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Fostering teaching-related analytical skills through case-based learning with classroom videos in initial teacher education

Abstract

The ability to analyze teaching is deemed to be crucial to successful adaptive classroom teaching. It requires teachers to use their professional knowledge for identifying significant teaching situations, for interpreting these situations in terms of student learning processes, and for considering possibilities for improvements. In our intervention study "Video Analysis in Teacher Education" (VideA), we applied a quasi-experimental pretest/posttest control-group design (N = 128 student teachers) for pursuing the question of whether teaching-related analytical skills can be fostered through analyzing one's own or other teachers' classroom videos. The intervention focused on three basic features of effective teaching (goal clarity, learning support, learning climate). For measuring the participants' analytical skills, we used open questions and standardized rating items, all of which related to video clips. Content analyses of the comments on the open questions showed a significant increase in the ability to identify classroom situations that are relevant to student learning in both video groups whereas there was no change as regards the ability to suggest improvements in teaching and the ability to give reasons for why the identified situations were thought to be relevant. Moreover, our results indicate that there is a positive correlation between the ability to identify significant classroom situations and the ability to interpret them by referring to pertinent knowledge.

Keywords

Analytical skills; Learning with classroom videos; Teacher education; Open and standardized measurement formats

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Förderung der unterrichtsbezogenen Analysekompetenz in der Ausbildung von Lehrpersonen durch fallbasiertes Lernen mit Videos

Zusammenfassung

Die unterrichtsbezogene Analysekompetenz gilt als bedeutsam für erfolgreiches adaptives Handeln im Unterricht. Sie zeigt sich darin, dass Lehrpersonen ihr professionelles Wissen nutzen, um relevante Situationen im Unterricht zu identifizieren, deren Bedeutung in Bezug auf das Lernen der Schülerinnen und Schüler zu interpretieren sowie begründete Optimierungsmöglichkeiten zu entwickeln. Im Rahmen der Interventionsstudie Videos in der Ausbildung von Lehrpersonen (VideA) wurde mit einem quasi-experimentellen Prä-Post-Kontrollgruppendesign (N = 128 Studierende) untersucht, ob sich die unterrichtsbezogene Analysekompetenz durch die Analyse von eigenen bzw. fremden Unterrichtsvideos fördern lässt. Inhaltlicher Fokus der Intervention waren die drei Unterrichtsqualitätsmerkmale „Zielklarheit", „Lernbegleitung" und „Lernatmosphäre". Zur Erfassung der Analysekompetenz wurden sowohl offene Fragen als auch standardisierte Ratingitems zu Videosequenzen eingesetzt. Die inhaltsanalytische Auswertung der Kommentare zu den offenen Fragen zeigt einen signifikanten Zuwachs beim Identifizieren lernrelevanter Situationen im Unterricht in beiden Videogruppen, hingegen keine Veränderung beim Vorschlagen von Optimierungsmöglichkeiten und beim Begründen von deren Bedeutung für die Lernenden. Die Ergebnisse deuten zudem darauf hin, dass die Fähigkeit des Erkennens und des wissensbasierten Interpretierens von lernrelevanten Situationen im Unterricht einen positiven Zusammenhang aufweisen.

Schlagworte

Analysekompetenz; Lernen mit Unterrichtsvideos; Lehrerinnen- und Lehrerbildung; Offenes und standardisiertes Erhebungsinstrument

1. Introduction

Teaching is a complex process in which teachers regularly find themselves in ambiguous and unpredictable situations that require the ability to act flexibly and adaptively. It is therefore important that they are able to identify significant situations, to interpret their relevance to student learning processes (Berliner, 2001; Sherin, 2007), and, if need be, to infer possibilities for improvements. The ability to analyze teaching is considered to be a crucial prerequisite for successful classroom teaching (Sherin, Jacobs, & Philipp, 2011). In order to enhance this ability, teacher preparation programs have increasingly made use of classroom videos (Gaudin & Chaliès, 2015). First studies have already yielded empirical evidence that points to the overall effectiveness of video-based learning as regards the pro-

motion of analytical skills in initial teacher education (e.g., Hellermann, Gold, & Holodynski, 2015; Stürmer, Könings, & Seidel, 2013). The more specific question concerning the effects on particular facets of student teachers' analytical skills is still in need of clarification, however. The intervention study VideA (Video Analysis in Teacher Education) addresses this question and explores the effects of case-based learning with regard to whether student teachers' own, or other teachers' classroom videos are used for fostering different facets of teaching-related analytical skills. Furthermore, the study pursues the question of whether there is a correlation between the ability to identify features of effective teaching and the ability to interpret teaching situations by referring to these features.

2. Theoretical background

2.1 Analytical skills of teachers

The ability to analyze classroom teaching is an essential aspect of a teacher's expertise (Seidel & Stürmer, 2014). It is grounded in professional knowledge (Blömeke, Gustafsson, & Shavelson, 2015; König et al., 2014; Plöger & Scholl, 2014; Stürmer et al., 2013) that consists of general pedagogical knowledge, content knowledge, and pedagogical content knowledge (Shulman, 1987). First empirical findings support the assumption that teaching-related analytical skills and especially the facet pertaining to the development of alternative teaching strategies are associated with more student-centred practices (Sun & van Es, 2015) and student performance (Kersting, Givvin, Sotelo, & Stigler, 2010; Kersting, Givvin, Thompson, Santagata, & Stigler, 2012; Roth et al., 2011). It is therefore of crucial importance to foster analytical skills already in initial teacher education.

Research on analytical skills has its origins in Goodwin's (1994) concept of professional vision that was transferred to classroom teaching by Sherin (e.g., 2007) and includes the two fundamental processes of noticing and interpreting significant classroom situations (Seidel & Stürmer, 2014). Noticing (or selective attention) refers to the identification of aspects that are relevant to learning while interpretation is understood as knowledge-based reasoning about classroom practices in terms of the impact of teachers' decision on student learning. As for the second ability, Seidel and Stürmer (2014) distinguish between three empirically separable but closely interrelated dimensions: 1) the ability to describe features that are relevant to learning; 2) the ability to explain such features; and 3) the ability to predict their effects on student learning. In addition to the two processes of noticing/identifying and interpreting, analytical skills include the ability to use one's professional knowledge for developing possible ways of improving learning processes and for deciding what to do next in a particular teaching situation (Blömeke et al., 2015; Plöger & Scholl, 2014).

