

**How do teachers reason about their practical knowledge?
Representing the epistemic nature of teachers' practical knowledge**

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Abstract

The present study focuses on the epistemology of teachers' practical knowledge by addressing the following research question: how do teachers attempt to reason about their practices and the practical knowledge underlie them? Given such research task, the main purpose of this paper is to develop a conceptual framework for studying the epistemic nature of teachers' practical knowledge by examining different related concepts in the literature, and integrating them with empirical data from the study. The results suggested that teachers' reasoning were found to be in the form of practical argument including three main epistemic statuses: pragmatic reasoning, constituent-to-end reasoning, and means-to-ends reasoning, and each of these reasoning relied on two distinguished reflections: analytical-productive reflection, and descriptive-defensive reflection.

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Over the past two decades, progressive theories have arisen regarding teachers' professional development programs. Such progressive theories make new assumptions about the roles of teachers: teachers are seen not just as decision-makers but as actively reflecting on their actions and, accordingly, as constructing their own theories. Elbaz (1981) has argued:

“As a teacher and curriculum worker, I have been disturbed by the inadequacy of the existing conceptualization of the role of the teacher within the field of curriculum. The prevailing view of teacher as a passive transmitter of knowledge does not accord with my own experience, in teaching and I work with teachers, of what the teaching act requires” (p.43).

So, as active practitioners, teachers are viewed as constructivists who can develop personal theories of the world. Progressive theory regarding the work of teachers also involves recognition that “generating knowledge about good teaching is not the exclusive property of university researchers, and it recognizes that teachers also have theories that can contribute to a codified knowledge base for teaching” (Zeichner, 1994, p.10). Despite the common focus to see teachers as active practitioners, research on teachers' thinking in this perspective has been carried out under different terms. These, for example, include practical knowledge (Elbaz, 1981); personal practical knowledge (Connelly & Clandinin, 1985); scripts and schema (Clark & Peterson, 1986); and teachers' talking and walking (Mena Marcos and Tillema (2006). Whatever the terminology, and despite variations in methodology and purpose, all emphasize and acknowledge that teachers can build their own knowledge-base for teaching (Pope, 1993). However from these above-mentioned concepts, researchers (e.g., Black & Halliwell, 2000; Elbaz, 1981; Fenstermacher, 1994; Meijer, Verloop & Beijaard, 1999; Zanting, Verloop & Vermunt, 2003) use frequently the term *practical knowledge* for the purpose of studying teachers' knowledge that support and guide their practice. Practical knowledge is based on the assumptions of Greek *practical philosophy* which “aims at developing the kind of context-based practical reasoning that is

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employed in the conduct of wide range of morally informed human activities” (Carr, 2004,p.61). Among what Carr has called “morally informed activities”, teaching is a concrete morally contextual activity that is associated with practical philosophy through the concept of teachers’ practical knowledge.

1. Practical knowledge

Because researchers in the field of teaching have defined practical knowledge from different points of view, there is no concrete agreement about what the practical knowledge is (Meijer et al., 1999); Moreover, it seems that there is, for research purpose, a confusing application of practical knowledge in relation with the similar term *praxial knowledge*. Such confusing originating from the fact that most Educational researchers (e.g., Elbaz, 1981, 1991; Fenstermacher (1994; Meijer et al., 1999; Zanting, 2001; Zanting, Verloop & Vermunt) have used the term practical knowledge to refer to the knowledge that teachers develop as the result of their experiences. Although there are other characteristics mentioned by the researchers, in reflecting on such research, one has the feeling that the main criteria for calling teacher knowledge to be practical is to learn it “on the job”. Conversely, I would argue that it is “praxial knowledge” that is learned on the job, and by “doing”; in the case of teaching it is learned by the “act of teaching” and reflecting on it (Tomas A. Regleski, November 15, 2006). From a researcher’s point of view, praxial knowledge is mainly concerned about the question of “how is this knowledge acquired?”

Practical knowledge in the context of teaching, however, arises in responding the question “what should I, as a teacher, do in a particular condition?”, on the one hand. “Practical”, on the other hand, in English has two shades of meaning: “Practicability” or what is capable of being done (use-able; capable of being used). In addition, something that

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is "practical" is "use-full" (full of use; i.e., pragmatic, as that is understood in philosophy: making a positive difference) (Tomas A. Regleski, November 15, 2006). As a result, referring to the question "what I should do in a particular situation", teachers apply the knowledge that they have "possibility" for and are "capable" of doing it; additionally, they suppose that this knowledge that guides their actions is "useful" and "good". However, the source of such knowledge may or may not be experience; thus, teachers may reconcile one or more of such other sources as theoretical and empirical with praxial knowledge to be applied on the job. In this sense, praxial knowledge may be considered as one source of practical knowledge, meaning that teachers use praxial knowledge because they see it to be practical: "being good" and "having capability of being done". Thus, teachers' practical knowledge is the knowledge that guides teachers for conducting the act of teaching: it is what Schön (1983) has called as "knowledge-in- action".

