

Information for the September 20, 2013 TeachingWorks Journal Club Meeting

We will discuss the following two articles in this meeting, each of which is summarized at the end of this document:

- 1. Brantlinger, A. & Smith, B. (2013). Alternative teacher certification and the new professionalism: The pre-service preparation of mathematics teachers in the New York City teaching fellows program. *Teachers College Record*, 115(7).**
- 2. Desimone, L., Smith, T.M., & Phillips, J. R. (2013). Linking student achievement growth to professional development participation and changes in instruction: A longitudinal study of elementary students and teachers in title I schools. *Teachers College Record*, 115(5).**

In addition, bibliographic information is below for other relevant articles published in the following journals since the May 10, 2013 meeting and until August 1, 2013.¹

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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Battey, D., Llamas-Flores, S., Burke, M., Guerra, P., Kang, H.J., & Kim, S.H. (2013). ELL policy and mathematics professional development colliding: Placing teacher experimentation within a sociopolitical context. *Teachers College Record*, 115(6).

Abstract:

Background/Context: A number of recent policies have specifically attacked immigrants and English Language Learners (ELLs), including Georgia's HB 87 (2011), Arizona's SB 1070 (2010), and Alabama's HB 56 (2011), among others. The policy focus of this study is Arizona's HB 2064 (2006), which added additional requirements that mandate tracking students by English language proficiency and separating English language instruction from subject matter for ELL students. Few scholars have considered how these broad social policies impact professional development (PD)-induced classroom change, especially in mathematics education. This sociopolitical context cannot help but affect teachers' willingness to take on new practices in PD and thus affect educational opportunities for Latinos and English Language Learners. Yet, policies that target ELLs have not received much attention within mathematics education or PD. This exploratory study details teacher change produced by mathematics PD efforts before and after a new ELD policy was implemented in order to better understand this intersection.

Purpose/Objective/Research Question/Focus of Study: The teachers in this study participated in mathematics professional development focusing on Cognitively Guided Instruction (CGI). This

¹ For the September 20, 2013 TeachingWorks journal club we considered the following journals: *The (May/June 2013; 64(3)) issue of the Journal of Teacher Education was considered for the May meeting of the journal club, and no other issues have come out; American Educational Research Journal (June 2013 vol. 50, no. 3), (August 2013 vol. 50, no. 4); Elementary School Journal (Vol. 113, No. 4, June 2013); Journal of Curriculum Studies (Volume 45, Issue 3), (Volume 45, Issue 4), Teachers College Record (Volume 115, Number 5), (Volume 115, Number 6), (Volume 115, Number 7); Educational Evaluation and Policy Analysis (June 2013; 35(2)), (September 2013, 35(3)), Teaching and Teacher Education (Volume 34), (Volume 35); Journal of Education for Teaching: International Research and Pedagogy (Volume 39, Issue 3).*

exploratory research documents how teachers experimented in their classrooms before and after this policy was implemented and teachers' views of HB 2064. Two research questions guided the study: 1) How did the mathematics PD affect change in teacher knowledge and classroom practice? and 2) How did the conflicting policy and PD efforts influence change in elementary mathematics instruction?

Setting: This research took place in the Monroe Elementary School District, an urban school district in Arizona. Three schools participated in mathematics professional development based on CGI principles. The student population was 95% Hispanic and 46% ELLs, and 89% of students received free or reduced lunch. Therefore, Arizona's policies had the potential to greatly impact the student population in this school.

Population/Participants/Subjects: The professional development was implemented with three groups of K–3 teachers (n=44). Across the PD, just over one fourth of participating teachers were bilingual in Spanish and English.

Intervention/Program/Practice: The professional development focused on the principles of CGI, combining earlier work on student strategies and problem types (Carpenter, Fennema, Franke, Levi, & Empson, 1999) with more recent work on algebraic thinking (Carpenter, Franke, & Levi, 2003) and counting (Schwerdtfeger & Chan, 2007). This model of professional development focuses teachers on the development of student thinking, problem types for various mathematical operations, and building instruction from this knowledge base. The PD consisted of monthly on-site workgroup meetings and weekly on-site visits to support teachers in their classrooms.

Research Design: The research team conducted a mixed methods study of teacher change across the district. The study followed teachers for two years—one year before the policy was implemented and the year it was implemented—documenting the practices teachers maintained in their elementary mathematics classrooms. The study used a mixed methods design to respond to the two research questions (Creswell, 2003). A teacher knowledge assessment was used to see if teachers were gaining new knowledge as they implemented the principles of the PD.

Observations allowed for the study to look at teacher experimentation in classrooms. Finally, an interview on the policy and its impact on their classroom practices was performed to add more understanding to why teachers did or did not implement more PD practices.

Findings/Results: Teacher knowledge change was minimal across the professional development. However, the data on change in practice suggest that more practices were adopted before the policy was implemented than during implementation. In contrast, teachers reported that the policy had minimal effect on their mathematics instruction. This conflict, between change in practice and the perceived lack of policy impact, seemed to be due to teachers' view of mathematics and language as fundamentally separate. It seemed also to be due to an alignment between teacher beliefs and the views embedded in the policy.

Conclusions/Recommendations: The findings raise concerns about the conflict between PD and policy in generating teacher change. New questions emerge from this work about taking into consideration the sociopolitical context when researching PD efforts focused on intersections between policy and subject matter. Questions also emerge about the alignment of ideology in policy with teachers' beliefs. The authors call for work in mathematics PD that takes on the intersections between policies and PD efforts and that targets particular student populations. Additionally, more research would be beneficial for understanding the impact of the sociopolitical context on teacher change efforts.

Brantlinger, A. & Smith, B. (2013). Alternative teacher certification and the new professionalism: The pre-service preparation of mathematics teachers in the New York City teaching fellows program. *Teachers College Record, 115*(7).

Abstract:

Background/Context: For more than a decade, large alternative teacher certification programs (ATCP) such as the New York City Teaching Fellows (NYCTF) have provided qualified applicants with fast-track or "early entry" routes to paid teaching. While early-entry ATCPs enjoy powerful support in the public and private sectors, critics (e.g., Zeichner, 2010) claim that early-entry ATCPs are aligned with a "new professionalism" which views teaching as a technical undertaking and teachers as easily replaceable implementers of others' prescriptive ideas. Yet little is known

about the knowledge, skills, and dispositions these programs seek to develop in teachers during pre-service preparation.

Purpose/Focus of Study: This study seeks to understand the nature of teacher preparation in early-entry ATCPs and how this reflects both the trends associated with the new professionalism and broader traditions of teacher education. The paper focuses on preparation of pre-service mathematics teachers who began the NYCTF program in the summer of 2007.

