TeachingWorks
UNIVERSITY *of* MICHIGAN SCHOOL *of* EDUCATION

Information for the March 20, 2015 TeachingWorks Journal Club Meeting

We will discuss the following two articles in this meeting:

1. Tekkumru Kisa, M., & Stein, M. K. (2015). Learning to see teaching in new ways: A foundation for maintaining cognitive demand. *American Educational Research Journal, 52*(1), 105-136.

2. Wolff, C. E., van den Bogert, N., Jarodzka, H., & Boshuizen, H. P. A. (2015). Keeping an eye on learning: Differences between expert and novice teachers' representations of classroom management events. *Journal of Teacher Education, 66*(1), 68-85.

In addition, bibliographic information is below for other relevant articles published in the following journals between December 15, 2014 and February 15, 2015.[1]

Journal of Teacher Education
American Educational Research Journal
Elementary School Journal
Journal of Curriculum Studies
Teachers College Record
Educational Evaluation and Policy Analysis
Teaching and Teacher Education
Journal of Education for Teaching: International Research and Pedagogy

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Aydin, S., Demirdogen, B., Nur Akin, F., Uzuntiryaki-Kondackci, E. & A. Tarkin (2015). The nature and development of interaction among components of pedagogical content knowledge in practicum. *Teaching and Teacher Education*, *46*: 37-50.

> This secondary analysis study focused on how interactions among preservice teachers' pedagogical content knowledge (PCK) components developed throughout a 14-week CoRe-based mentoring-enriched practicum course, and the nature of those interactions. Data were collected from three preservice teachers, information-rich cases, by the use of content representation (CoRe) and semi-structured interviews. Content analysis and the constant comparative method were employed in the data analysis. Results revealed that the development of integrations was idiosyncratic. Additionally, PCK integration moved from fragmented to a more integrated and coherent one by the end of the semester. Implications for science teacher education and research are discussed.

Berger, E., Reupert, A. & P. Hasking (2015). Pre-service and in-service teachers' knowledge, attitudes and confidence towards self-injury among pupils. *Journal of Education for Teaching*, *41*(1): 37-51.

> Teachers are ideally placed to identify and refer pupils who self-injure, but are often unaware when pupils self-injure or unsure how to respond. The aims of this study were to explore and compare pre-service and in-service teachers' knowledge and attitudes towards self-injury, and their confidence responding to pupils who self-injure. Pre-service teachers (n = 267) and in-service teachers (n = 261) completed self-report questionnaires. Prior education regarding self-injury was positively related to knowledge and confidence, while pre-service teachers were more confident than in-service teachers in their ability to cope with legal and school regulations.

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[1] For the March 20, 2015, TeachingWorks journal club we considered the following journals: *American Educational Research Journal (February 2015, **52**(1)); Educational Evaluation and Policy Analysis (March 2015, **37**(1)); Elementary School Journal (no new issues since last meeting: December 2014, **115**(2)); Journal of Curriculum Studies (2014, **47**(1)); Journal of Education for Teaching: International Research and Pedagogy (2015, **41**(1)); Journal of Teacher Education (January/February 2015, **66**(1)); Teachers College Record (**117**(1), **117**(2)); Teaching and Teacher Education (February 2015, **46**; April 2015, **47**).*

Thematic analysis of open-ended questions indicated that although pre- and in-service teachers are concerned about pupils who self-injure and are willing to help these students, they feel ill-informed about self-injury and requested school policies and additional education regarding the behaviour. Results have implications for educational programmes that prepare pre- and in-service teachers to identify and respond to pupils who self-injure.

Boylan, M. and I. Woolsey (2015). Teacher education for social justice: Mapping identity spaces. *Teaching and Teacher Education*, *46*: 62-71.

Teacher education requires an account of the complex ways that beginning teachers negotiate their relationships to social justice. A determinate view of identity successfully describes relationships to relatively stable social justice positions. This supports the adoption of pedagogies of discomfort and inquiry. However, socio-cultural accounts of identity emphasise indeterminate aspects of identity. The concept of striated and smooth identity space is proposed and illustrated by analysing the responses of four beginning mathematics teachers to the experience of a discomforting and inquiry based pedagogy. This challenges teacher educators to extend their pedagogies to embrace additional principles of respect and compassion.

Cochran-Smith, M. and A.M. Villegas (2015). Framing teacher preparation research: An overview of the field, part 1. *Journal of Teacher Education*, *66*(1): 7-20.