Based on the aforementioned argument, teacher practical knowledge, in this paper, refers to all informative and influential cognitions about various educational elements (Zanting, 2001) that teachers see them as "good" and having "capability of being done" in such way that "guide" teachers to conduct the job of teaching. Teachers may generate such knowledge as a result of their experiences (Fenstermacher, 1994; Elbaz, 1981); reflection before, during and after teaching; studying in teacher training programs; personal studies on existing relevant theories; and interaction with others in the school community and other social and academic contexts relevant to teaching (Elbaz, 1981). Such definition suggests that teachers' practical knowledge has several important aspects. First, teachers' practical knowledge, as it is frequently referred to in research on teacher knowledge, involves a "grouping or categorizing sense of term to call all cognitive events or mental states" (Fenstermacher, 1994, p. 29). Second, teachers have "range of practical knowledge of

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subject matter; of classroom organization and instructional techniques; of students' needs, abilities, and interests; of the social framework of the school and its surrounding community; and of their own strengths and shortcomings as teachers" (Elbaz, 1981, p.47). Third, teachers are the main "authorities" who develop, adapt and apply practical knowledge for conducting the job of teaching.

2. Epistemic nature of teachers' practical knowledge, why?

The application of "epistemology", which is a branch of philosophy connected with the nature and scope of knowledge, and the general reliability of the claims to knowledge (Hamlyn, 1967) in theoretical knowledge is well treated. In practical knowledge, on the contrary, that is not generally built by systematic research methodology, has been faced with more challenges. The problem in regarding to the epistemology of practical knowledge originates from the fact, if ever such knowledge deserves to take the label of "knowledge", and if the answer is positive, how it should be justified, to say how practitioners with the claim of holding practical knowledge can prove that they are not in "error". Such challenge has resulted in rare epistemological studies in relation to education, in general, and in regarding to classroom practices and teachers' practical knowledge, in particular. As Boyles (2006) has argued "the term "epistemology" can be found sprinkled liberally throughout recent articles by education scholars, but as a primary focus of work the topic is rarely treated" (p.58).

Teachers' practical knowledge, however, due to frequent application of it in educational research, has been questioned on the grounds of epistemic criteria: how teachers know to know, what evidence and proof they suggest for justifying their so-called practical knowledge, "what basis teachers have for knowing what is appropriate and true in

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matters they face in their work” (Tirri, Husu, & Kansanen, 1999, p. 17); and what the nature of these evidence and justifications is. These questions open a number of perspectives on epistemology in a way to evaluate teachers’ knowledge claims in terms of their relations to the “true” (Kansanen et al., 2000). Perhaps, in the last decade, Fenstermacher (1994) has presented one of the most challenging arguments regarding how teachers’ practical knowledge should be subject to epistemological criteria. He distinguished two major types of knowledge regarding to the work of teaching: “formal knowledge” that refers to the knowledge produced by researchers by means of existing systematic research methodology, and practical knowledge that is primarily known and generated by teachers as a result of reflection on their work. Following such classification, Fenstermacher (1994) has argued that:

“Justification of practical knowledge is every bit as important to its epistemic status as it is in the case of propositional knowledge, and that such justification is not simply in the performance of the skill or the craft, but also in establishing the reasonableness of the performance and the evidence connecting its purpose to its eventual outcome.... Both teacher formal knowledge and teacher practical knowledge are subject to evidentiary scrutiny if they are to count as knowledge in any useful sense of term. That teachers claim to have practical knowledge does not release them of the obligation to show how it is objectively reasonable to believe what they are contending” (pp.27-28).

The logic that underlies the argumentation of doing epistemological studies on teachers’ practical knowledge is that, every piece of teachers’ action and the knowledge that support it, fails to have the same epistemic status; the researchers should open the door to presuppose that some teachers hold the “better” knowledge, and do more “effective” course of actions in comparison to the others. In an empirical study on language teachers’ practical knowledge, for instance, Meijer et al. (1999) explored that practical knowledge of some teachers was not elaborated as the practical knowledge of other teachers: “teachers whose practical knowledge seems to be limited, seldom think about their teaching and therefore

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lack a deep understanding of what is going on in their classroom, in their students' minds, or in their students' environment" (p.81). In a different way, Feiman-Nemser and Floden (1986) have argued that it does not follow "that everything a teacher believes or is willing to act on, merits of the label knowledge; although that view has some support, such position makes the concept of knowledge as justified belief meaningless" (p.515). Thus, it is useless to justify every piece of teachers' action and the knowledge supporting it in the light of situational-orientated nature of the profession of teaching: to believe teachers can do anything because their job is situational, may cause teachers discontinue developing their profession more effectively.

