Abstract. In educational, developmental as well as cognitive psychology several approaches to measure epistemological beliefs have evolved. These approaches focus on learners' and teachers' beliefs about knowledge and epistemological issues. Such beliefs are important because of their impact on learning processes and learning results. Some of the most research approaches and their methods are outlined. Then some difficulties which the research is encountering are discussed. One of such difficulties concerns the issue of domain specificity of epistemological beliefs. This issue is one of the reasons for inconsistent empirical results. It will be suggested that some of these inconsistencies are caused by the epistemology implied in the research approach itself. In particular, the idea that epistemological beliefs can refer to knowledge as a social and cultural entity, is underrated. The paper concludes with the discussion of this argument and of it’s consequences for further research.

Key words: epistemological belief, learning, measuring beliefs, dualism, relativism, certainty of knowledge, simplicity of knowledge, division of cognitive labor, domain dependency

1. PRELIMINARY REMARK

Learning a certain school subject always requires the development of an epistemological perspective about the content within the context of a certain domain of knowledge (e. g. mathematics). Teaching a school subject (and therefore selecting it from many other options which could be taught) is justified if that specific content is helpful for the development of a broader perspective on the domain of knowledge. The importance of an epistemological perspective in learning and teaching has always been emphasized in the work of M. Otte (e. g. 1994). It is a main theme in his critical thinking on educational issues. In his work this emphasis on epistemology in its own right is expounded mainly as a meta-perspective, in other words, as comments on the ways researchers, teacher educators and teachers think and argue about knowledge. And it is expounded often with a normative intention, driven by the contention that a more thorough reflection on epistemological issues would improve (mathematical) education. It is rarely based on empirical observations of epistemological thinking among students. But such empirical research approaches are also relevant for philosophical and historical reflection on educational issues. Since any ‘having to do’ requires the ‘being able to do’ and since any normative statement on educational issues should be based on a realistic examination of the personal and institutional conditions of acting according such normative statements, philosophical
reflection needs such empirical analyses. Otherwise it would be out of touch with its communicability with the social field it refers to.

On the other hand, however, empirical analyses are not beneficial unless they themselves are based on an appropriate epistemological conception. Only then is it possible in the event of contradictory results to decide whether they are merely caused by methodical problems or whether a revision of the theoretical approach is needed. (By the way: Such a self-referential use of a certain epistemological argument is inspired last not least by M. Otte's work, where such patterns of self-referential argumentation can be found very often and where the importance of self-reference for the justification of mathematical knowledge has been thoroughly discussed).

2. EPISTEMOLOGICAL BELIEF: A VERY INTENSIVELY-INVESTIGATED OBJECT OF RESEARCH INCLUDING MANY OPEN QUESTIONS

Recently several empirically based approaches to epistemology and epistemological beliefs have evolved. They are put forward by psychologists (within the subdomains of developmental, educational and cognitive psychology) and by researchers in science, language, history and mathematics education. These approaches are attempting to describe and measure learners' and teachers' beliefs about knowledge and epistemological issues. (Buehl, & Alexander 2001; Duell, & Schommer-Aikens 2001; Hofer, & Pintrich 1997; 2002 have given inspiring overviews of this research).

The development of beliefs about the ontological status and justification of 'knowledge,' knowing and (sometimes) about the acquisition of knowledge is the subject of these research approaches. Some of the researchers focus their studies on the beliefs about academic knowledge, e. g. mathematics (Schoenfeld 1992; de Corte, Op t' Eynde, & Verschaffel 2002), science (Lederman 1992), psychology (Hofer 2000). Others prefer to concentrate on the epistemology underlying the application of personal knowledge in connection with problems in everyday life. Here, general ideas about knowledge and its justification are at the forefront while assignment to a particular domain of school knowledge is not so important for these researchers (Kuhn 1991; King, & Kitchener 1994).

Some of the research approaches will be outlined below (section 3). The paper goes on to deal with the difficulties which the research is encountering at present. As an example of such difficulties the issue of domain specificity of epistemological beliefs will be discussed (section 4). This issue is one of the reasons for inconsistent empirical results. It will be suggested that some of these inconsistencies are caused by the epistemology implied in the research approach itself (section 5). In my view the research is based on an inadequate theory as to what the content of beliefs about epistemology and academic knowledge might be. In particular, the idea that epistemological beliefs can refer to knowledge as a social and cultural entity, is underrated. Put bluntly: the epistemology of the research on the development of epistemological beliefs might fall behind the development of the subjects of their research.