ICSEI data use network symposium:
The use of data by stakeholders throughout the educational system: From schools, to professional learning communities, to teachers and parents

Chair: Kim Schildkamp, University of Twente
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Introductory abstract
This symposium focuses on the use of data by different stakeholders in the educational system. The first paper (England) focuses on the use of data at the school level, and discusses the results of a project focused on the use of peer review results. The second paper (New Zealand) focuses on the use of achievement data at the level of professional learning communities in schools. In the third paper (The Netherlands) we move to the individual teacher level and focus on the use of observation data by teachers to improve the quality of instruction in the classroom. In the fourth paper (USA), another important stakeholder and data user in education is scrutinized: parents. This symposium aligns with the conference strand ‘Measuring and Evaluating School Change’. This symposium will point to new directions in empirical research that propel scholarship to effectively measure and evaluate school change at different levels of the system to foster practical translations in specific school contexts. The four papers will be presented, after which our discussant will reflect on the papers. At the end, there will be time for questions from and a discussion with the audience.

Paper 1: Research-informed peer review: school to school professional collaboration to improve education in London primary schools

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Schools in England have long since been urged to engage in cycles of self-evaluation, and the importance of this process has increased in successive revisions to the English inspectorate (Ofsted) frameworks for the conduct of inspection, starting in the late 1990s (e.g. MacBeath, McGlynn et al. 2003). There is also complementarity between successful self-evaluation and schools that pursue research and enquiry (e.g. MacBeath 2008). Encouraging engagement with school self-evaluation driven by engagement with the research, can lead to a more rigorous focus on the pedagogical practices that are likely to lead to improved outcomes for students (Mincu 2013). Peer review is a good way to empower schools to define issues in ways that are deemed most relevant to their own context, a hallmark of the self-improving system (Hargreaves 2010). They can also provide the professional challenge needed to improve through collaboration (Matthews and Headon 2015).

Peer review models are now commonplace in the English education system. The government has also strongly encouraged schools to make improvements based on a closer engagement with high quality academic research about what works. However, the tendency for self-evaluations to be based on the Ofsted framework can cause school leaders to narrow their field
of enquiry and to merely ‘self-inspect’ (Ferguson, Earley et al. 2000). Thus many peer review models have been informally named ‘mocksteds’ – i.e. preparation for Ofsted.

Research-informed Peer Review (RiPR) is a new model of school-to-school peer review being developed at the London Centre for Leadership in Learning. RiPR is a model of collaboration which encourages greater rigor of professional learning by: sharing a key learning theme; starting with published evidence; employing a review methodology based on implementation science; practitioners and evaluators co-designing data collection tools; using a clear evaluation methodology; and facilitation by staff at UCL Institute of Education. The process has been developed by adopting the approaches of leading scholars in the field of theory-engaged evaluation, Viviane Robinson and Helen Timperley, and implementation – Shirley Hord and Gene Hall. This presentation will show the results of an evaluation of a pilot with six primary schools in London after one year of collaboration and will extract the contribution of each of its key elements to its success and invites ideas for next steps and collaboration with other stakeholders.

**Paper 2: The relationship between pedagogical content knowledge and reading achievement**

Mei Lai, Stuart McNaughton and Tong Zhu, University of Auckland, New Zealand

**Objectives**
This paper analyzes the relationship between pedagogical content knowledge generated collectively (CPCK) in a professional learning community (PLC), and student achievement. The focus is on PLCs where data are discussed to improve achievement.

**Perspective(s)**
PCK is the knowledge of a subject matter and how to teach it. In a PLC, PCK is collective in nature, as knowledge is shared and distributed across the PLC (Wenger, 1998). In discussions aimed at analysing data to improve student learning, collective knowledge building occurs when participants become more specific about the instructional practices that will address an achievement problem e.g., describe more details about the practice and under what conditions it is best implemented. Empirical studies suggest that increased PCK specificity is linked to improved achievement (e.g., Lai, Wilson, McNaughton & Hsiao, 2014)

**Methods and data**
Two groups of schools (n=8 schools) participated. One meeting per school was observed. Achievement data (STAR assessment) were collected from 573 students in three year-level cohorts at two time points (start of two consecutive academic years). STAR is a nationally normed standardised reading assessment (Elley, 2001). The test-retest reliability r is 0.91. To control for age-specific variations over time, STAR was analysed as norm-adjusted scale scores by subtracting the national norms (of each year level at each time of administration) from student scale scores.
The unit of analysis for the PLC meetings was a turn, which was each time a person spoke. PCK-related turns were scored from 1-3. A higher score indicated that more specific instructional practices were discussed to solve an achievement problem. Non-CPCK turns were analyzed thematically into Data Trend (discussing patterns in the data) and Other. Inter-rater reliability was 86%. PCK scores were aggregated to form a CPCK score for each PLC.

Hierarchical Linear Modelling (HLM). ANOVAs showed that CPCK and Data Trend, when analysed as the total percentage of turns per meeting, was significant for modelling. Three three-level models (Student: gender, cohort, initial achievement; School; Group: A, B) were built. Models only varied at the school level (Model 1: CPCK, Model 2: Data trend, Model 3: CPCK+ data trend). Akaike information criterion (AIC), the Bayesian information criterion (BIC), and comparison of the log likelihood were used as the model selection criteria.