2.1. Epistemic nature of teachers' practical knowledge, how?

One of the main concerns discussed regarding the epistemology of teachers' practical knowledge is to make it clear, whether or not, and to what extent researchers should consider the traditional orientations and definition of epistemology regarding to such studies. Boyles (2006) has argued that epistemological studies in education and regarding to the classroom practices and knowledge are rare, because epistemology has come to be seen from traditional point of view that focuses of "true knowledge". Referring to the Dewey, he has pointed out that traditional definition of epistemology should be replaced by the new version of epistemology "warranted assertibility":

"Warranted assertions replace justification in the traditional syllogism while at the same time imploding the syllogism itself. Where justification served a correspondence theory of the truth in the traditional account of the knowledge, warranted assertions merge truth and inquiry together in such a way that correspondence to an external world is no longer point. The point, instead, is the interdependency of truths and the process of inquiry: the temporal satisfaction of the solved problems in a world that is not set apart from the knower's use (s) of the world or place(s)" (p.61).

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Based on such argument, teachers' "reasoning" that support their actions and knowledge is considered to be reasonable (or effective) as far as they associated with the principles of "pragmatism" in such a way that help teachers cope with the problems embedded in the learning environment, and make a "difference" in the educational situations including students' learning.

Beside the concept of warranted assertibility, referring to the Aristotle's concept of "phronesis" some philosophers (e.g., Carr, 2004, 2005; Hamilton, 2005; Kristjánsson, 2005;) have argued that teaching can be best understood as praxis (practice, action) that is supported by practical reasoning. Distinguishing three forms of reasoning, Kristjánsson (2005) has stipulated that good or bad states of "theoria" (knowing) deals with true or false of knowledge"; in "techné" worthy or worthless products is at stake; and "phronesis" deals with wise and unwise action [and reasoning] support it. Based on this approach the way that teachers should prove that they know something is to offer "good reasons" for their actions. In this regard, Fenstermacher (1994) has also suggested that practical reasoning is well suited to addressing the epistemic nature of teachers' practical knowledge:

"The provision of reasons, when well done, makes action sensible to the actor and the observer. That is a minimal form of warrant for practical action. Such reasoning may also show that an action is, for example, the reasonable thing to do, the obvious thing to do, or the only thing one could do under the circumstances....Here the nature of justification shifts from the presentation of evidence, analogous to the uses of evidence in formal knowledge, to the development of "good reasons" (pp.45-48).

In a different way, harking back to Green's (1976) presidential address to the philosophy of Education Society, and referring to the Audi's (1989) concept of practical reasoning, a number of researchers (e.g., Fenstermacher and Richardson, 1993; Morine-Dersheimer, 1988; Morine-Dersheimer & Oliver 1988; Vasquez-Levy, 1998;) have suggested that teachers' reasoning can be understood as "practical argument". According to such interpretation, practical argument, which is seen different from practical reasoning, is

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accounts of actions that serve to explain or justify what the agent did, and include four types of premises and an action or intention to act: the “value premises” refers to a type of teachers’ reasoning that justify action based on morality; the “stipulative premises” in which teachers’ reasoning defines, interprets, and establish meaning, and sometimes originate from theory; the “empirical premises” a form of teachers’ reasoning that can be subject to empirical study, to test; ‘situational premises’ that justify teachers’ action (or intention to act) based on the context (Fenstermacher and Richardson,1993).

Addressing the notion of practical argument, Pendlebury (1990) has clarified three kinds of possible teachers’ reasoning. “Technical rationality” or means-to-end reasoning that insists on effectiveness of means regardless of whether or not it is a good action. In such reasoning, “it is possible for a teacher to choose her means well and yet not be a competent practitioner. If she has no sense of which ends are appropriate in teaching, and if her specification of those ends is myopic or misguided, her practice is self-defeating” Pendlebury (1990, p.178). Regarding this type of reasoning, Orton (1998) has pointed out that “in principle, the teacher could be thinking about things that are horrendous, immoral, or simply false, which in turn motivate or cause a behavior. Nevertheless, if the consequences of this behavior are students’ learning, the action is still good [effective]” (p.179). The second type of teachers’ reasoning, according to Pendlebury (1990) is:

“Constituents-to-end” reasoning or ‘situational appreciation’ calls for responding to non-technical cases; for example, how to teach a good lesson, how to engender an appreciation of poetry in students. The problem in these cases is less a matter of what would be causally efficacious in bringing about any of these ends than to see what really constitutes a good lesson or an appreciation of poetry” (pp.176-177).