This is the first of a two-part article that aims to chart the contemporary landscape of research on teacher preparation and certification. It is based on a review of more than 1,500 studies published between 2000 and 2012. Part 1 provides information about how the review was conducted and describes the theoretical/analytic framework the authors developed to guide the review. The framework combines ideas from the sociology of knowledge and research as social practice. This framework situates the research on teacher education within salient economic, intellectual, and demographic developments of the past half century and also examines the practices of researchers who are differently positioned from one another, have divergent purposes and audiences, and who work both inside and outside teacher education. Part 1 also analyzes the first of three major research programs—research on teacher preparation accountability, effectiveness, and policies, identifying strengths and weaknesses in this body of studies.

De Neve, D., Devos, G. & M. Tuytens (2015). The importance of job resources and self-efficacy for beginning teachers' professional learning in differentiated instruction. *Teaching and Teacher Education*, *47*: 30-41.

Professional learning in differentiated instruction (DI) is a challenging learning process for beginning teachers. This study investigates the interplay between job (i.e., teacher autonomy and characteristics of professional learning communities (PLCs)) and personal resources (i.e., teacher self-efficacy) as hypothesized determinants of professionalization in DI. A sample of 227 beginning teachers from 65 primary schools participated. Path analyses showed that the PLC-characteristic 'reflective dialogue', teachers' self-efficacy and autonomy directly predicted self-reported changes in DI-practice (i.e., measure of professional learning). Moreover, autonomy and the PLC-characteristic 'collective responsibility' indirectly predicted self-reported changes in DI-practice via self-efficacy. Implications for educational practices are discussed.

Depaepe, F., Torbeyns, J., Vermeersch, N., Janssens, D., Janssen, R., Kelchtermans, G., Verschaffel, L. & W. Van Dooren (2015). Teachers' content and pedagogical content knowledge on rational numbers: A comparison of prospective elementary and lower secondary school teachers. *Teaching and Teacher Education*, *47*: 82-92.

Rational numbers are amongst the most difficult topics in the elementary and secondary school curriculum and teaching them requires an appropriate knowledge base of teachers to properly deal with students' difficulties. We investigated prospective teachers' content knowledge (CK) and pedagogical content knowledge (PCK) on rational numbers, the relationship between CK and PCK, and differences in CK and PCK among prospective elementary teachers (trained as general classroom teachers) and lower secondary teachers (trained as subject-specific classroom teachers). The results revealed gaps in prospective teachers' CK and PCK, a positive correlation

between CK and PCK, and a better CK but not PCK for secondary compared to elementary school teachers.

Fox, A.R.C. and E.G. Wilson (2015). Networking and the development of professionals: Beginning teachers building social capital. *Teaching and Teacher Education*, *47*: 93-107.

> This paper focuses on how beginning teachers gain support during teacher training, applying concepts of social capital to understand how personal networks can give access to affective and cognitive support. It is based on qualitative case studies of three secondary school trainees during a full-time year-long programme in England. Relationships which supported trainees' developing practice can be characterised differently to those which enhanced their sense of belonging to the profession. Whether supportive relationships developed depended not only on the actions and attitudes of the trainees but also those of others. The paper suggests wider implications for the support of beginning teachers.

Gomez, M.L., Lachuk, A.J. & S.N. Powell (2015). The interplay between service learning and the ideological becoming of aspiring educators who are "marked" as different. *Teaching and Teacher Education*, *47*: 162-172.

> Through a Bakhtinian lens of "ideological becoming", we investigate the impact of service learning on two aspiring educators enrolled in a course exploring the intersections of race, class, gender, ability, language background, and sexual orientation. In particular, we explore how embodying "markers of difference" (Kerschbaum, 2014) assists aspiring educators in thinking about who they are and what they see as the potential for learning of youth from varied backgrounds.

Hou, H. (2015). What makes an online community of practice work? A situated study of Chinese student teachers' perceptions of online professional learning. *Teaching and Teacher Education*, *46*: 6-16.

> This paper brings to the fore a cohort of student teachers' perceptions of an online learning experience during school placement in a Chinese tertiary institution; it critically explores factors contributing positively to online professional learning and the development of the community. An ethnographic case study approach was adopted. Findings indicate that online communication allows participants to recognize the significant presence of others in supporting and transforming their learning. It also fosters an appreciation and embracement of the multidimensional roles that they take on. Voluntary participation and empowerment emerge as key factors making this a vibrant professional community for professional growth.