**Results**
A one-way analysis of covariance (ANCOVA) with random effects model with cohort (p-value < 0.001), gender (p-value = 0.07), and initial achievement (p-value < 0.001) at student level, and total CPCK and total Data Trend (p-value = 0.05) at school level was the best-fitted model. On average, a 10% increase in total CPCK and Data Trend increased achievement by 1.9 units (STAR reading scale scores) i.e., one fifth and one sixth of expected gains in one year.

**Significance**
This study is one of the few that has statistically model CPCK measured via observations with achievement. It extends current models of analyzing data (Gummer & Mandinach, 2015), by demonstrating that neither knowledge nor discussing data alone is related to achievement, rather the combination of both is critical.

**Paper 3: Effects of coaching of teachers in their zone of proximal development**

Wim van de Grift (Rijksuniversiteit Groningen) & Thoni Houtveen (Hogeschool Utrecht), The Netherlands

**Summary**
Specially trained observers with an observation-instrument that fulfils the assumptions of the Rasch model have observed the teaching skill of about 400 teachers in Dutch primary education. Based on these observations, the teachers received feedback about the zone of proximal development of their teaching behaviour. On year later, these teachers scored on about a standard deviation higher on their teaching skill.

**Objective**
The aim is to explore the effect of a feedback method that focuses on behaviour that teachers are not showing net, but they believed it could quickly own.
**Theoretical framework**
Little research has been conducted into the effects of feedback on the skill level of teachers. Houtveen (1990) examined the effects of counselling on teacher behaviour. Thurlings (2012) studied the mutual feedback from teachers. Van den Hurk, Houtveen & Van de Grift (2016) found among teachers who received feedback on their lessons, a skill growth, depending on the observed aspect, in effect size ranging from 29 to 76% of a standard deviation. The present study is focused on growing the skills of teachers under the influence of specific feedback that focuses on skills that they have not just shown during a lesson observation of their teaching.

**Research method**
About 400 teachers from primary schools were observed twice by specially trained observers in half a year with the ICALT-observation-scale that meets the requirements of the Rasch model (Van de Grift, Helms-Lorenz, & Maulana, 2014; Van der Lans, Van de Grift, & Van Veen, 2017). Following the first observation, the teachers got feedback on their zone of proximal development and agreements were made about next steps in their professional development. The second observation was intended to determine the growth in their skills.

**Results and conclusions**
At the first measurement, teachers scored an average of 1.62 on the ICALT-scale (range from -7 to 5). A year after the feedback, the teachers were on average 3.32 to score on the ICALT scale. That was a significant (.000) growth of about a standard deviation.

**Educational importance**
That coaching and giving feedback to teacher’s securities yields to their professional development is sure to teacher educators and school counsellors well known. Important questions, however: With which approach is the most growth achieved in skills and which approach is most efficient? The scientific significance of this study is located in the use of Rasch model upon observation of teachers. This approach allows us to diagnose the skill level of teachers and thereby provide highly targeted coaching.

**Paper 4: Educational Decision Making by Parents: Why Information is Important and the Technologies to Support the Decisions**

Ellen B. Mandinach, WestEd, Edith S. Gummer, Arizona State University, Ryan C. Miskell, WestEd

The field of data-driven decision making in education has focused almost exclusively on how educators use data and the supports needed to enable such use. Data use among diverse stakeholder groups is now being introduced. In the United States, the new education legislation, the Every Student Succeeds Act (ESSA) requires parental engagement. It also requires that state and local education agencies collect diverse data beyond student performance, including non-cognitive measures. The intent of ESSA is to provide educational data to diverse stakeholder groups, including parents, beyond simply having educators access
and use data to inform their practice. The proposed paper will report on a study that investigated two aspects of parental educational decision making. First, it examined what information parents seek when making decisions about their child’s education. Second, it examined the kinds of technological applications and systems parents prefer when accessing educational data.

Focus groups were conducted with diverse focus groups of 118 parents in one US state using a semi-structure interview protocol to yield information on the two research foci. Results indicated that although most parents seek quantitative indices of school and district quality (e.g., graduation rate, standardized test scores, dropout rate, school grade), many parents seek what might be considered descriptive, qualitative information about the educators, school curricula, extracurricular activities, and school and district services. One might even say that they preferred impressionist information. Desired information differed dependent on the age of the children being served. Parents with young children were concerned with school safety and supportiveness. Parents with middle school children showed increasing interest in enrichment activities. Parents with high school children desired information about college and career readiness and International Baccalaureate programs. Parents were asked about how they reconcile conflicting information. In almost all cases, parents placed more emphasis on the impressionist information than on the quantitative indices. This finding has major implications for the design of data systems that can provide such information. Another finding was that different parents will interpret the same data points in different ways, reflecting their value systems.

Educational data systems have a long history and have been designed with educator use in mind. Although some district data systems have parent portals, only recently have systems been designed with the intent of providing information to the general public. Findings from the study indicate that parents have distinct preferences about the design characteristics of such systems. They must be easily accessed and readily understandable. They need to have the capability to provide translations, definitions of education terms, and frequently asked questions. Other characteristics will be discussed.

Education agencies and data providers at the state or local levels need to consider how best to present diverse sources of information that will best meet the needs of stakeholder groups such as parents. This is especially relevant given that not all parents are familiar with data displays. In particular, parents seek more descriptive data that are likely to be more locally relevant and may be represented on school or district websites and data systems.

References