Research Design: Results for this paper are based on a mixed-methods analysis of curriculum and survey data. Curriculum data included course materials, journal entries and daily audio reflections, and exit interviews for nine mathematics teacher candidates who began NYCTF in the summer of 2007. The two authors coded this qualitative data with a high degree of inter-rater reliability. Survey data was collected from 90% of the approximately 300 mathematics candidates who began NYCTF in the summer of 2007. The analysis focused on responses to Likert-scale survey items that inquired about the focus of pre-service coursework. The Mann Whitney test was used to gauge the statistical significance of curricular differences reported by mathematics candidates in different sections of the NYCTF program.

Findings/Results: We find that only some of the major components of NYCTF summer preparation were well aligned with the expectations of the new professionalism. In particular, the curriculum delivered by NYCTF staff and staff at one of the four university coursework providers seemed to meet these expectations. Whereas, to varying degrees, the curriculum delivered by staff at the three other university partners did not. We also find that pre-service preparation was subject-general and featured little in the way of mathematics-specific teaching methods.

Conclusions/Recommendations: The results simultaneously support, extend, nuance, and challenge the hypothesis that such early-entry ATCPs such as NYCTF prepare program participants to meet the expectations of the new professionalism. The conclusion includes discussions of both the promise of early-entry ATCPs and how schools of education might respond to the rise of early-entry ATCPs and the trend of the new professionalism.

Burns, E., Poikkeus, A.M., & Aro, M. (2013). Resilience strategies employed by teachers with dyslexia working at tertiary education. *Teaching and Teacher Education, 34(0)*, 77-85.

Abstract:

This study investigates resilience strategies exhibited by teachers with dyslexia working at tertiary education. Narrative interviews of tertiary teachers' own perceptions of how dyslexia affects their work were analysed to understand how they cope in a challenging profession. Findings indicated a utilization of a range of resilience strategies; task-related strategies, personalizing work contexts, utilizing social support networks and nurturing self-esteem and self-efficacy. Developing individualized strategies is paramount to attaining a successful career in tertiary education. Self-awareness is required to build the strategies supporting teachers in fulfilling professional requirements and enable them to experience agency and self-efficacy in their work.

Childs, A. (2013). The work of teacher educators: an english policy perspective. *Journal of Education for Teaching, 39(3)*, 314-328.

Abstract:

This paper focuses on the Conservative-Liberal coalition government's policy in teacher education in England and its implications for the work of teacher educators. It does this by considering, for example, policy documents and the speeches of key politicians responsible for policy formulation. It argues that policies influenced by the neoliberal and neoconservative policies of past governments from the late 1970s have been continued and even accelerated by the current coalition government, with the result of a much more significant and rapid shift to more school-based and school-led initial teacher education and continuing professional development. The implication of such a rapid shift of teacher education into schools is then discussed focusing on how this will both influence who the teacher educators are and the work they do in this rapidly changing policy environment.

Cohen-Vogel, L., Feng, L., & Osborne-Lampkin, L. (2013). Seniority provisions in collective bargaining agreements and the "teacher quality gap". *Educational Evaluation and Policy Analysis, 35(3)*, 324-343.

Abstract:

For at least two decades, studies have demonstrated that the least experienced and credentialed teachers are concentrated in poor, minority, and low-performing schools. Some blame provisions in collective bargaining agreements (CBAs) between teachers unions and school districts that favor senior teachers. Seniority preference rules, they say, exacerbate the “teacher quality gap” by allowing experienced teachers to transfer. Using data from Florida, the authors analyze whether and how CBAs influence the distribution of teacher quality within school districts, paying special attention to staffing rules that grant preferences to senior teachers. They find little evidence that the within-district variation in teacher quality between more and less disadvantaged schools in Florida is explained by the determinativeness of union contract rules.

Depaepe, F., Verschaffel, L., & Kelchtermans, G. (2013). Pedagogical content knowledge: A systematic review of the way in which the concept has pervaded mathematics educational research. *Teaching and Teacher Education, 34(0)*, 12-25.

Abstract:

Pedagogical content knowledge (PCK) was introduced by Shulman in 1986 and refers to the knowledge teachers use to translate particular subject matter to students, taking into account possible (mis)conceptions. PCK was – and still is – very influential in research on teaching and teacher education, mainly within the natural sciences. The present study aims at a systematic review of the way PCK was conceptualized and (empirically) studied in mathematics education research. Based on a systematic search in the databases Eric, PsycInfo and Web of Science 60 articles were reviewed. We identified different conceptualizations of PCK that in turn had a differential influence on the methods used in the study of PCK.

Desimone, L., Smith, T.M., & Phillips, J. R. (2013). Linking student achievement growth to professional development participation and changes in instruction: A longitudinal study of elementary students and teachers in title I schools. *Teachers College Record, 115(5)*.

Abstract:

Background/Context: Most reforms in elementary education rely on teacher learning and improved instruction to increase student learning. This study increases our understanding of which types of professional development effectively change teaching practice in ways that boost student achievement.

Purpose/Objective/Research Question/Focus of Study: Our three-year longitudinal analysis answers two main research questions: (1) To what extent do teachers’ topic coverage, emphasis on memorization and solving novel problems, and time spent on mathematics instruction, predict student mathematics achievement growth? (2) To what extent does teacher participation in content-focused professional development predict the aspects of instruction found in our first analysis to be related to increases in student mathematics achievement growth?

Population/Participants/Subjects: This study uses data collected by the U.S. Department of Education for the Longitudinal Evaluation of School Change and Performance (LESCP) in 1997, 1998, and 1999. The LESC drew its sample from 71 high-poverty schools in 18 school districts in 7 states. Our student-level analyses include 7,588 observations over three years of 4,803 students assigned to 457 teachers. Teacher-level analyses include the same 457 teachers in 71 schools over three years.

Research Design: This is a quasi-experimental longitudinal study. To answer our first research question, we employ a 4-level cross-classified growth model using MLwiN software, with time points nested within students, students cross-classified by teachers over the three years of the study, and teachers and students nested within schools. To answer our second question, we employ a series of hierarchical linear models (HLM) to test the relationship between instruction and professional development.

Conclusions/Recommendations: We found that (1) when teachers in third, fourth, and fifth grade focused more on advanced mathematics topics (defined as operations with fractions, distance problems, solving equations with one unknown, solving two equations with two unknowns, and statistics) and emphasized solving novel problems, student achievement grew more quickly; (2) when teachers focused more on basic topics (defined as measurement, rounding, multi-digit multiplication, and problem solving) and emphasized memorizing facts,

student achievement grew more slowly; and (3) when teachers participated in professional development that focused on math content or instructional strategies in mathematics (in Year 1), they were more likely to teach in ways associated with student achievement growth. Specifically, they were more likely to teach advanced topics and emphasize solving novel problems. Effect sizes ranged from 1% to 15% of a standard deviation.