In our study, the promotion of teaching-related analytical skills focuses on the ability of knowledge-based identification and interpretation of significant classroom situations and the ability to make reasoned suggestions for improvements in teaching. As regards the contents, the training concentrates on three basic features of teaching, namely goal clarity, learning support, and learning climate, all of which are essential conditions for effective teaching irrespective of subject and grade (Hattie, 2009; Seidel & Shavelson, 2007). These three features belong to a teacher's general pedagogical knowledge and correspond to the curriculum of the seminar. "Goal clarity" requires transparency about learning objectives and demands of the lesson as well as a clear lesson structure. "Learning support" consists in process-oriented support of learning processes by means of asking questions that stimulate thinking, adaptive scaffolding and feedback, thus encouraging reflection. The third feature concerns the provision of a positive and supportive "learning climate", in which teachers take students seriously and humor and appreciation are essential (Seidel & Stürmer, 2014; Stürmer & Seidel, 2017).

2.2 Development of teaching-related analytical skills in (student) teachers

Findings from research on expertise indicate that experts tend to center on events that are significant in terms of student learning while novices are often inclined to pay particular attention to the teacher's actions (Berliner, 2001). Studies that explored video-based learning found that experienced teachers, owing to their sophisticated professional knowledge, discern the complexities of classroom teaching in more detail and are better able to keep track of what is going on than novices (Stürmer et al., 2013). This allows them to identify relevant situations and to develop alternative teaching strategies in a flexible way. Furthermore, there is evidence showing that novices, as opposed to experts who are better able to interpret possible effects of teaching on students' learning, mainly stick to descriptions of classroom situations (Seidel & Prenzel, 2007).

The study conducted by Gold, Hellermann, and Holodynski (2016) on student teachers', teacher candidates', and practicing teachers' abilities to identify and interpret teaching situations in terms of classroom management did not find significant differences between the three samples. All the same, the findings show that the student teachers proposed less alternative teaching strategies than the other groups. Moreover, their comments included the highest number of descriptions. This is consistent with the findings published by Schäfer and Seidel (2015) who looked at how student teachers identified and interpreted relevant classroom situations with respect to the features "goal clarity" and "learning climate". Although the participants were able to identify several relevant events, they also paid attention to comparatively irrelevant aspects. Furthermore, they had difficulties in knowledge-based reasoning about classroom practices.

In recent years, teacher preparation programs have increasingly made use of case-based learning with classroom videos for fostering analytical skills (Gaudin & Chaliès, 2015). Classroom videos are a suitable means because they capture the complexity of teaching in particularly authentic ways, allow repeated observations of complex situations, and facilitate multi-perspective analyses (Santagata, 2014). Also, video-based learning opportunities are considered to be more motivating than text-based case studies (Moreno & Valdez, 2007). Empirical research on video-supported learning in teacher education has provided evidence of positive effects on teaching-related analytical skills in both student teachers (e.g., Hellermann et al., 2015; Stürmer et al., 2013) and practicing teachers (e.g., Sherin & van Es, 2009; Tripp & Rich, 2012). The findings available so far indicate that learning with videos fosters the ability to identify relevant classroom situations (Barnhart & van Es, 2015; Star & Strickland, 2008) and to interpret them by referring to pertinent knowledge (Stürmer et al., 2013; Yeh & Santagata, 2015) as well as the ability to propose suggestions for improvements (Santagata & Guarino, 2011).

Case-based learning with videos can center on clips from one's own or another teacher's classroom. The suitability of the two types of video has been investigated in several studies. Seidel, Stürmer, Blomberg, Kobarg, and Schwindt (2011) showed that analyses of one's own teaching led to a higher degree of immersion and that they are perceived to be more authentic and more motivating than analyses of other teachers' videos. All the same, a potential disadvantage of videos that document the teachers' own practice is that they are less critically commented on than videos from unknown classrooms. This is in line with the findings proposed by Kleinknecht and Schneider (2013) who demonstrated, that videos of other teachers prompted more suggestions for possible improvements in teaching than the participants' own videos. What is still largely unresolved, by contrast, is the question of whether videos from one's own classroom or other teachers' videos are more suitable for fostering specific facets of a teacher's analytical skills. Moreover, there are hardly any studies with larger samples and control-group design that evaluate the effectiveness of video-based learning in teacher education (Gaudin & Chaliès, 2015). One study that is already available is the one by Hellermann et al. (2015) who investigated the effects of the two types of video on student teachers' analytical skills concerning classroom management. In comparison with the untreated control group, both exclusive learning with other teachers' videos and combined learning with other teachers' and the participants' own videos had positive effects on the development of the participants' analytical skills. The largest increase was achieved in the group that had worked with both types of video.

Irrespective of the type of video, the instructional setting is a decisive factor in the video-supported promotion of analytical skills (Blomberg, Renkl, Sherin, Borko, & Seidel, 2013; Brophy, 2004). Successful learning with videos requires a clear focus of the analyses and a well-structured learning environment (Borko, Koellner, Jacobs, & Seago, 2011). This ensures that (student) teachers focus their attention on relevant aspects and facilitates a profound analysis of the recorded classroom situations. The "Lesson Analysis Framework" devised by Santagata and

Guarino (2011) is designed to assist student teachers in learning to notice and interpret relevant situations and to develop suggestions for improvements in teaching. The VideA study used this framework for the analysis of the student teachers' own and other teachers' videos (Krammer, Hugener, Frommelt, Fürrer Auf der Maur, & Biaggi, 2015).

The VideA results available so far show that the participants considered both types of video to be effective in terms of the development of their professional competence and that they were motivated and liked dealing with authentic examples. Working with one's own video received the highest ratings (Krammer et al., 2015). In summary, the analysis of both types of videos enhanced the ability to interpret teaching situations on the basis of pertinent knowledge (Krammer et al., 2016), which was measured by means of the standardized video-based tool "Observer" (Seidel & Stürmer, 2014; Stürmer & Seidel, 2017).

2.3 Measurement of analytical skills

In teacher education, classroom videos serve not only to foster teaching-related analytical skills but also to measure them. Video clips situate teaching in a concrete context, capture its complexity, and make it possible to measure the analytical skills of teachers in a contextual frame (Blömeke, 2013). Ratings of and comments on videotaped teaching situations give an indication of how well-developed the target skills are. Instruments commonly used for this purpose are either open-ended question formats with a subsequent coding of the answers (e.g., Sherin & van Es, 2009) or standardized tools with items whose rating can be compared to an expert rating (e.g., Gold & Holodynski, 2017; Meschede, Steffensky, Wolters, & Möller, 2015; Seidel & Stürmer, 2014). Rating items of standardized, closed formats direct the teachers' attention to specific aspects whereas open questions facilitate the measurement of the ability to identify teaching situations that are relevant to learning and the ability to propose suggestions for improvements. So far, the two types of instrument have only rarely been used in combination, which is why their synergistic potential has not been fully explored yet (Gold et al., 2016; Schäfer & Seidel, 2015).

