

Studying Differences in Teachers' Ways of Thinking on the Basis of Commenting Videotaped Lessons

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Introduction

Teachers' perceptual capabilities, pedagogical knowledge and thinking processes underlying their professional decision-making have been extensively studied (see e.g. Berliner 1994, 2001, Kagan 1992, Van den Berg 2002). In spite of that reliable and easily applicable indicators of teachers' expertise haven't been produced yet. Some progress in this direction has been made by Japanese researchers (Sato et al. 1993, Sato 2002). Sato and others requested that expert and novice teachers watch a videotaped lesson without stopping it and that they think aloud about their perceptions and feelings. An analysis of the subjects' comments revealed four characteristic features of "practical thinking style" that distinguish expert teachers from novice teachers. *Firstly*, the study revealed that expert teachers produced 2.7 times more idea units in their comments than novice teachers. The number of words in experts' comments was 7.4 times higher than that of novices. *Secondly*, researchers found that the majority of novice teachers watched the video as outsiders, while expert teachers observed it as insiders and were sensitive to the specific situation. *Thirdly*, the experts, from the beginning to the end of the lesson, changed their viewpoints and standpoints. Sometimes they observed the lesson as a teacher, sometimes as an observer, and sometimes as a student. These multiple viewpoints were not characteristic of the majority of novice teachers. *Fourthly*, in the novices' comments, more than 70% of the idea units were merely "facts", and "reasoning" counted only for 10%. Contrariwise, in the experts' comments, nearly 40% of the idea units represented "reasoning".

The research findings of Sato and his colleagues' study inspired a research program using similar perspectives for learning about Estonian novice and experienced teachers' perceptual differences. The aim of this study is: to uncover differences in novice and expert teachers' perceptual capabilities and to compare the findings of study with the results of Japanese study.

Research methodology

Selection of research subjects

Appointing teachers to groups on the basis of number of years they have worked at school is unreliable. This criterion does not take into account individual differences in teachers' professional development. There are different systems for the certification of expert teachers usually serving promotion purposes. One of the most widely known is practiced by the National Board for Professional Teaching Standards (NBPTS) in the USA. Estonian schoolteachers are to be certified as senior teachers or teachers-methodologist depending on their expertise recognized by national certification boards whose decision are based on the accounting of candidates' educational merits and recognition by colleagues.

There is no easy to use and reliable methodology for identifying teachers expertise.

Different approaches have been used for discrimination of teachers by their expertise. Some of them have been based on indirect indicators rather than on a direct assessment of professional skills. For example: expert teachers are those whose students results are among the top of 15% for several years (Leinhardt and Greeno 1986) or expert teachers are those who have been recognized as teachers of the year (Agne 1992). In other studies expert teachers have been identified on the basis of more complex criteria. Bond et al. (2000) found three characteristics that had the greatest ability to discriminate between expert and non-expert teachers: the degree of challenge that the curriculum offered; ability for the deep representation of the subject matter; skillfulness in monitoring and providing feedback to their students.

The expert teachers in this study were identified on the basis of years worked as a teacher and on obtained public recognition as a teacher. The teachers having taught ten years or more at school were considered as potential expert teachers.

The earlier national survey showed that Estonian teachers'

understanding of many basic educational issues stabilizes in the teachers' 8-10th years of teaching (Krull 2003). Characterization of public recognition was based on two criteria: teachers certified as senior teachers or teachers-methodologist were considered as eligible and teachers should be recognized as good teachers at their own schools. The directors of schools of Tartu were asked to evaluate teacher-methodologists' communication skills with students; individual approach in teaching and creating favourable study atmosphere and motivation on ten point scale. The five expert teachers with best evaluations were invited on a voluntary basis in the experiment.

The novice teachers were selected among beginning teachers who had graduated from pre-service teacher education teaching experience was limited to ten weeks of supervised practice and to a few months as full-fledged teachers. The selection of novice teachers was random.

The beginning teachers were asked to participate in the experiment. Five students who made a request were involved. The potential research subjects were invited to participate on a voluntary basis. The subjects were paid double the amount of their pay for teaching a conventional lesson.

Selection of a videotaped lesson and defining study conditions

Several school lessons of different subjects were videotaped and analysed for their capability of stimulating teachers perception of educational incidents. The recording of an Estonian language lesson thought by an expert teacher in grade seven was selected.

In part one the teachers had to watch the video and comment on what they thought and felt about it aloud. The teachers were asked to read the lesson material (study aids and student handouts) before watching. The subjects recorded all their comments into the tape when watching the video.

In part two they had to write a report about the lesson after watching it. They had to write a report immediately after part one was completed.

The total amount of time used for commenting and writing was limited to about two hours. The teachers were asked to watch video only once and not to look back. The teachers watched the lesson recording and commented on it in a room equipped with the necessary equipment at the Department of Education. The teachers were instructed to comment aloud on everything they thought and felt when watching the lesson. They were recommended to answer some questions after the lesson that asked to characterize the observed lesson in general terms.

Methodology for the analysis of teacher comments

The comments were divided into idea units. It was determinate whether the unit was about teaching or learning. Then it was determinate whether it was a fact, impression or interpretation. The idea units were categorized according to significance and relevance. It was found that in Estonian circumstances the idea units should express integral ideas not to be limited to single sentences as defined by Sato et al. (1993). A nine-item list of categories was elaborated. Seven of these categories represent Gagne's (1985) instructional events. Remaining two categories represent comments on general classroom behaviour and atmosphere.

Categories of comments (idea units) were:

1. Gaining pupils' attention
2. Informing the pupils of the objectives of learning and motivating learning
3. Stimulating recall of prior learning
4. Presenting the learning information

5. Providing learning guidance Categories of comments (idea units):
6. Checking achievement of learning objectives by eliciting performance of pupils and providing feedback
7. Enhancing retention and transfer of what has been learned
8. Organization and management of general class activities
9. General teaching strategy and classroom atmosphere

Research findings and discussion

The statistically significant differences in mean numbers of idea units were found in four of initially introduced categories: presenting the learning information; providing learning guidance; enhancing retention and transfer; general teaching strategy and classroom atmosphere.

The expert teachers made almost 2.5 times more comments on joint teaching-learning activities than did novice teachers. This finding is in line with Sato et al. (1993) study which showed that "the expert teachers are better at grasping the complex structure of teaching..."

The differences between Estonian novice and expert teachers in idea units produced was less remarkable than in Japanese study. In Japanese study the ratio of the average numbers of idea units was 34.6 to 84.4. In Estonian study the ratio of these numbers was 49.2 to 81.0

In Japanese study 70% of the idea units produced by beginning teachers were facts while the share of facts in expert teachers' comments was less than 15%. In the case of Estonian teachers no significant difference was found between the average numbers of idea units identified as facts or interpretations produced by the novice and expert teachers.

Many of these differences found between the results of the Estonian and Japanese studies can be explained in the light of cultural differences in pedagogical thinking of two countries teachers.

Conclusions

The study created a good basis for the further research of indicators of teachers' professional expertise drawing on changes in their perceptual capabilities with a special focus on cultural differences in these perceptions and in the categorization of these perceptions.

The following study might focus on learning of teachers' comments on specific instructional events that appeared to have the highest discriminative power to teachers by their expertise.

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