Such reasoning is also described as plausible reasoning that hinges on coping with individual situations (Orton, 1996). In addition, the nature of teachers’ justifications can be understood as rationalization where “teachers’ argument has internal coherence; however,

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the result will be inappropriate or misguided actions because teachers in such arguments are wrong in identification of the salient features of cases” (Pendlebury, 1990, p.176).

Therefore, based on aforementioned discussion, there is no clear-cut type of reasoning behind teachers’ practical knowledge and action; in different situations, and depending on various educational elements engaged in the context of teaching that involves different, complicated, uncertain characteristics, teachers may need to reason about their actions and knowledge in diverse ways. The nature of cases, problems, and educational events that happen to the teachers and students calls for different types of reasoning. However, “moral considerations” and “situational appreciation” can be considered as two important criteria to see how well teachers reason about their knowledge and practice: these two criteria are tacitly embedded in the most studies on teaching and teacher education.

3. Source and analysis of data

Five class teachers and one subject teacher from two comprehensive schools, which provides a nine-year educational program for all school-age children beginning at the age of seven, were studied on voluntary base during one academic year. The schools were located in metropolitan region of Helsinki. “Stimulated recall interview” (Calderhead, 1996), general interview, and “reflection journal” were used to collect data. At the beginning of study, for each teacher, there was a general interview to explore the general pattern of teachers’ practical knowledge and reasoning behind it. Then teachers, based on a mutual agreement between researcher and teachers, were given a schedule for observing their teaching practice, each teacher 8 sessions. The first four sessions aimed at knowing the context and culture of classroom. In the other sessions, researcher made necessary notes while teaching; moreover, all conversation between teacher and kids were audio-taped. One

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hour after observation, each teacher was interviewed in order to explore the reasoning behind some of “observation unites” written while note-making. Observation unities were considered as particular and significant pieces of practice or knowledge that teachers insisted while teaching. The main strategy in interviewing teachers was to ask “why questions” type for finding out why teacher do or believe something particular. In addition to these two interviews, each teacher, at the beginning of study was given a “structured reflection” journal so teachers could describe their reflection based on some questions in the journal. The empirical results of this paper are mainly based on data related two class teachers that was considered as preliminary analysis.

As starting point, prior to analysis of the empirical data, using existing theoretical studies, a conceptual scheme developed. The main purpose of such scheme was to guide theoretical loading of the data in order to explore more possible, different, related aspects of the teachers’ reasoning. Then, all the interviews transcribed verbatim. After transcribing, two representative samples of interview, from two teachers, selected for initial analysis; the purpose of analyzing such interview was to develop a coding scheme to see how divergent it might be from theoretical scheme. The coding scheme form data mixed with theoretical scheme, and a final version of coding scheme for further analysis developed. Based on the final coding scheme, all interviews analyzed, and possible themes about teachers’ reasoning interpreted in three stages. In the first stage, all possible chunks of texts that contain some idea and meaning for analysis, labeled according to the coding scheme; then, related concepts and meaning clustered together to develop main and broad themes; and in the last stage, the content related to each of the theme organized, and used to describe the meaning of each theme in the first place, and for using in the report.

4. Results

The results of this study has suggested that “teachers’ reasoning” is the main source for exploring the epistemic nature of teachers’ practical knowledge. Being different from the notion of “justification” that apply for recognizing “true or false” of knowledge claim, and is evaluated based on theoretical sources; on the contrary, teacher “reasoning” calls for something that should be done rather to say that something is true or false, and take its “goodness” form “moral considerations” and “situational appreciation” embedded in the profession of teaching. The so-called notion of “practical argument” proposed by Fenstermacher and Richardson (1993) proved to be the main type of teacher reasoning in this study; however, with more complexity and differentiation in its structure. Teachers’ practical argument, in this study, suggested consisting of three main interrelated elements: “reasoning category”, “reasoning epistemic status”, and “epistemic reflection”.

4.1. Reasoning category: Refers to the “central category” which is an educational element that teachers’ reasoning revolves it. There were some other issues discussed in each chunk of teachers’ reasoning; however all of them somehow are addressing the central concept or meaning that reasoning is based on it. The reasoning category suggested that some educational issues are often seen to be more important than the others in the context of teaching, even though the case in question was not exactly what teacher use as the core issue in the reasoning. For example, talking about motivation in the class, a teacher reason how her strategy for increasing motivation is good:

“I will try base my lesson on what already kids know, so I have tried to have quite a lot of conversation in the class, which is not so easy because it is so big class, but I will try to get students to talk and to make them tell me their opinions, and what they already know because they normally think know a lot about topics, and it is not really truth; their information is not correct. So, it is what that I always think they first tell me what they know and think about that, then we discusses how it is” (class teacher, 4 years teaching).