3. Research questions

Our contribution investigates the effects of the use of classroom videos in initial teacher education in terms of specific facets of teaching-related analytical skills. We aim to find out to what extent student teachers are able to apply their theoretical knowledge of three basic features of effective teaching – goal clarity, learning support, and learning climate – to real-life situations if they are asked to write com-

ments on video clips and to suggest improvements in teaching. The results of our study are supposed to answer the following research questions:

1. Are the participating student teachers able to identify the three basic features of effective teaching (goal clarity, learning support, learning climate)?
2. Do the student teachers propose suggestions for improvements that relate to how student learning could be additionally enhanced through teaching strategies that relate to the three basic features of effective teaching?
3. Do the student teachers provide knowledge-based reasons for why they think that the identified features and their suggestions for improvements are significant for student learning?

We expect student teachers to be able to notice the three basic features of effective teaching after the intervention. As novices are less able to interpret effects of teaching on students' learning and propose alternative teaching strategies (e.g., Gold et al., 2016; Seidel & Prenzel, 2007) and due to student teachers' still limited professional knowledge in the first year of their preparation program, we assume student teachers' learning gain in providing reasons for the relevance of the identified features and to suggest alternative teaching strategies to be lower. However, due to the provided learning opportunities during the intervention we hypothesize positive changes in the three examined facets of the student teachers' analytical skills.

The results of our study are also supposed to answer the question if the three intervention groups differ in their abilities to identify the three basic features of effective teaching, propose suggestions for improvements and provide reasons for why they think that the identified features and their suggestions for improvements are significant for student learning. We expect student teachers in the three intervention groups to benefit from the intervention and show positive developments in their analytical skills. Students in the video groups are predicted to profit more than the control group. As working with one's own videos met with the highest degree of acceptance in our study and as it is considered to lead to a higher degree of immersion (Seidel et al., 2011), we expect this video group to show the highest change in identifying and interpreting. In contrast, because of less emotional involvement and more critical stance when analyzing other teachers' videos (Kleinknecht & Schneider, 2013), student teachers' in this intervention group may focus more on proposing suggestions for improvement, which could lead to the highest change between the pre- and the post-test in this facet of student teacher's analytical skills.

Moreover, we are interested in the way in which the results of this methodological approach with open-ended questions are associated with the results generated by means of the standardized tool "Observer". Thus, the following research question was addressed in an explorative way:

4. Do the facets of analytical skills (identifying, providing reasons) as measured in comments on open questions correlate with the ability to interpret (describing, explaining, predicting) teaching situations by referring to theoretical knowledge as measured by the standardized tool "Observer"?

4. Design and method

4.1 Project design

The intervention was embedded in a compulsory seminar and involved three conditions with nine seminar groups in total. Three of these groups worked with videos from their own practice, which had been recorded during an internship, and with the teaching materials they had used, while three other groups dealt with videos and materials from other teachers. So as to evaluate the effects of case-based video analyses, we included a control group with three further seminar groups that attended to written documents and materials instead of videos. Both the participating student teachers and the facilitators were randomly assigned to one of the three conditions. In preparation of the intervention, the facilitators had been introduced to the contents and to the procedure of case analysis in a three-day workshop.

For all three conditions, the examples of classroom teaching and the supplementary materials had been specifically selected to ensure that they provided a solid basis for an analysis with respect to the three focused basic features of effective teaching. They had to contain the realization of at least one of the three focused features in an explicit and clearly observable way. In all conditions, the participants had to analyze the examples (their own or other teachers' videos; written materials) for 90 minutes per week. The analyses were structured according to the "Lesson Analysis Framework" mentioned above (Santagata & Guarino, 2011). The theoretical basics were made available in a script that included descriptions, indicators, and examples of the three features (details in Biaggi, Krammer, & Hugener, 2013; Krammer & Hugener, 2014; Krammer et al., 2015).

In order to check the implementation, in each seminar group the intervention was filmed once. These videotaped seminar sessions were inspected by two raters. The results confirmed that all facilitators followed the procedure of the "Lesson Analysis Framework" and focused on the three basic features of effective teaching.

4.2 Sample

In total, 163 student teachers from the University of Teacher Education Lucerne, Switzerland, took part in the intervention. As stated above, participation was compulsory. 35 participants had to be excluded from the analyses because of missing data, which resulted in a final sample consisting of 128 student teachers. 46 of them worked with their own videos, 40 with videos from other teachers, and 42 with written teaching/learning materials. All participants were in their second semester and studied for a teaching certificate at kindergarten and primary-school

level (71.1 %) or at lower secondary-school level (28.9 %). On average, they were 21.75 years old (*SD* = 2.10), and 78.9 % of them were female.[1]

4.3 Instruments

Before and after the intervention, the participants completed an online video-survey that consisted of two parts. The first part measured different facets of teaching-related analytical skills (identification of key features of effective teaching, proposing suggestions for improvements, providing reasons) by means of written comments on three video clips while the second part consisted in a shortened version of the standardized tool "Observer" (Seidel & Stürmer, 2014).

4.3.1 Written comments

The open question format asked the student teachers to write comments on videotaped classroom teaching. The task consisted of three video clips from different school levels and subjects that had been specifically selected so that they illustrated the features "goal clarity", "learning support", and "learning climate". The two questions to be answered were the following: "1. Please describe what you have noticed in these teaching situations. Give reasons for why you think that your observations are important in terms of student learning. 2. Please make suggestions for how student learning could be additionally enhanced and give reasons for your suggestions".

Before the intervention, the average length of the comments on the two questions amounted to 82 words per video clip. After the intervention, the comments contained an average of 98 words per video clip and were thus significantly longer than at the beginning of the intervention (Wilcoxon test: $z = 3.42$, $p < .01$).

4.3.2 "Observer"

In the standardized survey format, which also included three video clips, the participants had to rate a range of items in terms of the three basic features of effective teaching on a four-level scale. Their ratings were thereafter compared to an expert rating (three experts, Cohen's $\kappa = .79$) so that the percentage of agreement could be determined. As several studies have shown, the tool "Observer" is a well-suited means for measuring aspects of professional vision respectively the ability of knowledge-based interpretation of teaching situations in a valid and reliable

1 In first year of the full time preparation program, all student teachers follow the same curriculum, which mainly covers educational psychology, general pedagogy and subject specific pedagogy. The three intervention groups were comparable with respect to age, sex and the school level they were being prepared for.

way (Seidel & Stürmer, 2014). In our study, we reached good EAP/PV reliabilities for knowledge-based interpretation (α = .81) and its three dimensions "describing" (α = .77), "explaining" (α = .81), and "predicting" (α = .85).

4.4 Data analyses

4.4.1 Coding of the comments

The content analysis of the comments on the video clips was based on a category system that was grounded in both theory and data and had been newly developed for the purposes of the study. The theoretical foundation consisted in the script concerning the three basic features of effective teaching that had been created by the research team and served as a reference in the video analyses of the intervention. The categories had been derived from comments of the pilot study[2] and were thereafter validated by applying them to comments of the main sample. The focus of the analysis was twofold: 1) content of the comments (aspects of basic features of effective teaching that the participants had identified and/or mentioned in their suggestions for improvements) and 2) the quality of the reasons that the participants had provided for their suggestions.

