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Constructivism and its implications for curriculum theory and practice

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Under the banner of constructivism, a world-wide change in the orientation to school learning has taken place. In the context of the constructivist movement an important question is how curriculum studies should view such concepts as 'development' and 'implementation'. If students and teachers together construct or enact their own curricula, what are the consequences in terms of curriculum theory and practice? What is the state of practice with respect to teaching and learning from a constructivist point of view?

Constructivism and situationism

The constructivist movement has it roots in a long-standing philosophical tradition (Von Glasersfeld 1991). Although constructivism in education can be seen as a recent branch of the cognitive sciences, there is, nevertheless, a direct link to the pragmatism of Charles S. Peirce, William James and John Dewey. In Dewey's 'laboratory school', instruction became 'continual reconstruction, moving from the child's present experience out into that represented by the organized bodies of truth that we call studies' (Dewey; cited in Boyd 1966: 406). Similar types of schools can be found in Western Europe, e.g. those based on the ideas of Maria Montessori (1870–1952), the Belgian psychologist Ovide Decroly (1871–1932), the French reform educator Celestin Freinet (1896–1966) and the German educator, Peter Petersen (1884–1952). The philosophy behind the establishment of such schools goes back to the beginning of this century, when what was known as the 'progressive movement' in the US and 'reform pedagogy' in Western European countries gained influence in teaching and learning.

The constructivist movement in recent cognitive psychology has re-emphasized the active role students play in acquiring knowledge and the social construction of knowledge has been an important principle in socio-cultural theory (Vygotsky 1978, Wertsch 1985). Situationism emphasizes the requirement that authentic learning should take place in meaningful contexts, in what are called 'communities of practice' (Lave 1988). Although there are theoretical differences between the Western-oriented 'progressive movement' and 'reform pedagogy' on the one hand and East

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European 'socio-cultural theory' on the other, they share such key concepts as 'reconstruction'.

In the US several curricula have been designed based on constructivist ideas: the 'Adventures of Jasper Woodbury' (Cognition and Technology Group at Vanderbilt 1994), 'CSILE' (Scardamalia *et al.* 1989), and 'Community of learners' (Brown and Campione 1994). Subsequently, these initiatives were combined in the programme, 'Schools for thought' (Scardamalia *et al.* 1994, Lamon 1995). All these projects contain characteristics of constructivism and situationism. Knowledge-acquisition is active and strategic, focused on many factors, including problems of understanding, diversity of expertise, learning styles and interests, curriculum as 'enacted' between students and teachers, and collaboration and reflection in a 'community of inquiry'. The results of these programmes seem promising in that they lead to an increasing growth in knowledge, a higher degree of critical thinking, greater reading and writing skills, as well as improved skills in argumentation.

But what can curriculum studies expect from constructivist theory? The actual implementation of constructivist ideas from the 'progressive movement' and 'reform pedagogy' was limited. However, during the last decade 'new' theoretical bases for constructive and situated learning have emerged, with the result that we now seem to know a great deal more about children's learning processes than before.

Constructivism: mistaken reliance on theory?

In a major address in 1969, Joseph Schwab (1970; see also Jackson 1992, Walker 1990, 1992) argued eloquently and powerfully against 'inveterate, unexamined, and mistaken reliance on theory'. He criticized the adoption of theories from outside the field of education, and the use of these borrowed theories, as principles from which right aims and procedures for schools and classrooms might be deduced.

Schwab made a powerful case, which no one has yet challenged, showing that, in principle, no single theory can provide an adequate foundation for educational practice. To provide educational practice with a solid underpinning of ideas, educators need to create what Schwab called a 'polyfocal conspectus', which unites elements from multiple theories, along with heuristics drawn from experience, into a coherent basis for action.

