



From the

AERA Online Paper Repository

<http://www.aera.net/repository>

Paper Title The Contribution of Video as a Tool in Mentoring: Student Teachers' Experiences

Author(s) Siri-Malen Høynes, Norwegian University of Science and Technology; Torunn Klemp, Norwegian University of Science and Technology; Vivi Nilssen, The Norwegian University of Science and Technology

Session Title Video Technology as a Tool for Preservice Teachers' Learning

Session Type Paper

Presentation Date 4/14/2018

Presentation Location New York, NY

Descriptors Classroom Research, Mentoring, Teacher Education - Pre-Service

Methodology Qualitative

Unit Division K - Teaching and Teacher Education

DOI 10.302/1300825

Each presenter retains copyright on the full-text paper. Repository users should follow legal and ethical practices in their use of repository material; permission to reuse material must be sought from the presenter, who owns copyright. Users should be aware of the [AERA Code of Ethics](#).

Citation of a paper in the repository should take the following form: [Authors.] ([Year, Date of Presentation]). [Paper Title.] Paper presented at the [Year] annual meeting of the American Educational Research Association. Retrieved [Retrieval Date], from the AERA Online Paper Repository.

The Contribution of Video as a Tool in Mentoring - Student Teachers' Experiences

Abstract

This paper presents findings from a Norwegian intervention study, which aims to support pre-service teachers learning of how to orchestrate whole-class dialogues with pupils. Pre-service teachers' dialogues in the classroom are videotaped and used as a tool in the post-lesson mentoring. Watching the video the group of four pre-service teachers, their mentor and the lecturer from the university discuss specific elements of the conducted dialogue. In this paper we focus on what could be gained by using video in the mentoring – from the pre-service teachers' point of view. Data material is daily written reflective logs from the student teachers. The analysis is inspired by procedures developed in grounded theory. We present and discuss three features that the mentoring benefited from.

Objectives

This paper is based upon an intervention study where we explore how videos from student teaching can influence and support the student teachers' learning of how to conduct mathematical whole-class dialogues with pupils.

The research question we explore in this paper is: *How did use of video benefit the post-lesson mentoring according to the pre-service teachers' experience?*

Context

The project is situated within Norwegian initial teacher education for primary school. This is a four-year long integrated program. Each year the pre-service teachers have 5-7 weeks of field practice as well as parallel studies in education and different subject matters. The pre-service teachers have their field practice in groups of four.

Official documents (KD, 2009) states that field practice and theoretical studies are equal arenas for learning and professional development, and mentors in contracted schools are regarded as teacher educators. The mentors are paid, and allotted time, for mentoring the pre-service teachers two hours daily. The mentor in this study holds a Master's degree in mathematics education. Due to the project, the lecturer in mathematics is part of the planning and post-lesson mentoring.

The pre-service teachers in the presented study are in their third year, studying mathematics and education. They have their field practice with third-graders focusing on mathematics. The four pre-service teachers were voluntarily recruited from a teacher education program with special emphasis on science and mathematics. Mathematical dialogues with pupils are a substantial part of the program, focused both in the course literature and in lectures where videos of professional teaching is watched and analyzed. In the presented study, pre-service teachers were asked to conduct whole class dialogues, which were planned as a common enterprise by the pre-service teachers, the mentor and the lecturer. In the post-lesson conversations the four pre-service teachers and the two mentors watched and discussed the videotaped lessons.

Theoretical framework and previous research

Our point of departure is sociocultural theory as developed by Vygotsky (1978) and his ancestors. Two features of this theory are especially relevant for our study. First, the claim that higher mental functioning, like reasoning and problem solving, in the individual derives from social life. Second, that tools and signs in general mediate higher mental functioning and human action. Individuals use tools to mediate their thinking and to collaborate. Vygotsky regarded language to be the most important tool, the basis for the dialogic classroom.