Kleickmann, T., Richter, D., Kunter, M., Elsner, J., Besser, M., Krauss, S., Cheo, M. & J. Baumert (2015). Content knowledge and pedagogical content knowledge in Taiwanese and German mathematics teachers. *Teaching and Teacher Education*, *46*: 115-126.

> In comparing content knowledge (CK) and pedagogical content knowledge (PCK) of Taiwanese and German inservice mathematics teachers, the present study examines whether the two-dimensional structure of teachers' subject matter knowledge is cross-culturally invariant and whether differences in teacher education and in teacher selection are reflected in teachers' subject matter knowledge. The results confirm that CK and PCK represent two distinct, but correlated dimensions, even in teachers from completely different backgrounds. Taiwanese inservice teachers showed considerably higher CK and also higher PCK scores than German teachers. Teacher education and teacher selection should be considered important levers for reform in mathematics education.

Lanas, M. and G. Kelchtermans (2015). "This has more to do with who I am than with my skills" – Student teacher subjectification in Finnish teacher education. *Teaching and Teacher Education*, *47*: 22-29.

> This article addresses the argument that in order to offer responsive teacher education which acknowledges student teachers as active members in their education process, teacher educators need to know more about who student teachers are. The context of the research is Finland, in which teacher education is highly selective. The interest in this article is on the process of shaping and re-shaping of student teacher-selves in response to the surrounding implicit norms – a process of student teacher subjectification. Using purposefully constructed narrative data and

thematic analysis we identified how students negotiate the implicit social and cultural expectations towards teachers.

Lee, K. and C. Brett (2015). Dialogic understanding of teachers' online transformative learning: A qualitative case study of teacher discussions in a graduate-level online course. *Teaching and Teacher Education*, *46*: 72-83.

> Teachers are expected to implement new educational technologies and adapt to new teaching environments. However, it involves a complex learning process that can lead to their perspective transformation. We have developed and taught a discussion-based online course to facilitate teachers' transformative learning. This qualitative case study examines teachers' perspective transformation in our course to understand the nature of effective online teacher-to-teacher discussions. Based on a theoretical framework that integrates Mezirow's transformative learning model and Bakhtin's dialogism, this paper builds on previous literature on teacher-to-teacher discussions as well as providing a fresh perspective to inform the current globalized teacher education context.

Martin, S.D. and S. Dismuke (2015). Teacher candidates' perceptions of their learning and engagement in a writing methods course. *Teaching and Teacher Education*, *46*: 104-114.

> In this paper we examine teacher candidates' perceptions of learning and learning opportunities in a semester-long course writing methods course. Results from this study indicate candidates felt they had developed understandings of writing, teacher practices, and themselves as writers. They also indicate that three factors fostered candidates' engagement in learning experiences: (1) learning across multiple activity settings, (2) interactions with peers, and (3) overlapping experiential learning roles as both teachers and writers. These factors provide a useful framework for planning and implementing learning activity in practice-focused teacher education. Other implications for teacher education programs, teacher educators, and researchers are discussed.

Munthe, E. and M. Rogne (2015). Research based teacher education. *Teaching and Teacher Education*, *46*: 17-24.

> Undergraduate research is one way to qualify teachers for professional learning and innovation, but there is little knowledge about how ITE programs address research for students. This study has investigated that question in one country, Norway. Data is survey data from all HEIs providing teacher education, and an interview study involving 36 teacher educators and 36 students. Results indicate that ITE programs emphasize research, but teacher-led more than student engagement. Although more teacher educators are qualified researchers, it varies greatly whether they are active researchers and what research goals the ITE leaders express. Variation is a key finding.

Nelsen, P.J. (2015). Intelligent dispositions: Dewey, habits and inquiry in teacher education. *Journal of Teacher Education*, *66*(1): 86-97.

> Despite much debate in the literature, accrediting agencies continue to require that teacher education programs demonstrate that candidates possess requisite sets of dispositions deemed necessary for licensure. At least three unresolved and important questions remain unanswered that directly affect programs' abilities to do so: Are dispositions immutable aspects of character or are they learned through experience and as such, are they subject to revision through education? How does the larger context of a program affect the development of dispositions? What is the link between observable actions and dispositions? While seemingly disparate questions, this article argues that John Dewey's discussion of habits offers a theoretical framework that points to answers that respond to mandates and also open avenues for complex educational engagement. To make the case, the article presents a theoretical response to questions about dispositions grounded in Dewey's conception of habits and then uses that conception to address each of the three proceeding questions in turn. The article's central argument is that teacher educators should conceptualize dispositions as being comprised of clusters of habits. Habits describe our predispositions to draw upon modes of response to situations and problems that arise within specific contexts. Furthermore, the article concludes that regardless of the type of disposition

involved, teacher education programs must create contexts that encourage the development of intelligent habits to inform intelligent dispositions.