Are educational researchers again taking the road Schwab criticized in their eager embrace of constructivist ideas? The theories of such constructivist icons as Vygotsky, Leont'ev, Bruner, Geertz, Piaget and Dewey have achieved a prominent place in thinking about the design of educational programmes. The design experiments of such educational researchers as Brown and Campione, Scardamalia and Bereiter, and the Cognition and Technology Group at Vanderbilt University seem to be rigorous, principled applications of these ideas. The substantial results these design experiments have achieved in the education of children not generally successful in school have attracted a great deal of attention. Many educators

and researchers attribute the results of these design experiments to constructivist ideas, and see in constructivism the key to reforming contemporary education. On close examination, however, constructivist theoretical innovations play a minor role in the design experiments. We can ask if those who rely on constructivist theories as *the* basis for educational reform are in danger of repeating the serious mistake Schwab identified – the 'inveterately theoretical' nature of the starting point.[1]

Constructivist theory and social interaction

As a consequence of many years of study, researchers now know that learning through interaction is a promising option. Under certain conditions and for certain purposes, forms of co-operative learning have proved to be motivating and effective. But much of constructivism has lead to a misplaced emphasis on the *amount* of face-to-face interaction in contrast to the *quality* of interactions (including extended and mediated as well as face-to-face interactions). Thus, in recent years more attention has been paid to the quality of interaction processes in which students are involved (Perrenet and Terwel 1997a, b). These studies have shown that learning depends in part on the nature of student participation in interaction processes. Students learn more by giving elaborated help to others and less from receiving low-level elaboration by others. Within the 'class as a community of inquiry', students become interdependent. This interdependence develops over time in more or less fixed patterns. Some students are active, others are passive; some contribute in a constructive way, others are destructive. It is often the same student who takes the lead, being active and dominant, while others are passive and submissive. With regard to social interaction, here too constructivism is an inspiring theory, but as such it does not offer any practical guidelines for the creation of communities of inquiry and the avoidance of ineffective interaction patterns.

In other words, Schwab's argument seems as valid for constructivism as it has for other theories. In principle, no single theory can provide an adequate foundation for the design of curricula. Educators need multiple perspectives, multiple research findings and, especially, practical experiences and extensive deliberations to change classes into 'communities of inquiry'.

Constructivism: how theory confronts realities

Most Dutch teachers still teach in a traditional teacher-led way. Nationwide, there still remains a big gap between the constructivist ideas expressed in the Dutch National Curriculum and actual practice in curriculum and teaching. The National Curriculum is far ahead of school reality – a situation not restricted to The Netherlands. Policy makers, innovators and researchers rely heavily on constructivist theories as the basis for curriculum innovation. They are in danger, of course, of repeating the mistake of reliance on theory.

Constructivism undoubtedly has a valuable contribution to make to curriculum theory and practice. *However, constructivism is not a robust concept*: it seems to flourish only under more or less ideal educational circumstances. Some important questions derive from this understanding. If knowledge-construction and curriculum creation take place between teachers and students in the classroom, then what are the conditions under which this process can succeed (Snyder *et al.* 1992)? What are the possible dangers in allowing teachers and students to construct their own knowledge, knowing that they may get disconnected from the subject-matter fields, and from researchers in the fields of learning and instruction? Although the idea of the classroom as a community of inquiry is attractive, there needs to be a close connection to knowledge-producing communities.

In the light of such issues (and given current practice), there is the distinct possibility that radical constructivism in education will fail to overcome the enemies of all acquisition of true knowledge: prejudices, naïve concepts, misconceptions, subjectivism, solipsism and uncommitted relativism. The solution Seixas (1993) proposes is to give teachers the opportunity to participate actively in educational research and, in doing so, to establish connections between isolated 'communities of practice'. Seixas seems to look for a practical solution that is more or less in line with Schwab's: establishing connections between theory and practice, and putting deliberation at the very heart of curriculum development and implementation.

As this suggests, the 'constructivist' and 'situated learning' movement offers a significant challenge for curriculum theory, practice, and research. Time, effort, and deliberation will be needed before any constructivist curriculum practice can be envisaged on a national scale. However, research in the Netherlands, especially the intervention studies into secondary mathematics education as described in the following paper by Roelofs and Terwel (1998), do show promising outcomes. These studies, as well as the accompanying study by Van Oers and Wardekker (1998) into primary education, indicate that teachers in mathematics and language are capable not only of guiding students in the process of reconstruction but also of fostering forms of authentic learning in primary and secondary education, provided they have an appropriate preparation, and effective collaboration is established between teachers, subject-matter specialists and researchers around a well-designed curriculum.

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Notes

1. From a cognitive information-processing view, Anderson *et al.* (1996) have analysed the concepts of 'constructivism' and 'situated learning' as currently advocated by many

theorists. They question the validity of constructivism and regard the popularity of these ideas as a 'regressive move that ignores or disputes much of what has been demonstrated empirically'. They reject the claims for curriculum making based on constructivist theory.

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