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In this case, four issues are discussed in the reasoning: teacher is applying and believing in the strategy; students are subject to involve in strategy; strategy itself, which is to know student by encouraging them to talk; and situation, which is having a big class. Despite arguing on these four educational elements, and motivation is the case in question, it can be seen that the central part of teacher's reasoning is the kids that flow throughout the argument, thus links the different parts of the argument; the other factors involved in the reasoning such as teacher, situation, and teaching strategy are peripheral in the reasoning. Considering the abovementioned characteristic as the main feature, reasoning category was explored to be three important cases:

4.1.1. student-based category: In which teachers support their action and knowledge by addressing two sub-category related to the kids: First sub-category is related to “academic engagement” where teachers reason about their action by referring to how kids should be engaged in educational activities at lessons; how kids should regulate their learning tasks in relationship to themselves, other classmates, and teacher; and how teacher should react to such activities:

“I think it (the strategy of being strict at the lesson) works for every kids, but then again sometimes I know some students could survive with less guiding, and they could work more independently, then I let them to work, but then again even the kids who could work really independently; still it does not matter if I guide them. Then I can, for some kids, guide them more and for other kids I can guide less, because I know the kids are fine, they know what to do, and they are really good at this. It depends; I can work with different kids, a bit, in the different ways” (teacher, 15 years teaching).

The second sub-category, in the student-based category, was found to be about “teachers’ pre-assumptions” regarding to the student characteristics. In this case, teachers established

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their reasoning based on the personal notions that they had developed concerning to the various students' qualities.

“There have been many occasions that I have been asking students questions, who have not raised their hands, and I have seen actually they know and they just scare of raising their hands. Then it was the case that I observe that they are not bad at lessons. They understand, and just not willing to raise their hands for some reasons. Sometimes like those bright students, actually they are not lazy, they do know the answers but of course it is easier when they can just observe” (class teacher, 4 years teaching)

4.1.2. subject-based category means teacher try mainly to reason about their practical knowledge, and the associated practices based on the nature of subject matters they teach. In other words, teachers presuppose that different subject matters require to be dealt in particular pedagogical ways; this may arise from what so-called content pedagogical knowledge. Teachers simply reason that I do apply such strategy because it suits to a particular subject matter. In this case, for example, it can be seen how the “centrality” of subject matter stream throughout the teacher reasoning:

“I apply group-work strategy in English class, because especially in the English class, there are some occasions that students can talk for some students who know less. It is a peer who is at the same level with him or her, and then you can talk and solve some problems without teachers always. And especially in the English class, there are the occasions that you can really use English. I mean if in the class we read so, one student read and others listen, the time when the other are listening is the way they are speaking with themselves. So I use small groups every now and then just because those are occasion that they really can talk English. And also sometime I think that it is good when they do an exercise together, they ponder on it more, and think of that more. Because if we just talk in the front of the class there are many students who just copy the lesson down but if they work with peers they have to do something” (class teacher, 4 years teaching).

4.1.3. strategy-based category involves reasoning about the educational incidents with regarding to different strategies that teachers hold for various purposes in the process of teaching-learning. In such cases, teachers insist on the significance of a particular strategy as a way of justifying the action, or knowledge in question. For example, when a teacher was asked “why she has to sometimes throw the kids away the classroom”, she tries to reason about how classroom management as a strategy for improving learning of kids is

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important. In this case, although there might be other things involved in the case, the educational strategies have been found to be the fundamental part of the logic.

4.2. Epistemic status of practical argument: Meaning how good a teacher reasons about her practices, and knowledge associated with them. Two important criteria were considered to see how far teacher' reasoning is good: "moral considerations", and "situational appreciation". The extent to which a teacher reason about her practices with regarding to mutual interaction between the moral ethics and particularity of situation she faced, she may hold reasoning with different epistemic status; the more a teacher reflect on moral ethics to regulate her educational decisions that is more likely made based on the different situation, the better epistemic status her reasoning is. In other words, teachers should reject to act in an immoral way in the light of, to say they have challenging educational situations: they need to present "good reasons" for warranting what they suppose to do. Considering such argument, the results suggested that teachers' reasoning involved three distinguished epistemic statuses:

4.2.1. Pragmatic reasoning: Associated with the concept of "warranted assertibility" crafted by Dewey, pragmatic reasoning addresses what "works" for the teacher to make "positive difference" ,and temporarily "solve" problem. In other words, teacher did (or believed) something that she thought it worked and could bring about differences in the kids' learning capabilities, and also helped herself cope with her problems or kids' problems. Regarding to the criteria of "moral consideration" and 'situational appreciation", teachers, in the pragmatic reasoning, focused more on the situations they faced than the moral aspects of the case; however, while they tacitly

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addressed the importance of morality (they simply did not reject it), their reasoning were found to be mainly based on the particularity of their situations: in each situation they tried to do something that worked.