Dudley, P. (2013). Teacher learning in lesson study: What interaction-level discourse analysis revealed about how teachers utilised imagination, tacit knowledge of teaching and fresh evidence of pupils learning, to develop practice knowledge and so enhance their pupils' learning. *Teaching and Teacher Education, 34(0)*, 107-121.

Abstract:

Teacher learning in Lesson Study: What interaction-level discourse analysis revealed about how teachers utilised imagination, tacit knowledge of teaching and fresh evidence of pupils learning, to develop practice knowledge and so enhance their pupils' learning.

Ellis, V., Glackin, M., Heighes, D., Norman, M., Nicol, S., Norris, K., . . . McNicholl, J. (2013). A difficult realisation: the proletarianisation of higher education-based teacher educators. *Journal of Education for Teaching, 39(3)*, 266-280.

Abstract:

Written collaboratively with research participants, this article reports the main findings of the Work of Teacher Education project that studied the labour of 13 higher education-based teacher educators in England and Scotland over the course of a year. The priority of maintaining relationships with schools (and between schools and student teachers) is noted and "relationship maintenance" is advanced as a defining characteristic of teacher educators' work. Policy changes and their impact on institutional structures and roles, variations in organisational arrangements and research activity are also discussed. The paper concludes by arguing that a new conceptualisation of the work of teacher educators as academic work is essential for the discipline and higher education institutions as a whole.

Foote, M.Q., Roth McDuffie, A., Turner, E.E., Aguirre, J.M., Bartell, T.G., & Drake, C. (2013). Orientations of prospective teachers toward students' family and community. *Teaching and Teacher Education, 35(0)*, 126-136.

Abstract:

Teacher educators need an awareness of orientations that prospective teachers (PSTs) hold about children's families and communities, so that they can support PSTs in developing positive perspectives and addressing deficit perspectives. Orientations expressed by 20 PSTs while in preK-8 mathematics methods courses are examined. Results from interviews indicate that PSTs recognize the importance of connecting with parents, understanding home and community practices, and building on these practices to support children's mathematical learning. They also, however, exhibit inconsistent perspectives, at times indicating a lack of understanding as to why some families appear to be less able to support students' academic efforts.

Garii, B., & Appova, A. (2013). Crossing the great divide: Teacher candidates, mathematics, and social justice. *Teaching and Teacher Education, 34(0)*, 198-213.

Abstract:

With social justice becoming a hallmark of educational practice, teachers are encouraged to weave social justice into teaching. We used curricular materials to help strengthen teacher-candidates abilities to incorporate social justice into mathematics while helping expand their understanding of social justice practices and mathematics teaching. Teacher-candidates were asked to present mathematics lessons that incorporated social justice. Findings reveal a lack of firm understanding of both mathematics and social justice practices that impedes their ability to incorporate social justice into mathematics curriculum. Suggestions for applied research about social justice in mathematics education is discussed.

Goldhaber, D.D., Goldschmidt, P., & Tseng, F. (2013). Teacher value-added at the high-school level: Different models, different answers? *Educational Evaluation and Policy Analysis*, 35(2), 220-236.

Abstract:

This article reports on findings based on analyses of a unique dataset collected by ACT that includes information on student achievement in a variety of subjects at the high-school level. The authors examine the relationship between teacher effect estimates derived from value-added model (VAM) specifications employing different student learning assumptions. Specifically, they compare teacher effectiveness estimates derived from a traditional lagged score VAM using pretests and posttests in a single subject area to those derived from VAM specifications employing a cross-subject student fixed-effects approach. The latter approach offers advantages for teacher evaluation systems due to significantly reduced data requirements; however, there is evidence that both the estimated effect size of teacher quality as well as estimates of individual teacher performance vary depending on the VAM methodology. In particular, teacher effects identified based on within-student cross-subject variation results in significantly smaller effect size estimates than do those generated from a more traditional lagged score model. The correlation across model specification ranges from .25 to .96 depending on the subject area.

Good, T.L., Wood, M.B., Sabers, D., Olson, A.M., Lavigne, A.L., Sun, H., & Kalinec-Craig, C. (2013). Strengthening grade 3-5 students' foundational knowledge of rational numbers. *Teachers College Record*, 115(7).

Abstract:

Background: American students have done poorly in algebra and that has generated policy concerns about preparing students for STEM careers. There has been growing recognition that the algebra problem may begin in earlier grades when students do not adequately master rational numbers.

Purpose: The study provided a series of workshops organized around problematic issues that students have in learning rational numbers. The research was designed to help all grade 3-5 teachers in a single school district help students gain in their knowledge of rational numbers.

Population: The population was drawn from one large school district (13 schools) and included 140 teachers and 2,845 students matched pre to post.

Research Design: The study used a quasi-experimental design. As all teachers in the district were involved, there was no control group.

Findings: On the basis of pre-post testing, girl and boy students, as well as students from diverse SES schools demonstrated large gains in their knowledge of rational numbers. There were no significant differences in gains for girls and boys at any of the three grade levels, but SES remained a main effect for gains in achievement for grades 3 and 4 even after entering prior achievement as a covariate and the interaction between SES and gender was significant for grade 5.

Recommendations: The findings provide clear evidence that students can make notable gains in learning rational numbers if they are given the opportunity to do so. The authors provide their intentions to further analyze the quantitative data (presented in this paper) with qualitative data that were collected in the study (e.g., providing open-ended response opportunities for students to respond to rational number questions like, "What is a fraction? What is a decimal? What is a percent?")

Haigh, M., Ell, F., & Mackisack, V. (2013). Judging teacher candidates' readiness to teach. *Teaching and Teacher Education*, 34(0), 1-11.

Abstract:

Making judgments about complex performances, such as teaching, is a sophisticated process. High stakes judgments, such as determining whether a prospective teacher is capable of teaching in ways that impact significantly on student outcomes, involve both conscious and unconscious processes. In this study, Social Judgment Theory was used to better understand judgments of 'readiness to teach'. To tap into the understandings and evidences used by teachers and faculty in making their decisions about prospective teachers, a task was developed

that explored the question: What aspects of a teacher candidate's practice are considered when judgments of his/her 'readiness to teach' are made?

Hamre, B.K., Pianta, R.C., Downer, J.T., DeCoster, J., Mashburn, A.J., Jones, S.M., . . . Hamagami, A. (2013). Teaching through interactions: Testing a developmental framework of teacher effectiveness in over 4,000 classrooms. *The Elementary School Journal*, 113(4), 461-487.

Abstract:

Validating frameworks for understanding classroom processes that contribute to student learning and development is important to advance the scientific study of teaching. This article presents one such framework, Teaching through Interactions, which posits that teacher-student interactions are a central driver for student learning and organizes teacher-student interactions into three major domains. Results provide evidence that across 4,341 preschool to elementary classrooms (1) teacher-student classroom interactions comprise distinct emotional, organizational, and instructional domains; (2) the three-domain latent structure is a better fit to observational data than alternative one- and two-domain models of teacher-student classroom interactions; and (3) the three-domain structure is the best-fitting model across multiple data sets.