Nilsson, M., Ejlertsson, G., Andersson, I. & K. Blomqvist (2015). Caring as a salutogenic aspect in teachers' lives. *Teaching and Teacher Education*, *46*: 51-61.

This inquiry explored how a group of teachers experienced resources for their well-being, both at work and in their private lives. The findings indicate that caring, for others and for oneself, is central for teachers' well-being. Caring is manifested in being present in the moment, and in actions which promote the well-being of oneself and others. Implications from the findings suggest that both school administration and teacher education should pay special attention to the caring aspects of teaching, as they influence teachers' well-being and retention, as well as the pupils' learning. Health promotion interventions could benefit from these findings.

Özçınar, H. (2015). Mapping teacher education domain: A document co-citation analysis from 1992 to 2012. *Teaching and Teacher Education*, *47*: 42-61.

The aim of the present study is to identify the structure of the research base for teacher education as a scientific discipline and changes in the structure of this domain between 1992 and 2012. The study was carried out using document co-citation analysis, a bibliometric method. Document co-citation analysis shows that the domain of teacher education is characterized by a number of specialties; however, none of them are sufficiently developed to be regarded as the principal trend in the domain.

Seban, D. (2015). Development of preservice identities: Learning from a multigrade classroom practicum context. *Journal of Education for Teaching*, *41*(1): 19-36.

This study explores the impact of practica in multigrade schools in rural areas in Turkey on the development of preservice teachers' identities, drawing in particular on Gee's four perspectives regarding viewing identity. Interpretation of the identity categories was based on the content of students' reflective narratives written over four consecutive years and discussed in terms of these categories, which were identified as nature, institution, discourse and affinity. The results indicated that a practicum undertaken in multigrade classrooms influenced students' thinking about continued identity development as teachers and supported their development, as well as the awareness needed to develop, shape or reshape an identity. The data also demonstrated that practicum experiences in multigrade classrooms are important, particularly in countries where teachers are frequently appointed to such an educational setting in their first year of teaching.

Tekkumru Kisa, M. and M.K. Stein (2015). Learning to see teaching in new ways: A foundation for maintaining cognitive demand. *American Educational Research Journal*, *52*(1): 105-136.

Students' opportunities to learn how to think are embedded in the instructional tasks with which they are invited to engage in the classroom. Prior research has revealed that the selection and use of cognitively demanding tasks does not guarantee high-level student thinking during their enactment. To address this challenge, we designed and implemented a professional development (PD) in which participants analyzed video clips of the enactment of cognitively demanding science tasks. Using transcripts of pre- and post-PD interviews during which participants were asked to respond to specially selected video clips, we analyzed what the participants attended to and how they made sense of what they saw. The findings suggested a change in terms of a growing tendency to attend to teaching as constituted in the interaction of the teacher, students, and task and to adopt an interpretive stance while talking about what was seen in the video clip.

Vähäsantanen, K. (2015). Professional agency in the stream of change: Understanding educational change and teachers' professional identities. *Teaching and Teacher Education*, *47*: 1-12.

The qualitative meta-study reported here investigated Finnish vocational teachers' professional agency amid an educational reform. Differences were found in teachers' agency regarding their work, their involvement with the reform, and their professional identity. The manifestations of agency could remain stable or could change over time, and agency drew on various resources

(e.g. teacher identity and the organizational management culture). The theoretical conclusions encompass professional agency as multidimensional, largely individually varied, temporally imbued, and both socially and individually resourced. Based on the findings, an agency-centered approach is proposed as a means of understanding and supporting educational change and teacher identity negotiation.

van der Linden, W., Bakx, A., Ros, A., Beijaard, D. & L. van den Bergh (2015). The development of student teachers' research knowledge, beliefs and attitude. *Journal of Education for Teaching*, *41*(1): 4-18.