Research within three areas guides the project: 1. Pre-service teachers and mathematical dialogues 2. Mentoring conversations 3. Use of video in teacher education

1. Mathematical reasoning is important for children's later achievement in mathematics (Nunes, Bryant, Sylva, & Barros, 2009). Differences in pupils' mathematical thinking and reasoning could be attributed to the type of questions teachers ask (Kazemi & Stipek, 2001). However, questions posed within mathematics classrooms across the world typically fail to provide pupils with opportunities to reason about mathematical concepts or to explore mathematical connections (Hiebert et al., 2003). Asking questions that probe pupils' thinking is a complex skill, and require thoughtful planning (Manouchehri & Lapp, 2003). Prospective teachers pose questions quickly with few follow-ups, giving little time for the pupils to expand their answers (Henning & Lockhart, 2003). As with questioning, learning how to listen to and interpret pupils' mathematical ideas is not a simple task (Chamberlin, 2005). Student teachers have difficulties responding to unexpected responses from the pupils (Nilssen, Gudmundsdottir, & Wangsmo-Cappelen, 1995).

Orchestrating whole-class dialogues in mathematics are pointed to as an example of core practices in teacher education (Grossman, Hammerness, & McDonald, 2009). Leading such dialogues includes asking questions or posing problems to begin a discussion, monitoring student participation, and responding to student ideas. Grossman et al. (2009) argue how "each of these is critical to the practice as a whole and represents practices that novice teachers can begin to develop in teacher education and the early years of teaching" (p. 281).

2. Mentoring conversations in field practice tend to be emotional support focusing more on classroom management and less on subject matter (Helgevold, Næsheim-Bjørkvik, & Østrem, 2015). Strong and Baron (2004) found that 70 % of mentors' suggestions to novice teachers focused on teaching as instructional matters and classroom management, 18 % were related to pupils, while only 2 % of the suggestions were related to subject matter. Advices in science teaching concentrated on general pedagogical knowledge while the domain of subject-matter knowledge was absent in the conversations (Bradbury & Coballa, 2007). As reported by Valencia, Martin, Place and Grossman (2009), the few visits from university lecturers do not seem to change this focus.

3. Internationally there are a number of studies using video in pre-service teacher education (Brouwer, 2011; Gaudin & Chaliès, 2015). They mostly focus on watching professional teaching, but there are studies where pre-service teachers watch videos of their own teaching, either peer teaching or video clips of student teaching during field practice. However, we find that the discussions around these videos mainly take place in courses at the university. A study suggests a change in the quality of the reflections made by interns when supported by video of their own teaching:

[Video-supported reflection] shift[s] the content of their reflections from a focus on classroom management in memory-based reflections to a focus on instruction when video

was available, focus less on themselves and more on children when they reflected on video clips of their teaching (Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008, p. 347).

Watching video seems to help novice teachers examine their ability to facilitate dialogues by slowing down the fast pace of classroom life so that explicit noticing of aspects of the classroom dialogue can be analyzed. Our study investigates how such use of video can support the student teachers' learning on an earlier stage in their professional development.

Using video as a tool demands an orientation towards concrete learning goals in order to direct the use of video properly (Blomberg, Renkl, Sherin, Borko, & Seidel, 2013). The aim of our intervention is that pre-service teachers should experience whole-class dialogues and, as a long-term goal, be efficient in orchestrating such dialogues. Due to accurate representation, use of video is effective for understanding communication patterns, the ability to notice significant aspect of pupils' thinking and engaging in productive conversations on classroom interactions (e.g. Sherin, 2004; Borko, Jacobs, Eiteljorg, & Pittman, 2008). As use of blackboards and smartboards are central in teaching, we find it important to catch how these are used. Non-verbal expressions can also be useful to identify.

Blomberg et al. (2013) assert that there is a need to focus novice teachers' attention towards specific elements and underline key connections between these when they observe video. Hence, the mentors play an important role in facilitating this reflection. We follow Seidel, Stürmer, Blomberg, Kobarg and Schwindt (2011) when they conclude that it makes sense to start professional development activities by working with videos of one's own teaching and Masats and Dooley (2011) who assert that video coaching can play an important role in field practice.