“I think a good teacher should be strict at the lesson. Because if you give kids too much freedom, they actually, I have experienced, can not work, you have to, you anyway have to give them the rules: what we are going to do, and somehow guide them in their work. I don't , I don't agree with the fact that you could just give the kids a topic and tell them ok, work with these, they can not work, they don't know how do that. So you have to get them guidelines. But you have to give the enough freedom. But not too much, because they can not work, they need just guidelines like when they have to finish their exercises , when they have to start, and sometimes give them ideas what they maybe could think of, if they stuck in some problems; for example, in geography and math (class teacher, 15 years teaching) ”.

4.2.2. Constituents-to-end reasoning: As Pendlebury (1990) has argued this kind of reasoning calls for responding to non-technical or hard cases; the problem in these cases is less a matter of what would be causally efficacious in bringing about any of these ends than to see what really constitutes a good practice. “A competent practitioner is one who has a rich understanding of the goods of the practice and a realistic, clear-sighted perception of what is possible under different situations. That is, she should consider good ends and possible means” (pp.176-177). Thus, in such reasoning, means and ends have a constitutive position to one another, and they are not technically isolated from each other; means are seen to be an integrated part of ends. Moreover, unlike pragmatic reasoning in which moral features of the practices were found to be peripheral, here, moral consideration and situational appreciation were both strongly emphasized in order to present “good reasons” for supporting practices. In the following case, for example, teacher reason about how she supports her strategy of ‘questioning’ in her particular way:

“First of all I want to know who is willing to answer, and very often it is the same students who are always raising their hands. They are actually quite a particular, let say they observe, the students observe really who has been given the chance to answer. If I call one student too many times, then the other tell, oh, he or she always gets the answers. And then I also I try to think that if some student has not raised her hands for a long time, then suddenly I see her

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raised her hand, I try to give them the chance to answer and try to encourage them. That is why I am observing all the time that who has been raising her/ his hands, and I try to make as many students to answer as possible. Because I know they really have a good feeling about the answering, although even it would not be totally correct. They enjoy the fact that I know, and giving them chance to answer. But I do call sometimes the names that will not raise their hands. Because, I do not want them to think that if you do not raise your hand, you do not have to do any things. Many times they say, oh, I did not raise my hand, and I say still you need to learn, although you did not raise your hand. But I do use the strategy that I ask first because I know some students do not like the fact if teacher always ask questions if they would not raise their hands. I was student like that at school and I was sometimes scared of the teachers when I was bad at some things. That is why I try not to create an atmosphere that students do not feel comfortable” (class teacher, 15 years teaching).

In this case, one can clearly see that teacher, through this particular piece of reasoning, has considered and emphasized the importance of means and ends by trying to show what constitute a “good” strategy (in this case questioning kids). The “goodness” of this strategy has been intended where teacher consider moral aspects of the case by saying “I need to provide equal opportunity for as many kids to engage in answering questions as possible; and saying that kids enjoy by answering the questions, even though their answers are not totally correct”. In this last piece of argument, teacher clearly reject to think about “effectiveness” of strategy from a technical point of view where she argues that “the kids’ answers may not be totally correct”. In addition, teacher focuses on the value of ends alongside means in that she argued: “I do call sometimes the names that will not raise their hands. Because, I do not want them to think that if you do not raise your hand, you do not have to do any things. Many times they say, oh, I did not raise my hand, and I say still you need to learn, although you did not raise your hand”.

4.2.3. Means-to-ends reasoning: Or “technical rationality” was found to be concerned about the “effectiveness” of the means, regardless whether or not, they are “good” i.e., they are associated with the “moral considerations”. In such cases, teachers support their knowledge and its related practices by referring to the fact that the practice

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was helpful, solved the problem, made difference, and brought about some positive consequences; however, it rejects to reflect on moral aspects of the case in question. Like pragmatic reasoning, teachers, in the means-to-ends reasoning, did practices that were supposed to be helpful and effective in bringing about some changes, and achieving certain ends; however, while in pragmatic reasoning moral considerations were not totally rejected, and peripherally seen to be reflected on, teachers failed to consider moral aspects of the practices in the means-to-ends reasoning.