The coding procedure first divided the comments into thematic units that were defined by one of the three basic features of effective teaching (goal clarity, learning support, learning climate) and, if existing, reasons for their significance for student learning. Thus, each thematic unit was coded in terms of content and quality of reasons. The content of the comments was separately categorized for each identified aspect of the three basic features of effective teaching and for each suggestion for improvements. The aspects that the student teachers could theoretically have noticed in the three video clips had beforehand been determined by three experts (see Table 1). All of them had expertise in educational psychology and were familiar with both the intervention and the associated materials. The coders decided for each of the participants' observations whether they corresponded to one of the predetermined aspects. Statements that did not relate to one of the three features but referred to aspects like clothing, language, or the furniture of the classroom were assigned to the category "Further aspects".

For evaluating the quality of the reasons, the research team defined three categories that were similar to the "levels of interpretation" proposed by Kersting, Givvin, Thompson, Santagata, and Stigler (2012). The first category applies to comments that merely describe the teaching situation whereas the second category contains comments that, at least in part, provide an interpretation of the teaching situation. The reasons rudimentarily relate to student learning processes. Essential concepts of educational psychology are mentioned but not further explained (e.g.,

2 In the pilot study all instruments and intervention materials had been tested with 110 student teachers.

Table 1: Categories relating to the content of the comments (with examples)

Content	Category/Aspect	Example
Goal clarity	Clarification of goals	"Definition of clear goals so that the students know why they have to learn a certain thing (transparency)."
	Clarification of expectations	"In this circle, the task was explained and looked at in more detail so that the students ask as less questions as possible while working and can fully concentrate on the task."
	Use of media enhances understanding	"The teacher could have asked the students to create a transparency so that all students can see the posters in the classroom."
	Contextualization: verbal	"The teacher established a close connection with everyday life by planting the calculations also rhetorically in the restaurant."
	Contextualization: media	"Getting started together arouses the students' interest and curiosity. The prepared environment with objects from the restaurant activates the students' prior knowledge."
	Structure of the teaching	"The teaching situation is very structured. There is an introduction to the topic, a phase of student work, and at the end of the lesson the teacher documents the results."
Learning support	Questions: degree of open-endedness	"Open-ended question format; that is to say, the students were free to find their own way of solving the problem."
	Factual-constructive feedback	"Furthermore, I noticed that the teacher gave factual and constructive feedbacks when the students asked him whether their solution was correct. Each time, the teacher answered and stimulated further thoughts, but without giving the solution away."
	Reflection on the procedure	"The students present their own solutions. This shows that there isn't just one way of doing it."
Learning climate	Teacher takes the students seriously	"The teacher made time for each group and carefully looked at the calculations as well. The students can see this as a confirmation, and it shows that the teacher takes the students and their suggestions seriously."
	Humor	"The teacher uses humor in a conscious and purposeful way."
Further aspects	--	"The teacher said 'um' too often."

metacognition, motivation). The third category consists of comments providing elaborate reasons and comprehensive descriptions of the significance for student learning processes (see Table 2).

Table 2: Categories relating to the quality of the reasons (with examples)

Category	Example
No reasons	"The teacher presents a real-world problem to the students that can be transferred to everyday life."
Rudimentary reasons	"They dealt with a real-world problem that was connected to a brain-teaser. This arouses the students' interest and motivation."
Elaborate reasons	"By telling this little story, the teacher confronts the students with a real-world problem. I can imagine that the children now ask themselves why it isn't possible to transport light. They try to understand this. By doing so, they activate their prior knowledge, which allows them to integrate new knowledge in a better way."

4.4.2 Reliability of the coding

The comments were coded by six trained persons who had no information about the intervention groups or the time-points of the measurements. In a training, coders were introduced to the coder manual and its application based on data of the pilot study. The manual contained the description of the categories and examples. To achieve a high consensus about the different codes difficult examples were discussed and added to the category system in order to specify the definitions. Before the coding and after the first half of the comments had been coded, we conducted a reliability check on all categories. For this purpose, we randomly selected three to five comments per category, each of which consisted of at least twenty thematic units. The percentage of agreement served as the reliability measure and had to meet at least 85 % according to Hugener, Pauli, and Reusser (2006). The first check compared the coding with the model coding by the research team while the second check pertained to inter-rater agreement. Both checks resulted in reliability values of at least 85 % for each facet of teaching-related analytical skills.

4.4.3 Statistical analyses

The quantitative analyses of the comments were separately conducted for the identified features and for the suggestions for improvements. We determined the relation between the number of features/suggestions mentioned in the comments and the total number possible as defined by the category system. As for the quality of the reasons, we determined the proportions of the three reasoning categories to the total number of the identified features of effective teaching and the suggestions for improvements. This procedure was chosen in order to prevent bias because of the varying length of the comments.

For investigating the development of the ability to identify significant teaching situations, the ability to provide suggestions for improvements, and the ability to provide adequate reasons in the comments, we conduced repeated-measures multivariate analyses of variance. The relations between the ability to identify basic

features of effective teaching and to provide reasons for their relevance as measured in the comments and the ability to provide knowledge-based interpretations of teaching situations as measured with the standardized tool "Observer" were calculated by means of Pearson correlations.

5. Results

5.1 Identification of basic features of effective teaching

The first research question focused on the identification of features of teaching that are conducive to learning. Before the intervention, the student teachers had, on average, been able to identify 20 % of those 23 aspects that were included in the category system and thus theoretically observable in the video clips. After the intervention, the proportion of identified aspects amounted to an average of 24 % (see Table 3). The results of the repeated-measures analyses of variance show that the participants of the total sample achieved a significant increase with a medium effect size in their ability to identify basic features of effective teaching (see Table 4). The increase is statistically significant for all three features (goal clarity: $t(127) = -2.36$, $p < .05$; learning support: $t(127) = -3.18$, $p < .01$; learning climate: $t(127) = -2.81$, $p < .01$). The highest increase was attained in the feature "learning support". Apart from aspects concerning the three key features of effective teaching, the student teachers mentioned two or three further aspects on average and did so before and after the intervention (see Table 3).