Ibrahim, A.S. (2013). Approaches to supervision of student teachers in one UAE teacher education program. *Teaching and Teacher Education*, 34(0), 38-45.

Abstract:

This study investigated approaches to supervision of student teachers in one UAE teacher education program. Student teachers completed a researcher-developed supervisory inventory and responded to a questionnaire of closed- and open-ended questions. Cooperating teachers completed a questionnaire and university supervisors were interviewed. The study found that student teachers preferred the collaborative approach to supervision. The collaborative approach was used by cooperating teachers, but the directive approach was used by university supervisors. Moreover, unlike cooperating teachers, university supervisors had negative views about student teachers' levels of commitment and abstraction.

Kelcey, B., & Phelps, G. (2013). Considerations for designing group randomized trials of professional development with teacher knowledge outcomes. *Educational Evaluation and Policy Analysis*, 35(3), 370-390.

Abstract:

Despite recent shifts in research emphasizing the value of carefully designed experiments, the number of studies of teacher professional development with rigorous designs has lagged behind its student outcome counterparts. We outline a framework for the design of group randomized trials (GRTs) with teachers' knowledge as the outcome and consider mathematics and reading knowledge outcomes designed to assess the types of content problems that teachers encounter in practice. To estimate design parameters, we draw on a national sample of teachers for mathematics and a state Reading First sample to estimate for reading. Our results suggest that there is substantial clustering of teachers' knowledge within schools and professional development GRTs will likely need increased sample sizes to account for this clustering.

Kim, J.H. (2012). Teacher action research as bildung: An application of gadamer's philosophical hermeneutics to teacher professional development. *Journal of Curriculum Studies*, 45(3), 379-393.

Abstract:

Teacher action research seeks to bring together action, reflection, theory, and practice; and it is acknowledged as a way to value and honour teachers' practical knowledge. The purpose of this article is to conceptualize teacher action research as Bildung, applying Gadamer's philosophical hermeneutics as a theoretical framework. Based on five teachers' lived experiences of conducting action research in their classrooms, this study explores how teachers go through the process of the development of the self as a teacher, furthering themselves as professionals through action research. It aims at understanding the role of action research as Bildung, one's inner process of

formation and cultivation of self, to shed light on teacher professional development as a hermeneutical and ontological practice.

Löfström, E., & Poom-Valickis, K. (2013). Beliefs about teaching: persistent or malleable? A longitudinal study of prospective student teachers' beliefs. *Teaching and Teacher Education, 35(0)*, 104-113.

Abstract:

This longitudinal study focused on change in university students' beliefs about the role of teachers. The students ($n = 80$) were Estonian undergraduates, whose beliefs were investigated in the first and third years of their studies and followed up to the point at which the students either entered teacher education or chose other paths. Beliefs about teaching were neither unambiguously persistent nor malleable. Students who continued in teacher education exhibited stronger beliefs about the teacher as pedagogue and aligned less with the belief that the teacher's role is to be a subject matter expert than peers who did not choose teacher education.

McNicholl, J., & Blake, A. (2013). Transforming teacher education, an activity theory analysis. *Journal of Education for Teaching, 39(3)*, 281-300.

Abstract:

This paper explores the work of teacher education in England and Scotland. It seeks to locate this work within conflicting sociocultural views of professional practice and academic work. Drawing on an activity theory framework that integrates the analysis of these seemingly contradictory discourses with a study of teacher educators' practical activities, including the material artefacts that mediate the work, the paper offers a critical perspective on the social organisation of university-based teacher education. Informed by Engeström's activity theory's concept of transformation, the paper extends the discussion of contradictions in teacher education to consider the wider sociocultural relations of the work. The findings raise important questions about the way in which teacher education work within universities is organised and the division of labour between schools and universities.

Nuttall, J., Brennan, M., Zipin, L., Tuinamuana, K., & Cameron, L. (2013). Lost in production: The erasure of the teacher educator in Australian university job advertisements. *Journal of Education for Teaching, 39(3)*, 329-343.

Abstract:

This paper seeks to understand how persistent categories of written language in institutional texts support the cultural-historical production and re-production of teacher educators as kinds of academic workers in Australia. Fifty-seven job advertisements and allied materials produced by Australian universities were downloaded across a seven-month period. These texts were understood as key cultural artefacts not only for the recruitment process but in conveying what it means to be a teacher educator. A surprising finding was the almost complete absence of the "teacher educator" within these texts. Analysis revealed, instead, textual distinctions between the advertisements (shown to be preoccupied with the image and positioning of institutional priorities and the supporting materials) which were characterised by the language of Human Resources. Ambivalence around the work of research within teacher education was another notable feature, which is interpreted in relation to institutional anxieties about the Australian government's Education in Research for Australia initiative.

Oliver, K.L., & Oesterreich, H.A. (2012). Student-centred inquiry as curriculum as a model for field-based teacher education. *Journal of Curriculum Studies, 45(3)*, 394-417.

Abstract:

This research project focuses on teacher education in a field-based methods course. We were interested in understanding what could be when we worked with pre-service teachers in a high school physical education class to assist them in the process of learning to listen and respond to their students in ways that might better facilitate young people's interest, motivation and learning. To develop a theoretical understanding of what happened in this field-based methods course designed to promote listening and responding to students as a way to guide curriculum, we utilised grounded theory. In this paper, we describe a model, student-centred inquiry as

curriculum, which includes a cyclical process of building the foundation, planning, responding to students, listening to respond and analysing the responses. Student centred-inquiry as curriculum is a blending of action in the historical, localised and particular lived realities of students and teachers illuminated through inquiry with the simultaneous engagement of autobiographies, the negotiation of student voice and the social construction of content. We discuss this model as a possibility for transforming the status quo of teacher education and K-12 schools.

Paakkari, L., & Välimaa, R. (2013). Ethical issues in the teaching and learning of health topics in schools: The conceptions of teacher trainees. *Teaching and Teacher Education, 34(0)*, 66-76.

Abstract:

There has been little research on how teacher trainees can be educated to deal with ethical issues, or on trainees' conceptions of these issues. Using written essays, this study aimed to examine health education teacher trainees' ($N = 35$) conceptions of the ethical aspects involved in teaching and learning health topics. A qualitative content analysis revealed three broad themes: health education as an ethical subject, the teacher as an ethical professional, and spaces for learning. The results reflect the content areas focused on in health education teacher training, and provide new insights into topics that can be useful in developing teacher training.