“I have used throwing out the classroom kids really very, very seldom, just in those situations students can not simply calm down. I mean, in the situation, one starts confusing whole the class, and fighting students so the others can not concentrate. The good thing would be, if there would be a class and a teacher, and you could send students there to calm down. But we have no such classes because we have not enough teachers. So I think that it is not a good thing for such student putting them out the class, because they will not learn. But then again, I have to think that I should consider the better of one student, or the best of all students. In general, sometimes students need to be punished, to be upset, if they have been misbehaving. Ok, if always you say please, please, please, it does not work. I have to say: be quiet, calm down, and mouth shot” (class teacher, 4 years teaching).

As it is obvious, teacher, in this chunk of reasoning, simply believe that “it does not matter if misbehaving kids gets upset, and be treated in immoral way as far as the practice of throwing kids out the classroom is effective”. Here, the nature of means, which is punishing kids, is not based on moral ethics and conflicting entirely with the nature of ends, which is to provide normal learning environment for other kids, that is good and based on moral considerations. In other words, there is no good balance between the extent to which teachers reflect on moral aspects of their practice and the situational appreciation of it; they only focus on the situation (in this case misbehaving) they have faced. It seems, in such cases teachers’ reasoning is poorly presented for supporting their practice.

4.3. Epistemic reflection: Refers to the type and nature of “mental” considerations when teachers reason about their practices. The analysis of data suggested that teachers

held two distinguished types of reflection related to practical argument for warranting their knowledge and practices:

4.3.1. Analytical-productive reflection which involves reflecting on, and integrating different dimensions of the case in question in the context of teaching. Such reflection, in this study, was found to be “analytical” by type and “productive” by nature: it was seen to be analytical in the sense that teachers reflect on different categories, which in the first section of the results discussed as the first feature of teachers’ practical argument, such as matters related to subject matter, students, and teaching strategies in their reasoning, connecting them to establish a “good reasons”. It was considered, in addition, to be productive in that teachers involved in such reflection were found to be “vigilant about striving to avoid unknowingly deceiving themselves and others” (Argyris, 2004, p.3).

4.3.2. Descriptive-defensive reflection: In which teachers’ reasoning were found to be “descriptive” by type and “defensive” by nature. Reasoning about different practices, teachers, in such reflection, only describes a list of ideas and meanings without presenting more analysis, and establishing any logical connection among them to demonstrate “good reasons”. Moreover, descriptive reflection has been found to be defensive in the sense teachers struggled to protect themselves, or any other supra individuals unites. Argyris (2004) has described defensive reasoning or reflection as following:

“The objective of defensive reasoning is to protect and defend actor (s) or supra-individuals unites such as groups...the primary reasoning processes include making the premises explicit (on the assumption that they are valid) and testing them by self-referential logic. Self-referential logic means testing a claim by the same logic that generated it in the first place. Transparency is avoided in the service of protecting the self, and the fact that one is protecting the self is denied” (p.1).

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The case below illustrates that how descriptive reflection can be defensive:

Teachers should be strict at the lessons.
Being strict works for every kid even the independent kids.
It makes no problem for these kids (independent ones) because they are good.

As it is clear, teacher, in this piece of practical argument, first, has described an idea: “teachers should be strict in the classroom, it works for all kids, and it is, also, good for independent kids”; second, she has used self-referential logic for testing her knowledge by referring to her own claim in all premises. In other words, she has said nothing about how such strategy works properly for all the kids, and it does not matter for the independent kids, in the case she is strict at the lessons.

5. Discussion

The main research task, in this study, was to explore the epistemic nature of teachers’ practical knowledge by addressing the question “how do teachers try to reason about their practical knowledge?” The results of the study suggested that the concept of “reasoning” was central for exploring the epistemic nature of teachers’ practical knowledge. Unlike the concept of “justification” that involves the static situation, and seeks for true or false of knowledge claims, the concept of “reasoning” involves a dynamic, ongoing, in the process situation that practitioners use for deciding that something should be done. Teachers’ reasoning were found to be in the form of practical argument proposed by Fenstermacher and Richardson (1993); however with more complexity and differences in its characteristics. Three main characteristics were explored to be related to the teachers reasoning: reasoning category, reasoning epistemic status, and epistemic reflection.