Table 3: Identification of basic features of effective teaching and further aspects ($N = 128$)

		Descriptive statistics							
		Absolute values				Proportions in percentages[a]			
	Measurement	*M*	*SD*	Min	Max	*M*	*SD*	Min	Max
All features of effective teaching (23)[b]	t_1	4.53	2.07	1	12	0.20	0.09	0.04	0.52
	t_2	5.55	2.47	1	12	0.24	0.11	0.04	0.52
Goal clarity (10)[b]	t_1	2.20	1.25	0	6	0.22	0.12	0.00	0.60
	t_2	2.50	1.18	0	6	0.25	0.12	0.00	0.60
Learning support (8)[b]	t_1	1.59	1.15	0	5	0.20	0.14	0.00	0.63
	t_2	2.05	1.52	0	7	0.26	0.19	0.00	0.88
Learning climate (5)[b]	t_1	0.74	0.86	0	4	0.15	0.17	0.00	0.80
	t_2	1.00	0.76	0	3	0.20	0.15	0.00	0.60
Further aspects	t_1	2.88	1.98	0	12	-	-	-	-
	t_2	3.05	2.08	0	9	-	-	-	-

[a]Proportion of identified aspects of effective teaching (three video clips) relative to expert analysis in percentages. [b]Number of aspects of effective teaching identified by experts (three video clips).

A comparison between the three groups shows that the groups that had worked with their own or other teachers' videos identified significantly more aspects of effective teaching after the intervention than before the intervention. The control group, by contrast, which had solely dealt with written materials, did not do significantly better after the intervention (see Table 4). The results of the repeated-measures analysis of variance revealed, however, that the development of the ability to identify features of effective teaching did not significantly differ between the three groups ($F(2, 125) = 0.85$, $p = .43$, $\eta^2 = .01$).

Table 4: Development of the ability to identify aspects of features of effective teaching by intervention group ($N = 128$)

					Pretest		Posttest		$\Delta t_1, t_2$	
Sample	*N*	*F*	*df*	η^2	*M*	*SD*	*M*	*SD*	*M*	*SD*
All intervention groups	128	20.40***	1,127	0.14	0.20	0.09	0.24	0.11	0.04	0.11
Other teachers' videos	40	11.39**	1, 39	0.23	0.19	0.11	0.26	0.12	0.06	0.12
Participants' own videos	46	7.27*	1, 45	0.14	0.20	0.08	0.23	0.10	0.04	0.10
Teaching/learning materials	42	3.11	1, 41	0.07	0.20	0.08	0.24	0.10	0.03	0.12

*$p < .05$, **$p < .01$, ***$p < .001$.

5.2 Suggestions for improvements in teaching

The second research question focused on the participants' suggestions for improvements in teaching through strategies that relate to the three basic features of effective teaching. On average, the student teachers mentioned 11 % of the 16 possibilities included in the category system before the intervention and 12 % after the intervention (see Table 5). Before the intervention, the participants had most often proposed suggestions that concerned the feature "learning support", but there was no increase after the intervention ($t(127) = 1.21$, $p = .23$). The same applies to the feature "goal clarity" in which we found no increase either ($t(127) = 0.97$, $p = .34$). Only as regards the feature "learning climate", the student teachers provided more suggestions for improvements after the intervention than they had done before ($t(127) = 4.74$, $p < .001$). Before and after the intervention, the participants moreover mentioned two to three suggestions for improvements concerning other aspects on average.

Table 5: Suggestions for improvements in terms of the three basic features of effective teaching and further aspects (N = 128)

	Measure-ment	Descriptive statistics							
		Absolute values				Proportions in percentages[a]			
		M	*SD*	Min	Max	*M*	*SD*	Min	Max
All features of effective teaching (16)[b]	t_1	1.78	1.21	0	6	0.11	0.08	0.00	0.38
	t_2	1.91	1.28	0	6	0.12	0.08	0.00	0.38
Goal clarity (9)[b]	t_1	0.70	0.87	0	4	0.08	0.10	0.00	0.44
	t_2	0.60	0.85	0	3	0.07	0.09	0.00	0.33
Learning support (4)[b]	t_1	0.82	0.68	0	3	0.21	0.17	0.00	0.75
	t_2	0.73	0.66	0	2	0.18	0.16	0.00	0.50
Learning climate (3)[b]	t_1	0.27	0.48	0	2	0.09	0.16	0.00	0.67
	t_2	0.57	0.71	0	3	0.19	0.24	0.00	1.00
Further aspects	t_1	2.20	1.42	0	8	-	-	-	-
	t_2	2.52	1.53	0	9	-	-	-	-

[a]Proportion of suggested improvements (three video clips) relative to expert analysis in percentages.
[b]Number of expert suggestions for improvements (three video clips).

The results of the repeated-measures analysis of variance confirm that the student teachers of the total sample did not make more suggestions for improvements after the intervention than before the intervention (see Table 6). Furthermore, Table 6 shows that there were no differences in the development between the three intervention groups ($F(2,125) = 0.03$, $p = .97$, $\eta^2 = .00$). Thus, in none of the groups we could find an increase in the ability to make suggestions for improvements in teaching.

Table 6: Development of the ability to suggest improvements by intervention group (N = 128)

					Pretest		Posttest		$\Delta t_1, t_2$	
Sample	*N*	*F*	*df*	η^2	*M*	*SD*	*M*	*SD*	*M*	*SD*
All intervention groups	128	0.71	1,127	0.01	0.11	0.08	0.12	0.08	0.01	0.10
Other teachers' videos	40	0.06	1, 39	0.00	0.11	0.09	0.12	0.09	0.00	0.12
Participants' own videos	46	0.42	1, 45	0.01	0.10	0.07	0.10	0.06	0.01	0.08
Teaching/learning materials	42	0.44	1, 41	0.01	0.13	0.07	0.14	0.09	0.01	0.10

5.3 Quality of the reasons

Our analyses concerning the third research question and thus the quality of the reasons for the significance of the identified features of effective teaching and proposed suggestions for improvements show that before the intervention the student teachers on average did not provide reasons for 62 % of the identified features of effective teaching and their suggestions for improvements. For 35 % of the aspects, the comments contained rudimentary reasons, and 3 % of the aspects were backed by elaborate reasons (see Table 7). After the intervention, the proportion of aspects without reasons was as high as before the intervention and amounted to 62 % again ($t(127) = -0.04$, $p = .97$). The same can be stated regarding rudimentary reasons for the significance of identified features of effective teaching: There was no significant increase after the intervention ($t(127) = 1.04$, $p = .30$). Elaborate reasons, by contrast, were provided for 5 % of the aspects, which marks a significant increase (Wilcoxon Test: $z = 2.70$, $p < .02$).[3]

Table 7: Descriptive statistics: Quality of reasons ($N = 128$)

		Descriptive statistics							
		Absolute values				Proportion in percentages[a]			
	Measurement	*M*	*SD*	Min	Max	*M*	*SD*	Min	Max
No reasons	t_1	3.77	2.02	0	11	0.62	0.26	0.00	1.00
	t_2	4.50	2.49	0	13	0.62	0.26	0.00	1.00
Rudimentary reasons	t_1	2.35	1.96	0	9	0.35	0.24	0.00	0.88
	t_2	2.53	2.01	0	8	0.32	0.23	0.00	1.00
Elaborate reasons	t_1	0.20	0.67	0	5	0.03	0.09	0.00	0.71
	t_2	0.42	0.78	0	5	0.05	0.10	0.00	0.56

[a]Proportions of reasons provided for identified aspects of features of effective teaching and suggestions for improvements in percentages. 100 % refer to the total of identified aspects of features of effective teaching and suggestions for improvements.