This study reports on the development of second-year student teachers' knowledge of research, and the changes in their beliefs and attitude regarding research during an introductory course at an institute for primary teacher education. Questionnaires and concept maps were administered before and after the course. The results showed that student teachers' knowledge about research grew during the introductory course and that their positive beliefs about research became more positive, while their negative beliefs about research decreased. A positive change was found concerning the attractiveness of research to student teachers. Furthermore, student teachers' self-efficacy regarding research appeared related to their beliefs and attitude: the more the student teachers were convinced of their abilities to conduct and use the results of research after the course, the more positive their beliefs and their attitude regarding research were. This study provides guidelines for institutes for teacher education on integrating research activities into their curricula, so that their student teachers develop research knowledge and positive beliefs and attitudes towards research.

Wolff, C.E., van den Bogert, N., Jarodzka, H. & H.P.A. Boshuizen (2015). Keeping an eye on learning: Differences between expert and novice teachers' representations of classroom management events. *Journal of Teacher Education*, *66*(1): 68-85.

Classroom management represents an important skill and knowledge set for achieving student learning gains, but poses a considerable challenge for beginning teachers. Understanding how teachers' cognition and conceptualizations differ between experts and novices is useful for enhancing beginning teachers' expertise development. We created a coding scheme using grounded theory to analyze expert and novice teachers' verbalizations describing classroom events and their relevance for classroom management. Four categories of codes emerged. These referred to perceptions/interpretations, thematic focus, temporality, and cognitive processing expressed. Mixed-method analysis of teachers' verbalizations yielded a number of significant effects related to participants' expertise levels. Notably, teachers' cognitive processing diverged significantly based on expertise level. Differences in focus included themes such as student learning, student discipline, and teacher interaction and influence. Experts focused on learning in the classroom and the teacher's ability to influence learning, whereas novices were more concerned with maintaining discipline and behavioral norms.

Yeh, C. and R. Santagata (2015). Preservice teachers' learning to generate evidence-based hypotheses about the impact of mathematics teaching on learning. *Journal of Teacher Education*, *66*(1): 21-34.

This study examines the development of a specific sub-skill for studying and improving teaching—the generation of hypotheses about the effects of teaching on student learning. Two groups of elementary preservice teachers (PSTs) were compared: one group that attended a typical mathematics-methods course and one that attended a course integrating analysis skills for learning from teaching. Data consist of PSTs' comments on video clips of mathematics instruction administered before and after course completion. Findings reveal that PSTs at the beginning of the program struggled to generate hypotheses with relevant evidence, often equating teacher behavior or student correct answers as evidence of student understanding. After course participation, PSTs who attended the course with integrated analysis skills significantly improved in their ability to generate hypotheses based on student evidence whereas their counterparts continued to display difficulties. Implications for teacher education and future research are considered.

Yemini, M., Yardeni-Kuperberg, O. & N. Natur (2014). The global–local nexus: Desired history curriculum components from the perspective of future teachers in a conflict-ridden society. *Journal of Curriculum Studies*, *47*(1): 26-48.

This study reveals the views of future teachers from Israeli-Jewish and Palestinian-Arab communities regarding the desired school history curricula. We applied a quantitative and qualitative survey to a sample of 528 students studying in teachers' preparation programmes in three higher education institutions: one research university with a large Jewish majority and only Jewish respondents to our survey, one Palestinian-Arab college and one Jewish secular college. In both Jewish and Arab sectors, we found a major gap between teachers' perceived desired curriculum and the official (nationalistic) one. The results indicated that the university students, who come from higher socio-economic backgrounds, prefer significantly more internationally oriented curricula than Palestinian-Arab students and Jewish students in colleges. In addition, students who are studying in the university were found to attribute more importance than all college students to globally oriented curricular content for their pupils' future success. Notably the Jewish students choose to include more globally oriented subjects than are currently found in the official curriculum. On other measures, there was less difference between Jewish and Palestinian-Arab students. The qualitative phase of our research revealed that this seeming anomaly is due to the relative lack of sector-specific content in the formal curriculum covering the history of Palestinian-Arab population. This study yields important implications for history curricular design in the context of the global-local nexus, particularly within conflict-ridden societies.

Abstract:

Students' opportunities to learn how to think are embedded in the instructional tasks with which they are invited to engage in the classroom. Prior research has revealed that the selection and use of cognitively demanding tasks does not guarantee high-level student thinking during their enactment. To address this challenge, we designed and implemented a professional development (PD) in which participants analyzed video clips of the enactment of cognitively demanding science tasks. Using transcripts of pre- and post-PD interviews during which participants were asked to respond to specially selected video clips, we analyzed what the participants attended to and how they made sense of what they saw. The findings suggested a change in terms of a growing tendency to attend to teaching as constituted in the interaction of the teacher, students, and task and to adopt an interpretive stance while talking about what was seen in the video clip.