Philip, T.M., Way, W., Garcia, A.D., Schuler-Brown, S., & Navarro, O. (2013). When educators attempt to make "community" a part of classroom learning: The dangers of (mis)appropriating students' communities into schools. *Teaching and Teacher Education, 34(0)*, 174-183.

Abstract:

In this article, we explore the ambiguous associations of the term "community" within one professional development (PD) program that engaged teachers in using mobile technologies to learn about data. We argue that multiple meanings of "community" are embedded in competing ideological discourses that reproduce and/or contest relationships of power that shape the educational experiences of students of color. We examine how the norms, representational artifacts, and tools in the PD we studied co-constructed various meanings of "community." Lastly, we explore the implications of our findings for PD facilitators by disambiguating other analyses that are often conflated with "community."

Pillen, M. T., Den Brok, P. J., & Beijaard, D. (2013). Profiles and change in beginning teachers' professional identity tensions. *Teaching and Teacher Education, 34(0)*, 86-97.

Abstract:

This study reports on profiles in beginning teachers' professional identity tensions regarding their changing role from student to teacher, their care for students and their orientations towards learning to teach. 373 teachers completed a questionnaire. Cluster analysis identified six profiles: teachers struggling with (views of) significant others, teachers with care-related tensions, teachers with responsibility-related tensions, moderately tense teachers, tension-free teachers, and troubled teachers. Data of 42 teachers who completed the questionnaire twice showed that tensions are subject to change, implying that tensions can be reduced, coped with or altered if support is provided by teacher educators or mentors in schools.

Prescott, A., Bausch, I., & Bruder, R. (2013). TELPS: A method for analysing mathematics pre-service teachers' pedagogical content knowledge. *Teaching and Teacher Education, 35(0)*, 43-50.

Abstract:

A pre-service teacher's Pedagogical Content Knowledge (PCK) and their personal constructs of teaching develop throughout their teacher education program. PCK integrates generic pedagogical knowledge, mathematical teaching methodology and knowledge of the discipline of mathematics and this paper reports on a survey that can be used to assess a pre-service teacher's PCK. TELPS (Teacher Education Lesson Plan Survey) was developed to determine the PCK of pre-service teachers during their teacher education program. TELPS is shown to analyse

pre-service teachers' PCK with some indication that the pre-service teacher's development of PCK can be observed.

Rinke, C.R. (2013). Teaching as exploration? The difficult road out of the classroom. *Teaching and Teacher Education, 34(0)*, 98-106.

Abstract:

This article examines the current notion of teaching as an exploratory career. Drawing upon longitudinal research in urban schools and using a theoretical framework grounded in teachers' lives and careers, this study captures the experiences of three former educators who chose to explore teaching and then leave. It highlights their backgrounds, entries into the classroom, experiences in schools, decisions to leave, and transitions out of teaching and into new fields. This research finds that the exploration of teaching comes with high financial, professional, and personal costs for the teachers themselves, along with the opportunity to contribute to society.

Rolando, L.G.R., Salvador, D.F., & Luz, M.R.M.P. (2013). The use of internet tools for teaching and learning by in-service biology teachers: A survey in brazil. *Teaching and Teacher Education, 34(0)*, 46-55.

Abstract:

The study investigated the profile of use of internet tools by in-service biology teachers in the State of Rio de Janeiro. We identified four purposes of use: Study, Didactic, Professional Management and Personal Socialization. The pedagogical use internet tools proved to be small. It was mostly focused to the search for information about biological contents for individual use and to the download of materials to distribute to the students. We discussed the importance of articulating policies and programs of teacher education through the development of activities to raise awareness about the pedagogical potential of collaborative internet tools among Brazilian teachers.

Rosaen, C.L., Carlisle, J.F., Mihocko, E., Melnick, A., & Johnson, J. (2013). Teachers learning from analysis of other teachers' reading lessons. *Teaching and Teacher Education, 35(0)*, 170-184.

Abstract:

This study explores teachers' responses to a video-based multimedia program designed to reflect current views of effective professional development for practicing teachers. The Case Studies of Reading Lessons program engages teachers in analysis of others' reading instruction. Findings showed teachers' enthusiasm for studying authentic reading instruction but suggest mixed views of the benefits of questions used to guide analysis of instruction. Teachers reported making connections to their own reading instruction and provided evidence that analysis of reading lessons may contribute to reflective practice. Future studies might investigate long-term effects of systematic analysis of case studies to develop adaptive expertise.

Seidel, T., Blomberg, G., & Renkl, A. (2013). Instructional strategies for using video in teacher education. *Teaching and Teacher Education, 34(0)*, 56-65.

Abstract:

Using video in teacher education can increase pre-service teachers' ability to apply knowledge. However, video is not effective in itself. To be useful, it must be embedded in appropriate instructional contexts. We investigated the differential impact of two university modules—one using video as an illustrative example (rule-example) and one using video as an anchor (example-rule)—on pre-service teachers' ($N = 56$) knowledge. The rule-example group scored higher on reproducing factual knowledge and evaluating videotaped classroom situations, whereas the example-rule group scored higher on lesson planning. The findings emphasize the need for their targeted use depending on specific learning goals.

Spencer, I. (2013). Doing the 'second shift': Gendered labour and the symbolic annihilation of teacher educators' work. *Journal of Education for Teaching, 39(3)*, 301-313.

Abstract:

Reflecting on the experience of being a participant in the Work of Teacher Education (WoTE) research, and drawing on conceptualisations of teacher education as domestic labour, I argue that teacher educators' closeness to classroom practice acts as a determining factor in their symbolic annihilation, a concept usually applied to study of the media that argues that the absence of representation, or underrepresentation, of some groups of people is a means of maintaining social inequality. Teacher educators' necessary closeness to practice affects promotion, academic outputs and recognition and constitutes a two-tier system that closely mirrors "blue collar/white collar" inequalities in wider society, underlining Bourdieu's characterisation of academics as the "dominated fraction of the dominant class". Reviewing data derived from my own practices as a teacher educator in relation, and doing so with reference to the larger WoTE data-set, I argue that the feminised connotations of teacher education work contributes to teacher educators' symbolic annihilation within the public discourse, which includes the wider education community.

Sun, M., Penuel, W.R., Frank, K.A., Gallagher, H.A., & Youngs, P. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis*, 35(3), 344-369.

Abstract:

This study examines how high-quality professional development can promote the diffusion of effective teaching strategies among teachers through collaboration. Drawing on longitudinal and sociometric data from a study of writing professional development in 39 schools, this study shows that teachers' participation in professional development is associated with providing more help to colleagues on instructional matters. Further, the influence of professional development on participants' instructional practice diffuses through the network of helping. These findings suggest that in addition to direct effects, spillover effects of professional development can occur through collegial interactions. Evidence presented in this study potentially helps educational leaders develop high-quality professional development programs and distribute professional development participants within schools to enhance all teachers' instructional practices.