The results of the repeated-measures analysis of variance show that there was no difference in the development of the quality of the reasons between the three intervention groups ($F(2,125) = 1.08$, $p = .34$, $\eta^2 = .02$). In all three groups, the quality of the reasons remained the same (see Table 8).

3 Because of the dependence of the three variables that relate to the quality of the reasons, the significance level was adjusted through Bonferroni correction.

Table 8: Development of the quality of the reasons (rudimentary and elaborate) by intervention group (N = 128)

					Pretest		Posttest		$\Delta t_1, t_2$	
Sample	*N*	*F*	*df*	η^2	*M*	*SD*	*M*	*SD*	*M*	*SD*
All intervention groups	128	0.01	1, 127	0.00	0.38	0.26	0.38	0.26	0.00	0.34
Other teachers' videos	40	0.63	1, 39	0.02	0.39	0.24	0.35	0.25	-0.04	0.32
Participants' own videos	46	0.99	1, 45	0.02	0.39	0.29	0.45	0.29	0.06	0.40
Teaching/learning materials	42	0.39	1, 41	0.01	0.36	0.25	0.33	0.21	-0.03	0.30

Note. Owing to the small number of elaborate reasons, rudimentary reasons and elaborate reasons have been merged.

5.4 Correlations between different facets of analytical skills

The fourth question dealt with correlations between the ability to identify features of effective teaching and to provide reasons for their relevance as reflected in the comments and the ability of knowledge-based interpretation of teaching situations as measured by the tool "Observer". The reported results exclusively relate to one of the three video clips of the "Observer" because this clip was part of the open question format as well. After the intervention, the agreement between the student teachers' ratings and the experts' rating of the video clip under consideration amounted to 30 % (in total). Moreover, the values of the three dimensions "describing," "explaining," and "predicting" are very similar (see Table 9).

The results show that knowledge-based interpretation and its three dimensions significantly correlate with the ability to identify features of effective teaching. The higher the ability to identify relevant teaching situations is, the higher the values for knowledge-based interpretations in the "Observer" are. We also found positive correlations between the reasons provided in the comments and knowledge-based interpretations in the "Observer", but they were not statistically significant.

Table 9: Descriptive statistics: Knowledge-based interpretation in the tool "Observer" and correlations with comments on one video clip (identification and reasons) (N = 128)

	Proportions "Observer" in percentages t_2		Comments t_2	
			Identification	Reasons[a]
	M	*SD*	*M* = .20, *SD* = .15[b]	*M* = .23, *SD* = .31[b]
Knowledge-based interpretation (in total)	0.30	0.26	.33**	.14
Describing	0.28	0.26	.27**	.12
Explaining	0.29	0.27	.27**	.08
Predicting	0.32	0.30	.35**	.17

[a]Owing to the small number of elaborate reasons, rudimentary reasons and elaborate reasons have been merged. [b]In percentages.
**$p < .01$.

6. Discussion

The aim of our article was to investigate the effects of learning with classroom videos on different facets of teaching-related analytical skills in initial teacher education. Furthermore, we were interested in how the ability to identify basic features of effective teaching and to give reasons for their relevance as reflected in the comments and the ability of knowledge-based interpretation of teaching situations as measured by the tool "Observer" correlate. In what follows, we summarize and discuss our findings and conclude with some remarks on the limitations of our study and an outlook.

6.1 Development of different facets of teaching-related analytical skills

With regard to the effects of case-based learning with classroom videos, the findings vary between the different facets of teaching-related analytical skills. After the intervention, the student teachers of the two video groups were significantly better able to identify teaching situations that are relevant to learning than the control group. This means that the structured analysis of written materials did not in the same way lead to a measurable increase in the ability to identify the three focused features of effective teaching and might be attributed to the media-specific advantages of classroom videos to foster analytical skills of teachers (e.g., authenticity, capture complexity of teaching). Because there were no differences between the two video groups, we can conclude that structured analyses of classroom vide-

os in general can contribute to enhancing the ability to identify essential features of effective teaching, irrespective of whether the student teachers deal with their own or with other teachers' videos.

As for the suggestions for improvements in teaching, there was no significant increase in any of the three intervention groups. When the participants suggested alternative teaching strategies, they mostly related to the feature "learning support", no matter whether the suggestions were made before or after the intervention. The highest increase occurred in the feature "learning climate". This finding may indicate that it is easier to acquire the ability to suggest improvements pertaining to this feature than to acquire this ability in connection with the other two features.

Apart from the focused features of effective teaching, the participants' comments also included several other aspects of classroom teaching. The findings by Schäfer and Seidel (2015) make it plausible to assume that the category "Further aspects" may at least in part contain irrelevant features. Additional analyses of the comments are needed for clarifying this hypothesis, however.

In general, the student teachers had difficulty in providing reasons for the relevance of identified features of effective teaching and for their suggestions for improvements both before and after the intervention. The proportion of features that are supplemented with elaborate reasons is very low in both measurements. Thus, establishing connections with student learning processes and linking them to basic knowledge of educational psychology seems to be a demanding task for student teachers. This is consistent with the findings published by Schäfer and Seidel (2015) who also reached the conclusion that student teachers find it difficult to give knowledge-based reasons for their observations.

Summing up our findings, we can conclude that case-based learning with classroom videos at the beginning of a teacher preparation program was not to the same extent effective in fostering all three facets of teaching-related analytical skills. The fact that there was neither an increase in the ability to make suggestions for improvements nor an increase in the ability to provide reasons could point to the limits of the learning gains to be expected within one single semester.

Another explanation might be the timing of the intervention. It took place in the first year of the preparation program. Since this is quite early, it could account for why the student teachers had not been fully able to apply their newly acquired knowledge flexibly to authentic teaching situations (Berliner, 2001; Steffensky, Gold, Holodynski, & Möller, 2015). The finding that it is easier for student teachers to identify relevant teaching situations than to interpret their significance in terms of the impact of teachers' decisions on student learning and to propose reasoned suggestions for improvements could therefore indicate that the second and the third facet rest on more closely interconnected knowledge structures than identifying alone. This assumption can be supported by referring to the model of teaching-related analytical skills devised by Plöger and Scholl (2014). Their model is grounded in research on expertise and places the ability to make reasoned suggestions for alternative teaching strategies on higher levels that require a well-de-

veloped perception of complexities and the integration of pertinent knowledge. Furthermore, also the study by Gold et al. (2016) showed that student teachers were less capable of suggesting alternative strategies than teacher candidates and experienced teachers. Thus, it is vital that teacher preparation programs not only impart knowledge of educational psychology, but also provide student teachers with opportunities to relate this knowledge to authentic examples, as this is practiced in video-supported case studies.