Methods and data sources

To answer the research question we analyzed the student teachers' reflective logs written daily during field practice.

The analysis of the student teachers' logs is inspired by procedures developed in grounded theory (Corbin & Strauss, 1998). We first identified and marked all passages that said something about the student teachers experience with whole-class dialogues and use of video. Through open coding we named utterances and marked recurring words. A challenge was that the student teachers used what we would call a dense language. Thus, we found it necessary to code on the level of words and sentences to understand the benefits of using video in the post-lesson mentoring from the pre-service teachers' point of view. The coded utterances were put into a table with the student teachers names horizontally and the codes vertically in order to identify the essence of their experiences.

Through the logs we gained access to the student teachers' experiences. Transcriptions from the mentoring conversations were used to triangulate their utterances regarding the content of the conversations. The analysis shows that their utterances are in accordance with what actually took place (authors, submitted). The analysis revealed three important features that benefited the post-lesson mentoring: First, use of video refreshed their memory of teaching situations – individually and collectively. Second, use of video helped the pre-service teachers to see and understand their own contributions in the discussion. Third, they could discuss what they found difficult when making decisions in the moment. The three features were used to code the data material to ensure credibility.

Ethics is taken care of by following guidance from the Norwegian Research Committee (NESH) and through informed consent.

Findings

Watching the video gave all participants in the mentoring a shared frame of reference. Although expressed differently, the four student teachers found it important that the video ensured that they discussed the situation the way it happened. It was not left to chance what they were discussing. Thus the video helps to establish intersubjectivity, or a shared definition of the situations (Wertsch, 1984), which can be seen as a presupposition to the discussion of the other two features. First, through the logs we understand that none of the pre-service teachers felt they succeeded as conductors of whole-class dialogues. One of them writes that “she lost the pupils”. Watching the video the pre-service teachers realized that the way they expressed themselves and posed questions “ruined the conversation”. They became aware that the pupils could have found it difficult to understand what they were saying or asking for as well as why the pupils acted like they did. In the situation the pre-service teachers were not aware of this, as they felt well prepared for posing questions.

Second, the third feature was the possibility to discuss what they had found difficult when making decisions in the moment. From their logs we understand that this was mainly about interpreting pupils’ answers and represent what they were saying on the board. In the classroom with the demand for immediate response they felt insecure. Distanced from the in-the-moment decision-making, looking back at the situation and hearing exactly what the pupils said, they were able to dwell on pupils’ explanations and discuss alternative choices with their peers and the two mentors.

Significance

This study sustains previous research, orchestrating whole-class dialogues are challenging for inexperienced teachers (e.g. Nilssen et al., 1995; Henning & Lockhart, 2003). In-the-moment decision-making is complicated, and cannot be learned through readings or analysis of the performance of others. This is due to the unknown in the classroom, what pupils’ responses will be (Ball & Forzani, 2009). Our study implicates that pre-service teachers need to learn these skills in authentic teaching situations. Unlike in the study of Valencia et al. (2009), the university and the primary school mentors can be a fruitful team scaffolding such learning processes based on video-clips from the student teaching. By decomposing the complexity of mathematics teaching into specific activities, they demonstrated that they feasibly and directly managed to address representation as a key practice in teaching mathematics and develop a common language for discussing this practice.

References

- Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education*, 60(5), 497-511.
- Blomberg, G., Renkl, A., Sherin, M. G., Borko, H., & Seidel, T. (2013). Five research-based heuristics for using video in pre-service teacher education. *Journal for Educational Research Online*, 5(1), 90-114.
- Brouwer, N. C. (2011). *Imagining teacher learning. A literature review on the use of digital video for preservice teacher education and professional development*. Paper presented at the annual meeting of the American Educational Research Association in New Orleans, April 11, 2011.
- Chamberlin, M. T. (2005). Teacher discussions of students’ thinking: Meeting the challenge of attending to students’ thinking. *Journal of Mathematics Teacher Education*, 8(2), 141-170.