Swinkels, M.F.J., Koopman, M., & Beijaard, D. (2013). Student teachers' development of learning-focused conceptions. *Teaching and Teacher Education*, 34(0), 26-37.

Abstract:

Student teachers' conceptions of learning and teaching influence the way they approach situations in teaching practice. To provoke a focus on student learning in student teachers during teacher education, new learning environments are needed. This study reports on results of a newly designed learning environment characterized by the use of authentic contexts, authentic tasks and reflective dialogues. Questionnaires, drawings, metaphors and learner reports were used to gain insight into the development of student teachers' conceptions and the influence of the learning environment on this. Results indicate that the learning environment contributed to more learning-focused conceptions of learning and teaching.

Taylor, M.W. (2012). Replacing the 'teacher-proof' curriculum with the 'curriculum-proof' teacher: Toward more effective interactions with mathematics textbooks. *Journal of Curriculum Studies*, 45(3), 295-321.

Abstract:

This research examines secondary mathematics teachers' use of textbook curriculum materials within "typical" cycles of planning and teaching in a school year. The curriculum use of four teachers from the western US was examined before and after engagement in a form of professional development focused on more purposeful and flexible curriculum use. A multiple case study approach was used in order to uncover and describe patterns of curriculum use over time in greater detail. Planning and teaching materials were collected, grouped, and coded for reflectivity of more effective adaptations. Overall, the number of textbook materials teachers used as-is dropped dramatically while the number of materials they adapted increased. This finding was true regardless of teaching experience, teaching context, textbook used, or content taught. Furthermore, the types of adaptations teachers made to their curricula were more deliberate and student-specific in the spring than they were in the beginning of the school year. This research

sits within the broader domain of understanding how mathematics teachers use curriculum and raises new questions about how, when, and why teachers make changes to textbook materials.

Thompson, J., Windschitl, M., & Braaten, M. (2013). Developing a theory of ambitious early-career teacher practice. *American Educational Research Journal*, 50(3), 574-615.

Abstract:

Current theories of novice teacher learning have not accounted for the varied influences of pedagogical training, subject matter knowledge, tools, identity, and institutional context(s) on the development of classroom practice. We examined how 26 beginning secondary science teachers developed instructional repertoires as they participated in two types of communities, one infused with discourses and tools supportive of ambitious teaching and another that reinforced traditional practices. We found three trajectories of practice—each with distinctive signatures for how novices engaged students intellectually. Differences were explained by: the communities with which teachers most closely identified, the degree to which teachers' discourses about student thinking were developed within these communities, and how teachers used tools from the communities to shape their practice.

van den Kieboom, L.A. (2013). Examining the mathematical knowledge for teaching involved in pre-service teachers' reflections. *Teaching and Teacher Education*, 35(0), 146-156.

Abstract:

This study examines the mathematical knowledge for teaching involved in 24 pre-service teachers' reflections on teaching the meaning of fractions to a small group of students in an elementary mathematics field experience. Excerpts from journals are used to describe the aspects of mathematical knowledge for teaching pre-service teachers include and emphasize in the content of their reflections. The article illuminates how mathematical knowledge for teaching assists pre-service teachers in analytically reflecting on multiple aspects of teaching and learning, thus making reflection more productive. Implications for teacher education are discussed.

Whitney, A.E., & Friedrich, L. (2013). Orientations for the teaching of writing: A legacy of the national writing project. *Teachers College Record*, 115(7).

Abstract:

Background/Context: Founded in 1974 by James Gray and a group of teacher colleagues who came together as the Bay Area Writing Project in California, the National Writing Project is a professional development network that has spread from one site to 197 university-based sites across the U.S. After such a long period of time in operation, it becomes possible to talk about the organization's legacy—not legacy as in something one leaves behind after death, for NWP surely has not died, but one's contribution, that which extends beyond its immediate tangible effects and resonates in a wider sphere.

Purpose/Objective/Research Question/Focus of Study: Focusing on the broader orientations (Friedrichsen, Van Driel, & Abell, 2011) developed within the NWP network rather than solely on the transmission of specific teaching strategies, we ask specifically, "How do teachers describe the influence of NWP on their teaching?"

Research Design: This qualitative study uses interview data from NWP teacher-consultants whose involvement in NWP began between 1974 and 1994.

Conclusions/Recommendations: The legacy of the National Writing Project for the teaching of writing is a set of orientations that guide teachers in making decisions about their work and learning about and from that work. First, they clarified or revised their sense of the purposes for writing, primarily as a tool for learning and for developing ideas. Second, participants used writing processes as an organizing idea by which to scaffold students' writing practices. Finally, participants linked their teaching of writing to their own experience as writers. These findings resonate with Friedrichsen, Van Driel, and Abell's (2011) sense of orientations in science teaching as a set of beliefs that influence practice along the dimensions of goals or purposes of writing, the nature of writing, and writing teaching and learning. If we conceptualize professional development not as merely discrete events that have a linear and concrete impact, but as a decades-long series of encounters with ideas and strategies, then orientations help the field

envision how individual teachers, as well as networks such as NWP, can bring coherence to a fragmented and changing landscape. We also offer this study's design and analysis as a possible approach for long-term influence of conceptually based interventions.

Yendol-Hoppey, D., Hoppey, D., Morewood, A., Hayes, S.B., & Graham, M.S. (2013). Micropolitical and identity challenges influencing new faculty participation in teacher education reform: When will we learn? *Teachers College Record, 115*(7).

Abstract:

Background/Context: Teacher education faculty face increasing pressure to simultaneously strengthen and reform teacher education programs while maintaining research productivity. The demands placed on teacher education programs to increase relevancy by strengthening clinical components of teacher preparation has once again reached the fore. The energy for this reform often rests on the shoulders of tenure-earning faculty who have developed as Engaged Scholars during their doctoral preparation and wish to continue this work as they enter the professoriate.

Purpose/Objective/Research Question/Focus of Study: This article investigates and describes the experiences of new, tenure-earning faculty who sought working conditions that would support their involvement in reform oriented, clinically rich teacher education, and Engaged Scholarship.

Population/Participants/Subjects: This is a qualitative study with seven participants who worked as assistant professors across four different research-intensive state universities. Each university has a history of involvement in either the Holmes Partnership or the National Network for Educational Renewal, organizations that target integrating faculty members into partnership schools making this a part of their teacher education work.

Research Design: This qualitative self-study, guided by a constructivist epistemology (Crotty, 1998, 2005), seeks to understand tenure-earning faculties' experiences as they enter the professoriate. This study makes use of interpretivism (Crotty, 1998) as a theoretical perspective.

Data Collection and Analysis: This research uses focus group transcripts as the primary data source. Additional data sources include program artifacts such as meeting agendas and minutes, blog entries, and field notes that were used during the four taped focus groups to generate discussion related to research questions.