Furthermore, our findings point to the importance of the facilitators' role in case-based work with classroom videos. Other studies particularly emphasize the aspect of how the analysis is guided (e.g., Borko et al., 2011; Santagata & Guarino, 2011; van Es, Tunney, Goldsmith, & Seago, 2014). This could point to further explanations for the differences in the development of the three facets. It is possible, for instance, that in our intervention – although the procedure was standardized – the ability to give reasons and the ability to suggest improvements were less intensely practiced than the ability to identify situations that are relevant to learning. The implementation check confirmed a comparable application of the "Lesson Analysis Framework", but the facilitators' support activities were not analyzed in detail. Hence, this point requires further clarification.

6.2 Correlations between different facets of analytical skills

The results from the complementary survey with the standardized tool "Observer" show that case-based learning with classroom videos can foster the ability to interpret teaching situations on the basis of pertinent knowledge (Krammer et al., 2016). Those facets that were measured with both instruments (comments and "Observer") correlate positively, but only the correlation between identification and knowledge-based interpretation was statistically significant. König et al. (2014) were also able to find a positive, though not significant correlation between the identification and the interpretation of general pedagogical aspects of classroom teaching. Therefore, the authors conclude that the two facets are only loosely associated. Similarly, loose connections were found by Gold et al. (2016), who conducted their study on professional vision concerning classroom management. The number of identified events (open question format) did not significantly correlate with the results from a standardized scale that measured the abilities relating to describing and interpreting. Owing to the differences in the instruments, the focused contents, and the design of the studies, these findings are comparable to ours only within limits, however.

That the correlations between knowledge-based interpretation in the "Observer" and the ability to give reasons in comments were not significant could indicate that the latter is a distinct facet that requires more flexibly structured knowledge or even other skills than the former. Since while the answers in standardized instruments are limited to a particular range of options, an open format involves unguided recalling of relevant theoretical knowledge and associating this knowledge with

a given teaching situation. Without this flexibility in the use of pertinent knowledge it is not possible to generate hypotheses concerning the effects of a teacher's actions on student learning and thus not possible to provide well-founded reasons.

6.3 Limitations and outlook

The only minor developments of student teachers' different facets of teaching-related analytical skills, which can also be ascribed to the design of the study, might be due to the timing of the second measurement, which took place at the end of the semester and thus simultaneously with the exam period. It is likely that the participants devoted less priority to the second survey than to their exams, which raises doubts about whether we could document their actual progress.

Our findings concerning the correlations between the different facets of teaching-related analytical skills rest on the analysis of one single video. Hence, we should emphasize that the reported results are only explorative in nature and that they merely provide first indications of correlations between the abilities under discussion. In order to clarify the question of whether and how these abilities correlate, more research is necessary.

Moreover, our data do not provide information about the effects of video analyses on the participants' actual behavior in the classroom or on the learning gains of the students taught by the participants. Pursuing these questions would yield knowledge on the effects of a video-based enhancement of teaching-related analytical skills on practical teaching and thus clarify whether this approach is functional. This, in turn, would provide valuable inputs when it comes to improving the design of teacher preparation programs.

Despite the limitations mentioned above, the study presented in this article makes a contribution to the research on effects of video-based interventions on the development of different facets of teaching-related analytical skills at the beginning of initial teacher education. So as to document and monitor this development over the course of the whole preparation program, a longitudinal study would be required. Furthermore, this study provides valuable information for the design of video-based teacher education as our findings show that students' own videos and videos from other teachers can be used to foster their ability to identify relevant classroom situations. In contrast, however, interpreting classroom situations and proposing suggestions of improvement seem to be challenging for student teachers in the first year of their preparation program. Thus, the question arises how to design propitious settings for fostering these two facets of analytical skills.

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References

Barnhart, T., & van Es, E. (2015). Studying teacher noticing: Examining the relationship among pre-service science teachers' ability to attend, analyze and respond to student thinking. *Teaching and Teacher Education, 45,* 83–93.

Berliner, D. C. (2001). Learning about and learning from expert teachers. *International Journal of Educational Research, 35,* 463–482.

Biaggi, S., Krammer, K., & Hugener, I. (2013). Vorgehen zur Förderung der Analysekompetenz in der Lehrerbildung mit Hilfe von Unterrichtsvideos – Erfahrungen aus dem ersten Studienjahr. *SEMINAR, 19*(2), 26–34.

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.

Blömeke, S. (2013). Moving to a higher state of confusion. Der Beitrag der Videoforschung zur Kompetenzforschung. In U. Riegel & K. Macha (Eds.), *Videobasierte Kompetenzforschung in den Fachdidaktiken* (pp. 25–44). Münster, Germany: Waxmann.

Blömeke, S., Gustafsson, J. E., & Shavelson, R. (2015). Beyond dichotomies: Competence viewed as a continuum. *Zeitschrift für Psychologie, 223*, 3–13.

Borko, H., Koellner, K., Jacobs, J., & Seago, N. (2011). Using video representations of teaching in practice-based professional development programs. *ZDM, 43*, 175–187.

Brophy, J. (Ed.). (2004). *Using video in teacher education*. Oxford, United Kingdom: Elsevier.

Gaudin, C., & Chaliès, S. (2015). Video viewing in teacher education and professional development: A literature review. *Educational Research Review, 16*, 41–67.

Gold, B., Hellermann, C., & Holodynski, M. (2016). Professionelle Wahrnehmung von Klassenführung – Vergleich von zwei videobasierten Erfassungsmethoden. In D. Prinz & K. Schwippert (Eds.), *Der Forschung – Der Lehre – Der Bildung: Aktuelle Entwicklungen der Empirischen Bildungsforschung* (pp. 103–118). Münster, Germany: Waxmann.

Gold, B., & Holodynski, M. (2017). Using digital video to measure the professional vision of elementary classroom management: Test validation and methodological challenges. *Computers & Education, 107*, 13–30.

Goodwin, C. (Ed.). (1994). Professional vision. *American Anthropologist, 96*, 606–633.

Hattie, J. (2009). *Visible learning. A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.

Hellermann, C., Gold, B., & Holodynski, M. (2015). Förderung von Klassenführungsfähigkeiten im Lehramtsstudium: Die Wirkung der Analyse eigener und fremder Unterrichtsvideos auf das strategische Wissen und die professionelle Wahrnehmung. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 47*, 97–109.