Summary prepared by JoeyLynn Selling

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Purpose of study

The purpose of this study was to investigate the extent to which professional development on noticing teaches teachers to view teaching and students' thinking in new ways (p. 108). Specifically, the researchers hoped to help teachers learn to "pay attention to students' thinking and identify helpful (and not so helpful) ways of interacting with their students" during cognitively challenging tasks (p. 112).

Theoretical framework

The researchers framed their research around two important bodies of literature: cognitive demand and teachers' learning to notice. Cognitive demand refers to a task's level of complexity. For example, memorization requires low cognitive demand whereas evidence based-reasoning requires highly complex, cognitively demanding attention (p. 107). Teacher noticing refers to the way teachers notice – attend to and interpret –and respond to classroom events (p. 108).

In analyzing cognitive demand, Tekkumru Kisa and Stein (2015) used the Task Analysis Guide in Science [TAGS]. TAGS is a two-dimensional framework of the two critical features of the Next Generation Science Standards: cognitive demand and the integration of science content and science practices.

Figure 1: TAGS (Tekkumru Kisa & Stein, 2015, p. 113)

Further, the researchers conceive of *learning to notice* as "related to developing expertise in a profession in terms of seeing and understanding complex situations in particular ways" (p. 112). To examine science teachers' learning to notice, Tekkumru Kisa and Stein (2015) used van Es and Sherin's (2002) Learning To Notice Framework (Tekkumru Kisa & Stein, 2015, p..113). The framework identifies three components of noticing: identifying what is noteworthy, reasoning about – or interpreting - classroom interactions, and making connections between the specific classroom interactions and the broader principles of teaching and learning (p. 113).

Research questions
The authors asked three research questions:
1. "In what ways did what teachers *attended to* in the video cases change from the beginning to the end of the Noticing-PD?
2. In what ways did teachers' stance (i.e., descriptive, evaluative, or interpretive) for making sense of what they attend to in the video cases change from the beginning to the end of the Noticing-PD?
3. To what extent did teachers learn to recognize video cases as an instance of a particular level or type of student thinking as defined in the TAGS" (p. 114)?

Research design
This study was part of a larger study on the development and implementation of STEM units. This particular study took place during a four-week-long unit titled, "Modeling Genetics: The Gecko Breeder Challenge" (p. 114).

Study participants included five high school (2 tenth grade, 2 eleventh grade, and 1 twelfth grade) biology teachers from several school districts in the northeastern part of the United States. Three of the five teachers have been teaching biology for two years while one taught for 13 years and one for 16. Participants agreed to implement the STEM unit, attend two project-related meetings, and attend seven Noticing-PD sessions (pp. 114-116).

The Noticing-PD sessions focused on teaching the participating teachers to notice classroom events during cognitively demanding tasks. Participants viewed video cases of biology lessons and used TAGS to analyze the events they noticed.

Teacher participants were interviewed prior to the Noticing-PD intervention and following the Noticing-PD. During these interviews, teacher participants viewed two video recordings of the implementation of two lessons from the unit in two high school biology classrooms. Each video showed "high-level student thinking during the enactment of a cognitively demanding biology task" (p. 116).

All interviews were transcribed and divided into two parts: (1) talk related to what the interviewee noticed in the video and (2) talk in response to the question, *What level or type of student thinking is going on in this class?* (p. 117). Then, the authors partitioned the transcripts related to noticing into idea units, and the idea units were coded into the dimensions of topic and stance. Topic codes included pedagogy (Three subcodes were used to differentiate this code: pedagogy not explicitly tied to students; pedagogy explicitly tied to students, but at a general, non-content-specific level; and pedagogy explicitly tied to students at a specific, content-informed level), student thinking, student engagement, student talk, classroom climate, management, and other (p. 117). Stance codes included descriptive, evaluative, and interpretive (p. 119). Following iterative and double coding, researchers compared the "number and percentage of idea units relating to the various codes underneath the topic and stance dimensions" (p. 120) from the initial interview to the exit interview. A one-tailed *t*-test was used to determine the significance of any changes.

Transcripts related to participants' responses to the question were first coded by level – "whether or not the participants identified the level of student thinking in the video cases as high or low level" (p. 125). Participants were asked to explain their high or low claims. Constructs used to describe high-level student thinking were coded as one of the following: prior knowledge, student application, student engagement, student thinking or sense making, what was not happening, reference to scientific practices, or other. The number of participants who cited each construct during the initial interview was compared with the number of participants who cited each during the exit interview (pp. 125-127).