Findings/Results: The study describes six challenges faced by new faculty who assume leadership in clinically rich teacher education reform, and identifies faculty identity and micro-political concerns as central to navigating challenges. These challenges include: (a) complications associated with negotiating workload, (b) entrée to schools, (c) negotiating roles, (d) negotiating Internal Review Boards and school district research policies, (e) influencing promotion and tenure policies, and (f) facilitating pockets of program renewal and innovation.

Conclusions/Recommendations: This study suggests that while doctoral programs are now preparing new faculty who embrace clinically rich teacher preparation, they do not receive adequate support as they enter academia. Discussed are three assertions that must be resolved by university, college, and department leadership, as well as tenured colleagues, to support new faculty involvement in developing clinically rich teacher education reform.

Zendler, A., & Hubwieser, P. (2013). The influence of (research-based) teacher training programs on evaluations of central computer science concepts. *Teaching and Teacher Education, 34*(0), 130-142.

Abstract:

Computer science education is acknowledged to play an important role in schools. The development of a curriculum needs to be informed by knowledge of concepts that are central to the discipline of computer science. Taking a cross-contextual approach, this study compares the combinations of content and process concepts identified as important in the context of professors (university educators) with those considered relevant in the context of teachers (high schools educators). The results can inform the evaluation of pre- and in-service training programs for computer science teachers and the evolution of computer science curricula for computer science teacher educators.

Summary:

Brantlinger, A. & Smith, B. (2013). Alternative teacher certification and the new professionalism: The pre-service preparation of mathematics teachers in the City teaching fellows program. *Teachers College Record*, 115(7).

Summary prepared by Hyman Bass

Alternative Teacher Certification Programs (ATCPs), providing fast-track entry into paid teaching, are a subject of substantial debate. Among the critics, Zeichner associates them with “*a new professionalism*, which views teaching as a technical undertaking and teachers as easily replaceable implementers of others’ prescriptive ideas.”

Noting, as does a 2010 NRC report, that little is known about the curriculum and goals of these programs, Brantlinger and Smith, in part to test Zeichner’s critique, have conducted a study of the preparation of mathematics teachers in the New York City Teaching Fellows (NYCTF) Program, this being one of the first, largest, and most widely emulated of the ATCPs. Specifically, they focused on the approximately 300 mathematics NYCTF candidates who entered the program in the summer of 2007. Their data came from two sources: 1. Nine (eventually 8) of the candidates, who provided daily logs, end-of-day audio reflections, curricular artifacts they were able to collect, and (program) exit interviews; and 2. A pre-program survey of demographic data, and a post-program survey about the focus of the pre-service course work, collected from 90% of the 300-member cohort.

The policy context and structure of the NYCTF pre-service program

NYS: Prospective teachers who already possess an undergraduate degree with a non-education major can be certified after completing a 200-clock-hour pre-service component of an approved ATCP, including at least 40 hours of clinical fieldwork.

NYC: Training should address basic skills in instructional design and delivery and classroom management. Teachers should be equipped to assess the level of their students’ learning and to employ basic strategies for creating instructional plans for student needs. The content of training should be relevant and specific to New York City schools by utilizing instructional materials and strategies typically used in the schools. While theory and foundations may be introduced in the pre-service [component], this should only be done in a manner directly linked to practical preparation. The university program should complement the summer field experience, content workshops, and Student Achievement Framework sessions.

NYCTF: The required 200 hours of pre-employment (summer) preparation was divided into four components:

- a) 34 hours of Student Achievement Framework (SAF) Advisory;
- b) 26 hours of Friday Content Workshops or Seminars including a 6-hour program orientation;
- c) 60 hours of clinical practice; and
- d) 80 hours of university coursework.

For (a), (b), and (c), NYCTF partnered with The New Teacher Project (TNTP), and for (d) with four metro New York universities, designated as A, B, C, and D, two of them public (B and D) and two private (A and C). The faculty at the university sites controlled the last component (d) 80 hours of university coursework. Candidates were assigned to one of the four universities.

Universities were allowed to recommend alternative certification if a candidate completed the summer program and passed two New York State Teacher Examinations, the Liberal Arts and Science Test and the Content Specialty Test for mathematics, even if (s)he lacked the 30 required hours of college level coursework in mathematics and cognate areas. Many candidates reported that they would have preferred to teach a discipline other than mathematics, but were drawn by high need incentives.

Theoretical Framework

Brantlinger and Smith draw on four traditions of teacher education (TE) in the U. S. in the 20th century proposed by Liston and Zeichner (1991) and Zeichner (1993):

- **Academic:** Emphasizes academic subject matter expertise.
- **Social Efficiency:** Features an industrial model of “scientific management.” Pre-service teachers learn a basic repertoire of “proven” skills and techniques and managerial routines (through micro teaching, role-playing, etc.), before entering classrooms. Practicality is emphasized.
- **Developmental Tradition:** This tradition is centered on the cognitive, emotional, moral, and physical development of students. Teachers facilitate students’ natural trajectory for learning. This is linked to progressive approaches (Montessori, Dewey), constructivism (Bruner, and others), and is informed by psychological theories of Piaget, Vygotsky, Gardner.
- **Social Reconstructionist:** Teachers are social activists working towards social and economic justice who teach students to think critically about society and its major institutions. (Counts 1932, Freire 1971, Ladson-Billings 1999).

The developmental tradition and social reconstructionist traditions include a multicultural focus. The “new professionalism” of which Zeichner speaks is represented by the social efficiency tradition.

Research Questions

The authors pose the following two questions:

RQ1. What was the nature of 2007 NYCTF pre-service preparation for prospective mathematics teachers?

RQ2. How closely did this preparation align with the four traditions of teacher education (e.g., social efficiency) and the expectations of the new professionalism?

Open coding of the data led to the following categories: (a) mathematics content; (b) classroom management and organization; (c) developmental psychology and educational foundations (e.g., philosophy of education); (d) social reconstructionism; (e) multicultural content; (f) instructional design, delivery, and assessment; (g) New York City school context, including reference to state regulations and salary schedules; (h) reflection on clinical experiences or self-reflection; (i) other (e.g., paperwork) or unclear. One code was selected for each half hour of coursework data. These categories are related to, but not aligned with the four traditions.

Results

The results, which describe the coursework provided by the university partners, the pre-service curriculum provided by NYCTF, and the clinical fieldwork and mathematics immersion components, advance the following two main theses: “that the components controlled by NYCTF and one university partner focused on the development of technical competencies and generally aligned with the social efficiency tradition and the expectations of the new professionalism.... Whereas... the components controlled by the other university partners did not; and.... [second]

that the development of subject-general, rather than mathematics-specific, competencies were prioritized in NYCTF's initial preparation."