Hugener, I., Pauli, C., & Reusser, K. (2006). Videoanalysen. In E. Klieme, C. Pauli & K. Reusser (Eds.), *Dokumentation der Erhebungs- und Auswertungsinstrumente zur schweizerisch-deutschen Videostudie "Unterrichtsqualität, Lernverhalten und ma-*

thematisches Verständnis". Materialien zur Bildungsforschung, Bd. 15. Frankfurt a. M., Germany: GFPF.

Kersting, N. B., Givvin, K. B., Sotelo, F. L., & Stigler, J. W. (2010). Teachers' analyses of classroom video predict student learning of mathematics: Further explorations of a novel measure of teacher knowledge. *Journal of Teacher Education, 61*, 172–181.

Kersting, N. B., Givvin, K. B., Thompson, B. J., Santagata, R., & Stigler, J. W. (2012). Measuring usable knowledge: Teachers' analyses of mathematics classroom videos predict teaching quality and student learning. *American Educational Research Journal, 49*, 568–589.

Kleinknecht, M., & Schneider, J. (2013). What do teachers think and feel when analyzing videos of themselves and other teachers teaching? *Teaching and Teacher Education, 33*, 13–23.

König, J., Blömeke, S., Klein, P., Suhl, U., Busse, A., & Kaiser, G. (2014). Is teachers' general pedagogical knowledge a premise for noticing and interpreting classroom situations? A video-based assessment approach. *Teaching and Teacher Education, 38*, 76–88.

Krammer, K., & Hugener, I. (2014). Förderung der Analysekompetenz angehender Lehrpersonen anhand von eigenen und fremden Unterrichtsvideos. *Journal für Lehrerinnen- und Lehrerbildung, 14*(1), 25–32.

Krammer, K., Hugener, I., Biaggi, S., Frommelt, M., Fürrer Auf der Maur, G., & Stürmer, K. (2016). Videos in der Ausbildung von Lehrkräften: Förderung der professionellen Unterrichtswahrnehmung durch die Analyse von eigenen und fremden Videos. *Unterrichtswissenschaft*, *44*, 357–372.

Krammer, K., Hugener, I., Frommelt, M., Fürrer Auf der Maur, G., & Biaggi, S. (2015). Case-based learning in initial teacher education: Assessing the benefits and challenges of working with student videos and other teachers' videos. *Orbis Scholae, 9*(2), 119–137.

Meschede, N., Steffensky, M., Wolters, M., & Möller K. (2015). Professionelle Wahrnehmung der Lernunterstützung im naturwissenschaftlichen Grundschulunterricht. Theoretische Beschreibung und empirische Erfassung. *Unterrichtswissenschaft, 43*, 317–335.

Moreno, R., & Valdez, A. (2007). Immediate and delayed effects of using a classroom case exemplar in teacher education: The role of presentation format. *Journal of Educational Psychology, 99*, 194–206.

Plöger, W., & Scholl, D. (2014). Analysekompetenz von Lehrpersonen – Modellierung und Messung. *Zeitschrift für Erziehungswissenschaft*, *17*, 85–112.

Roth, K. J., Garnier, H. E., Chen, C., Lemmens, M., Schwille, K., & Wickler, N. I. Z. (2011). Videobased lesson analysis: Effective science PD for teacher and student learning. *Journal of Research in Science Teaching, 48*, 117–148.

Santagata, R. (2014). Video and teacher learning: Key questions, tools, and assessments guiding research and practice. *Beiträge zur Lehrerinnen- und Lehrerbildung, 32*, 196–209.

Santagata, R., & Guarino, J. (2011). Using video to teach future teachers to learn from teaching. *ZDM, 43*, 133–145.

Schäfer, S., & Seidel, T. (2015). Noticing and reasoning of teaching and learning components by pre-service teachers. *Journal for Educational Research Online, 7*(2), 34–58.

Seidel, T., & Prenzel, M. (2007). Wie Lehrpersonen Unterricht wahrnehmen und einschätzen – Erfassung pädagogisch-psychologischer Kompetenzen mit Videosequenzen. *Zeitschrift für Erziehungswissenschaft, 10* (Special Issue 8), 201–216.

Seidel, T., & Shavelson, R. J. (2007). Teaching effectiveness research in the last decade: Role of theory and research design in disentangling meta-analysis results. *Review of Educational Research, 77*, 454–499.

Seidel, T., & Stürmer, K. (2014). Modeling the structure of professional vision in preservice teachers. *American Educational Research Journal, 51*, 739–771.

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*, 259–267.

Sherin, M. G. (2007). The development of teachers' professional vision in video clubs. In R. Goldman, R. Pea, B. Barron, & S. Derry (Eds.), *Video research in the learning sciences* (pp. 383–395). Hillsdale, NJ: Erlbaum.

Sherin, M. G., Jacobs V. R., & Philipp R. A. (Eds.). (2011). *Mathematics teacher noticing. Seeing through teachers' eyes*. New York, NY: Routledge.

Sherin, M. G., & van Es, E. A. (2009). Effects of video club participation on teachers' professional vision. *Journal of Teacher Education, 60*, 20–37.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1–22.

Star, J. R., & Strickland, S. K. (2008). Learning to observe: using video to improve preservice mathematics teachers' ability to notice. *Journal of Mathematics Teacher Education, 11*, 107–125.

Steffensky, M., Gold, B., Holodynski, M., & Möller, K. (2015). Professional vision of classroom management and learning support in science classrooms – Does professional vision differ across general and content-specific classroom interactions? *International Journal of Science and Mathematics Education, 13*, 351–368.

Stürmer, K., Könings, K. D., & Seidel, T. (2013). Declarative knowledge and professional vision in teacher education: Effect of courses in teaching and learning. *British Journal of Educational Psychology, 83*, 467–483.

Stürmer, K., & Seidel, T. (2017). A standardized approach for measuring teachers' professional vision: The Observer research tool. In E. O. Schack, M. H. Fisher, & J. A. Wilhelm (Eds.), *Teacher noticing: Bridging and broadening perspectives, contexts, and frameworks* (pp. 359–380). Cham, Switzerland: VS.

Sun, J., & van Es, E. A. (2015). An exploratory study of the influence that analyzing teaching has on preservice teachers' classroom practice. *Journal of Teacher Education, 66*, 201–214.

Tripp, T. R., & Rich, P. J. (2012). Using video to analyze one's own teaching. *British Journal of Educational Technology, 43,* 678–704.

van Es, E. A., Tunney, J., Goldsmith, L. T., & Seago, N. (2014). A framework for the facilitation of teachers' analysis of video. *Journal of Teacher Education, 65*, 340–356.

Yeh, C., & Santagata, R. (2015). Preservice teachers' learning to generate evidence-based hypotheses about the impact of mathematics teaching on learning. *Journal of Teacher Education*, *66*, 21–34.

UNSERE BUCHEMPFEHLUNG

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Langzeitpraktika als Lernräume

Historische Bezüge, Konzeptionen und Forschungsbefunde

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