- Gaudin, C., & Chaliès, S. (2015). Videoviewing in teacher education and professional development: A literature review. *Educational Research Review*, 16, 41-67.
- Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Teachers and Teaching: Theory and practice*, 15(2), 273-289.
- Helgevold, N., Næsheim-Bjørkvi, G., & Østrem, S. (2015). Key focus areas and use of tools in mentoring conversations during internship in initial teacher education. *Teaching and Teacher Education*, 49, 128-137.
- Henning, J. E., & Lockhart, A. (2003). Acquiring the art of classroom discourse: A comparison of teacher and prospective teacher talk in a fifth grade classroom. *Research for Educational reform*, 8(3), 46-57.
- Hiebert, J., Gallimore, R., Garnier, H., Givng, K. B., Hollingsworth, H., Jacobs, J., ... Stigler, J. (2003). *Teaching mathematics in seven countries: Results from the TIMSS 1999 Video Study*, NCES (2003-013), U.S. Department of Education. Washington DC: National Center for Education Statistics.
- Kazemi, E., & Stipek, D. (2001). Promoting conceptual thinking in four upper-elementary mathematics classrooms. *Elementary School Journal*, 102, 59-80.
- KD (Ministry of Education and Research) (2009). Report No. 11 to the Storting (2008-2009). *The teacher. The Role and the Education. Oslo: Ministry of Education and Research*.
- Lampert, M., Franke, M. L., Kazemi, E., Ghouseini, H., Turrou, A. C., Beasley, H., ... Crowe, K. (2013). Keeping it complex: Using rehearsals to support novice teacher learning of ambitious teaching. *Journal of Teacher Education*, 64(3), 226-243.
- Manouchehri, A., & Lapp, D. A. (2003). Unveiling student understanding: The role of questioning in instruction. *Mathematics Teacher*, 96(8), 562-566.
- Masats, D., & Dooly, M. (2011). Rethinking the use of video in teacher education: A holistic approach. *Teaching and Teacher Education*, 27(7), 1151-1162.
- Nilssen, V., Gudmundsdottir, S., & Wangsmo-Cappelen, V. (1995). *Unexpected answers. Case study of a student teacher derailing in a math lesson*. Paper presented at the annual meeting of the American Educational Research Association (AERA), San Francisco, April 1995. <http://files.eric.ed.gov/fulltext/ED390853.pdf>
- Nunes, T., Bryant, R., Sylva, K., & Barros, R. (2009). *Development of maths capabilities and confidence in primary school*. London: Department for Education <http://dera.ioe.ac.uk/11154/1/DCSF-RR118.pdf>
- Rosaen, C. L., Lundeborg, M., Cooper, M., Fritzen, A., & Terpstra, M. (2008). Noticing noticing: How does investigation of video records change how teachers reflect on their experiences? *Journal of Teacher Education*, 59(4), 347-360.
- Seidel, T., Stürmer, K., Blomberg, G., Kobarg, M., & Schwindt, K. (2011). Teacher learning from analysis of videotaped classroom situations: Does it make a difference whether teachers observe their own teaching or that of others? *Teaching and Teacher Education*, 27(2), 259–267. DOI: 10.1016/j.tate.2010.08.009
- Sherin, M.G. (2004). New perspectives on the role of video in teacher education. In J. Brophy (Ed.), *Using video in teacher education* (pp. 1-28). Boston: Elsevier.
- Valencia, S. W., Martin, S. D., Place, N. A., & Grossman, P. (2009). Complex interactions in student teaching: Lost opportunities for learning, *Journal of Teacher Education*, 60(3), 304-322. Doi: 10.1177/0022487109336543.
- Vygotskij, L. S. (1978). *Mind in society: the development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wertsch, J. V. (1984). The Zone of proximal development: Some Conceptual Issues. In B. Rogoff, & J. V. Wertsch (Eds.), *Children's learning in the "Zone of Proximal development"*. (pp. 7-17). San Francisco, CA: Jossey-Bass Publishers.