In particular:

University Coursework at the four metro New York universities were found to be as follows:

- A. The curriculum was unadulterated *social efficiency*, focusing heavily on technical approaches to classroom management and instructional design.
- B. The curriculum was a more restrained version of *social efficiency* punctuated by a range of theoretical, social, and mathematics-specific considerations.
- C. The curriculum had a clear *developmental* thrust, inclusive of its treatment of lesson planning, and all but ignored social efficiency techniques.
- D. The curriculum had an *academic* and multicultural focus that drew as much on *social reconstructionism* as it did on *social efficiency*. While University D included a geometry course, none of the university curricula included a systematic and sustained consideration of mathematics-specific instruction.

NYCTF Pre-service Curriculum

Technical in orientation, subject-general (rather than specific) consistent with the social efficiency tradition. (B&S) The Teaching for Student Achievement Guidebook, developed by TNP with TFA is said to offer a "solid base for excellent teaching," and practical tools for immediate classroom use: High impact teaching strategies ("HITS"). "You should not think of these strategies as optional methods with which you might dabble periodically. You have no choice but to wholeheartedly embrace these strategies – those with a proven record of affecting student achievement."

For the next two components, the study did little analysis:

1. Clinical Fieldwork. The authors found clinical fieldwork to be highly variable experiences, and reported that these occurred in summer remedial classes. Many candidates found this the most valuable part of the program, and wished it were longer. Its brevity is consistent with the academic tradition.
2. Mathematics Immersion (40 hour course), which was offered for those needing more math credits, in fact more than five in six of the NYCTF.

Discussion

The authors distill their results as follows: "our results generally are consistent with the claim that such early-entry ATCPs as NYCTF promote the new professionalism by preparing "good enough" teachers for high needs urban schools, eroding teacher autonomy and diluting "theoretical" considerations like multicultural education in teacher preparation."

Further, they argue that none of the components of the NYCTF's initial preparation featured a full-blown teaching methods course that might develop mathematics-specific instructional competencies or the content knowledge necessary for teaching.

The initial preparation of NYCTF mathematics teachers was realized quite differently at four university partner sites. Only one site (A) fit the social efficiency tradition. Many candidates at other sites complained that the university coursework was overly theoretical and impractical, and had concerns about their lack of mathematics-specific understandings and strategies they could draw upon in their first year of teaching.

In subsequent years NYCTF chose only university partner – A. And the NYS Board of Regents allowed TNP and TRA to prepare NYC teachers without a university partner.

Questions for the Journal Club Participants

Consider the University of Michigan Teacher Education Program.

Q1. Where would you (or others) place the U-M Teacher Education program among Liston & Zeichner's four traditions?

Q2. Suppose that an outside researcher wanted to understand the curriculum and orientation of our TE program by the following method:

1. Choose eight of our entering students, representing different program components and demographics.
2. Have them keep daily logs in their program work.
3. Audio tape 10 minutes of reflection at the end of each work day.
4. Gather whatever artifacts of the program (guides, syllabi, handouts, etc.) that they can.
5. Conduct a survey of the entire graduating class about their views of the program.

Q3. Based on analysis of these data what confidence would you place in the resulting portrait of our program?

Summary:

Desimone, L., Smith, T.M., & Phillips, J. R. (2013). Linking student achievement growth to professional development participation and changes in instruction: A longitudinal study of elementary students and teachers in title I schools. *Teachers College Record*, 115(5).

Summary prepared by Hyman Bass

Desimone, Smith, and Phillips write: "Our analysis provides a rare look at change over time in teaching and student achievement."

They identified the following features of professional development (PD) and instruction:

1. Effective PD (Eff PD): Focus on content (perhaps the most influential feature), active and collective learning, coherence, and duration (time spent).
2. Student Gains (Stud Gains): Gains in student achievement.
3. Conceptual Instruction (Conc Inst): Advanced topics, solving novel problems, aims for understanding and transfer.
4. Procedural Instruction (Proc Inst): Basic topics and procedures, memorization, aims for factual knowledge and skills.

Both kinds of instruction (conceptual and procedural) are valuable (U.S. National Math Panel) but procedural instruction is the dominant mode of U.S. math instruction, particularly for low-achieving students.

The authors ask two key questions:

RQ1. "To what extent do teachers' topic coverage, emphasis on memorization and solving novel problems, and time spent on mathematics instruction, predict student mathematics achievement growth?"

Which of (Conc Inst) and (Proc Inst) produces greater (Stud Gains)?

RQ2. "To what extent does teacher participation in content-focused professional development predict the aspects of instruction found in our first analysis to be related to increases in student mathematics achievement growth?"

To what extent does (Eff PD) lead to (Conc Inst)?

Methods

A carefully designed quasi-experimental study. Data were drawn from the U.S. Department of Education large-scale Longitudinal Evaluation of School Change and Performance (1997-9), grades 3-5.

Detailing the data, the authors write: "Our sample includes all students in each year who were linked to valid math achievement tests scores, and all teachers who specified that they taught mathematics in each year and also reported teaching grades three to five. Student achievement tests and teacher surveys were administered in the spring of each year. Our student-level analyses include 7,588 observations over three years of 4,803 students assigned to 457 teachers. Teacher-level analyses include the same 457 teachers in 71 schools over three years."

They used rather coarse measures of instruction, but sufficient to distinguish conceptual instruction (Conc Inst) from procedural instruction (Proc Inst). They accounted for time spent in each of three types of PD: math focused; reading focused; and other (such as working with

parents, use of assessments, working with special needs students).

The analysis uses a complex multi-level design.

Results:

RQ1: (Conc Inst) produces greater (Stud Gains) than (Proc Inst).

Effect sizes:

Novel problems -> increase at most 1% of a SD

Advanced topics -> 15% > average gains

Basic topics -> 15% below average gains

RQ2: (Eff PD) in year 1 tends to produce higher levels of (Conc Inst).

Effect sizes:

Effect of Content-focused PD on advanced topics in instruction was 11% of a SD

Effect of novel problems in PD on instruction was slight.

To summarize, the authors write:

"Our data analysis supported our main hypotheses in that (1) when teachers in third, fourth, and fifth grade focused more on advanced mathematics topics (defined as operations with fractions, distance problems, solving equations with one unknown, solving two equations with two unknowns, and statistics) and emphasized solving novel problems, student achievement grew more quickly; (2) when teachers focused more on basic topics (defined as measurement, rounding, multi-digit multiplications, and problem solving) and emphasized memorizing facts, student achievement grew more solely; and (3) when teachers participated in professional development that focused on math content or instructional strategies in mathematics (in Year 1), they were more likely to teach in ways associated with student achievement growth—specifically, they were more likely to teach advanced topics and emphasize solving novel problems."

Conclusion: Consistent with earlier studies, content-focused professional development holds the most promise for fostering teaching practice that boosts student achievement