Results

RQ1. To answer the first research question, the researchers looked at the subcodes for pedagogy within the topic dimension. Analyses from the initial interview indicated that 40% of the participants' comments were about general pedagogy not linked to students (p. 121), but analyses of the exit interview comments revealed that none of the participants' pedagogy comments were independent of students' actions and ideas (p. 122). That is to say, participants' comments shifted from simple play-by-play of the teacher's actions to explaining the teacher's moves as in response to students' ideas or actions (p. 118).This change was statistically significant. On the flip side, from baseline to exit, there was a significant increase in participants' attention to the teacher's action in relation to students and actions at a content-specific level (p. 123) This means participants noticed when teachers responses were in support of student thinking surrounding specific content (p. 118).

RQ2. To answer the second research question, the authors analyzed the stance the participants expressed when talking about the video cases. From the initial interview to the exit interview, there was a marginally significant decline in participants' evaluative comments and a marginally significant increase in interpretative comments (p. 124).

RQ3. The third research question was answered by looking at participants' responses to the question, *What level or type of student thinking is going on in this class?* At both baseline and exit, all participants save one identified the video case students' thinking as high level (p. 125). During the baseline interview, though, none of the participants referred to scientific practices as reasons. However, at the exit interview, after the Noticing-PD and introduction to TAGS, all of the participants referred to scientific practices. Still, "[the participants'] use of the term did not reveal a fully developed understanding of scientific practice. Most common was the idea that scientific practices necessarily involved engaging in investigation or data analysis" (p. 127).

Conclusions

This study shows that with training, teachers changed the way they attended to classroom events. Prior to the Noticing-PD, participants attended to what the teacher did independent of the students. After the intervention, the participants attended to the interactions among teacher, students, and content when the class was engaged in complex, cognitively demanding tasks. In addition, participants shifted from making evaluative comments of students' sense making to interpretive comments. This shift is noteworthy because "an interpretive stance affords a deeper examination of classroom events" (p. 129) and leads to more supportive responses (e.g., scaffolding questions) to students' ideas.

Limitations

The participants in the study noticed classroom events in a classroom other than their own. The next step for research on teacher noticing should focus on participants' own practice as teachers who notice and respond to classroom events.

Furthermore, within one lesson, instructional practices can range from highly procedural to highly autonomous, from carefully scaffolded to loosely scaffolded, from low cognitive demand to high cognitive demand, etc. Therefore, Tekkumru Kisa and Stein (2015) insist researchers must consider the nature of the task at hand when examining teacher noticing because "the nature of the task that is enacted sets boundaries on he kinds of ways in which the teacher and students interact" (p. 129).

Abstract:

Classroom management represents an important skill and knowledge set for achieving student learning gains, but poses a considerable challenge for beginning teachers. Understanding how teachers' cognition and conceptualizations differ between experts and novices is useful for enhancing beginning teachers' expertise development. We created a coding scheme using grounded theory to analyze expert and novice teachers' verbalizations describing classroom events and their relevance for classroom management. Four categories of codes emerged. These referred to perceptions/interpretations, thematic focus, temporality, and cognitive processing expressed. Mixed-method analysis of teachers' verbalizations yielded a number of significant effects related to participants' expertise levels. Notably, teachers' cognitive processing diverged significantly based on expertise level. Differences in focus included themes such as student learning, student discipline, and teacher interaction and influence. Experts focused on learning in the classroom and the teacher's ability to influence learning, whereas novices were more concerned with maintaining discipline and behavioral norms.

Summary prepared by Dr. Mary Schleppegrell and JoeyLynn Selling

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Goals of the study

The study had two goals: "to learn more about differences in the skills and knowledge of teachers when processing real-word classroom scenes" and "to substantiate the complexity of teaching expertise and its ensuing development" (p. 70). To accomplish these goals, the researchers studied novice and expert teachers' interpretations of actual classroom lesson videos. Working through a cognitive perspective, the researchers sought to examine how classroom sense-making differs between novice, inexperienced, and expert, experienced, teachers and how prior knowledge contributes to the teachers' interpretations.

The authors recognize that teaching has many dimensions, and they focus here on what they call a "core component" of teaching expertise: classroom management. They define classroom management as "a multi-faceted skill set encompassing the structure and atmosphere of the classroom space, the instructional choices of the teacher, the pedagogical and practical knowledge driving these decisions, and the stream of interaction and exchange occurring inside (and outside) the classroom" (p. 71). Their conception of classroom management goes beyond *discipline management,* and refers to all of the work done to maintain an environment that supports learning goals.