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Reasoning category suggested that, in the teachers' practical argument, there was a central educational element that teacher based her reasoning on it; the other aspects of the case were found to be peripheral. The most frequently stated issues as reasoning category were issues related to the students, subject matter, and teaching strategies. While each chunk of teachers reasoning focused on a fundamental theme, it was explored to have three different epistemic statuses. Constituent-to-ends reasoning in which teachers considered means and ends as an integrated whole. For Pendlebury (1990), situational appreciation is the main criteria to see how teachers present "good reasons". In this study; however, teachers suggested to reflect on both moral consideration and situational appreciation for supporting their reasoning. Teachers' reasoning, in two other epistemic statuses, unlike constituent-to-ends reasoning, mostly relied on how the means would be effective in bringing about certain ends. While in the pragmatic reasoning moral aspects of the problems in question were tacitly emphasized (not entirely rejected); on the contrary, in the means-to-ends reasoning, teachers failed to reflect on moral consideration: they technically focused on the effectiveness of means, regardless how it was based on the moral ethics concern with the case. In addition, teachers' reasoning was found to be based on two distinguished types of reflections that were different by nature. Analytical-productive reflection illustrated that teachers reflect on, analysis, and integrate various aspects related to their practice and knowledge underlie it; such reflection was explored to be productive in the way teachers were transparent in presenting informed reasons. Contrary to the analytical reflection, there was, also, descriptive reflection that in which teachers only list few meanings without trying to make a logical connection among them. Because teachers in such reflection tried to protect "the self", and used "self-referential" logic to test their claims, it was called as defensive reflection by nature.

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Although there was no clear-cut association between each type of epistemic statuses of reasoning with types of epistemic reflection, constituent-to-ends reasoning was found to be mostly based on analytical-productive reasoning, pragmatic reasoning relied on both reflection types, and means-to-ends reasoning showed to be mainly based on descriptive-productive reasoning. The main message of this study, I would like to argue, was the fact that there would be no clear-cut type of reasoning behind teachers' practical knowledge and its associated practices, but depending on the complexity and differences in the educational elements engaged in the job of teaching, teachers may hold different types of reasoning to cope with their problems. However, because the context of teaching is bounded by "moral consideration" and "situational appreciation", teachers may need to move from means-to-ends reasoning toward pragmatic and particularly constituent-to-ends reasoning for developing their profession.

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Reflective Journal

By:

International School of Vantaa
2006-2007

Instruction on Reflective Journal

Dear Teacher: Please read this instruction before starting.

The theoretical pre-assumption behind *reflective teaching* is that Teacher Training Programs and, also existing learning and teaching theories ignore the critical problems embedded in the context of teaching. Therefore, teachers reflect, deliberate, and contemplate about different challenging educational elements to solve, ease, manage, and regulate their problems, thus, develop their practice.

This **Reflective Journal** aims at exploring and understanding your reflection during our cooperation. You should describe your reflection on this papers that I am calling a **Journal** based on following instruction:

1. Please describe your explicit and implicit reflection in this journal. Reflection may happen either **explicitly** or **implicitly**: in an explicit form a practitioner including a teacher articulate the process of her/his reflection, for example writes it down, talks on it with others, or even conduct a research on it, and express it more clear; and an implicit form of reflection is **tacit**, and just happens in the mind of a teacher, however, it still useful and helps teacher develop teaching.
2. Please describe your reflection **in action** and **on action**: reflection in action deals with your deliberation **at the time of teaching** in classroom; by this I do not mean you interrupt your lesson and immediately write about your reflection; just after lessons whenever possible or maybe at home, if you remember, write down about your reflection while teaching. Reflection on action means deliberating on **your teaching retrospectively**: in this case you may reflect on your different educational events happened to you during day, week, or even month and year.
3. Please describe reflection on your **beliefs, values, insights and whatever mental and cognitive** activities about teaching: reflection is not only concerned to action; you may also reflect on and evaluate your different beliefs, values, motives, insights about teaching.
4. Please describe each of your reflections as a **case in a single page** folded in journal: a case refers to a certain **educational practice** that you do or happens to you before, after, and during teaching, and you reflect on it; it also includes any of your **cognitive activities** such as beliefs, values, etc, about teaching that you reflect on. Thus, you may have different cases during our cooperation to be reflected on.
5. Please describe your reflection **whenever possible**: you should express your reflection when (1) it happens to you and (2) you are free to write it down: You do not need to write your every second, or even, every day's reflection.
6. The questions in the next page that I have raised in the journal, may help you unravel you reflection easier; however, it is not a strict format: you can extend or narrow down it if necessary.

The question concerning different aspects of your reflection

Date of reflection:

Please, according to instruction given in the first page and following questions, describe different aspects of your reflection: If you need more paper to write, please reverse the page and write whatever you need

(1) What was the **case** (either any of your teaching practices or your cognitions) that you reflect on it? Please explain as much details on the content of your reflection as you remember:

(2) **How** did you reflect on the case? Was it the kind of **interactive thinking** that you reflect only in your mind and evaluate the case? Or, did you **write down** your reflections? Or whatever else? Please explain the process of your reflection?

(3) Was your reflection on the case helpful and good? If yes, how do you explain its goodness?

(4) **When** did you reflect on the case? Before, during or after teaching:

(5) Would you like to write something else? Please...