Research questions

The authors asked three research questions (pp. 71-72):
1. How do expert and novice teachers' classroom representations differ when describing classroom scenes?
2. Which aspects of teaching or learning do teachers focus on, and how do experts and novices differ in this respect?
3. Can we identify differences in the cognitive processing used by experts and novices when representing classroom management events?

Research design

To answer these questions, the researchers recruited 20 experienced, "expert" teachers and 19 "novice," student teachers. The expert teachers were nominated by colleagues and superiors as experts. All expert teachers had at least 10 years of teaching experience and ranged in age from 31 to 50 years. The novice teachers were between the ages of 17 and 20 years and were in either their first or second

year of preservice teacher training, with only 10-40 hours of classroom teaching experience respectively. All participants taught at the secondary level within the Dutch educational system.

Participants viewed video fragments from two authentic language lessons taught by novice teachers (the scenes had no subject-specific content to make them accessible to all teachers in the study). They were asked to click a device each time they saw a classroom event that they considered relevant to classroom management (p. 72). Following the video viewing, participants were interviewed to explain their decisions to click by answering the question "Can you describe what you saw there and how you find it relevant to classroom management?"

To understand differences in the knowledge and skills experts and novices draw on to process and represent real-world classroom scenes, the researchers analyzed the words they used to describe those scenes. Researchers used grounded theory to develop a coding scheme to analyze *idea units* (sentence-like segments containing a clear core idea) as well as *whole utterances.* Four coding categories were established through a process of iterative coding and review: *perceptions* and *interpretation* of events; *the main theme or focus* expressed in the statement; expressions of *temporality* (contemporaneous, prospective, or retrospective); and the *cumulative cognitive processing* expressed (four further codes were used to differentiate these: *viewpoint, perspective, continuity,* and *certitude*) (see outline attached). Following this qualitative coding, MANOVA analyses were conducted on the coding categories, and all showed significant main effects for experts.

Results

In answering RQ 1, codes that referred to the ways teachers perceived and interpreted the classroom event showed that experts were able to make predictions about classroom events based on prior experience: "Experts have developed a sophisticated ability to make observations, recollect and link these to past experience, and phrase interpretations of their observations as predictions about what may arise" (p. 80). In addition, experts offered more contextualized commentary for possible modifications and interventions in response to specific classroom events.

To answer the second research question, researchers specifically looked at identified themes including *learning and discipline, norms & types,* and *lesson modifications*. They found that expert teachers' statements reflected greater concern for student learning. Novice teachers were attuned to students' adherence to rules and discipline whereas expert teachers were concerned with whether the classroom environment and interactions served instructional goals and with what the students took away from the lessons. Expert teachers also focused on teachers and the ways in which the teachers contribute to classroom events. The authors summarize the differences as follows:

> For experts, learning is central, and the role of the teacher is deeply integrated into whether or not students are actively engaged so that learning can happen. For novices, it is the other way around: The disruptions and misbehavior of students is a problem arising from the students, disconnected from the teacher, and the teachers' role is simply to intervene and deal with problems, not to ensure lesson engagement and enhance learning opportunities. (p. 81)

To answer the third research question, researchers examined coded statements that represented *viewpoint, perspective, continuity,* and *certitude.* They found that expert teachers' representations repeatedly expressed multiple points of view whereas novice teachers' typically expressed only one. Moreover, expert teachers saw classroom events as continuous and connected; novice teachers viewed events as "disparate and disconnected from other events" (p. 82). The *temporality* codes indicated that novice teachers focused on the moment in the video and rarely linked those with prior or later events, while expert teacher were able to account for the actions and interactions that led to the unfolding events and predict future events.

Conclusions

The study shows that expert teachers rely heavily on past experiences to interpret and respond to events. They see classroom interactions as a relational sequence and understand the crucial role of the teacher in moderating events. Expert teachers are less concerned with the nuances of student behavior than they are with students' learning. Novice teachers do not have the practical knowledge of expert teachers, and therefore, cannot interpret classroom events in the same ways as experts do. Novices tend to not look at the big picture but rather at individual events. They assume that students, not teachers, are

responsible for misbehavior, and do not frequently acknowledge the importance of the teacher in guiding classroom events. The authors suggest that this results in missed learning opportunities for students.