The 2017 AERA theme is Knowledge to Action: Achieving the Promise of Equal Educational Opportunity. How does your scholarship align with the 2017 AERA meeting theme?

High performing education systems are characterized by the combination of quality and equity. In fact, equity and quality can be considered as two sides of the same coin (Kyriakides & Creemers, 2011). My research focusses on the use of different types of data (e.g., assessment results, surveys, classroom observations) in schools in the context of promoting the quality of education, which should also promote equal educational opportunity.

I started my work in the field of data use during my PhD. After my PhD I continued to study data use in education, also encouraged and supported by my friend and mentor, Lorna Earl. My work shows that schools need support in translating data into information, into knowledge, and into concrete improvement actions. Inspired by the work of Lorna Earl, Steven Katz and the data wise work from Harvard (Boudett & Murnane, 2015), I developed the first version of a data team intervention to support schools in the use of data. This intervention was tested and refined over the years, together with researchers, Cindy Poortman and Adam Handelzalts, with data team coaches Hanadie Leusink, Marije Meerdink, and Maaike Smit, with PhD students Johanna Ebbeler, Mireille Hubers, and Wilma Kippers, and together with schools. The data team intervention follows all the important steps in the process of data use, as also identified by other scholars in the field (e.g., Coburn & Turner, 2011; Mandinach, Honey, Light, & Brunner, 2008; Marsh, 2012). Data teams consist of school leaders and teachers (6-8 people) who collaboratively use data to improve education.

The data team intervention...
starts with a purpose in the form of a problem definition and a related goal. Next, the team formulates hypotheses concerning possible causes of the problem, and they collect data to investigate these hypotheses. However, data as such have no meaning. These data have to be checked (e.g., are the data valid and reliable and, if not, additional data need to be collected), analyzed, and interpreted to become information. Combined with the understanding and expertise of the data team members, this information can become knowledge. When the information shows that the hypothesis is incorrect, the team goes back to formulating new hypotheses; when the information shows that the hypothesis is correct, the team can take improvement action based on the data. Finally, the team needs to evaluate, and thus collect new data, to check if the improvement actions have lead to the desired outcomes and goal (Schildkamp & Poortman, 2015).

Our work and that of others in the field shows that if schools are supported in the use of data, the use of data can lead to school-, and teacher development, student learning, and increased student achievement (e.g., Lai, Wilson, McNaughton, and Hsiao 2014; Poortman & Schildkamp, 2016; Van Geel, Keuning, Visscher, & Fox, 2016; Schildkamp & Poortman, 2015).

What complicates things is that although teachers sometimes face challenges with collecting data and transforming these data into information and knowledge, the biggest challenge seems to be transforming knowledge into action. Data can never tell you exactly what to do. It may inform you that students have problems with certain types of knowledge and skills, but the data will not tell you whether you have to re-teach, change your instruction, use different materials, group students differently etc. This is where it the expertise, experience, and (pedagogical content) knowledge of teachers plays a crucial role. Data combined with teachers’ expertise, experience, and knowledge can lead to improved education.

Given your work on data-based curriculum reform and on data-informed professional development, what do you see to be some important contributions of this work to the field of educational change?

Educational change for improvement should involve the use of data. Many problems that schools face these days do not have obvious solutions. However, while acting quickly may feel efficient, acting without data is often not effective. We have seen examples of schools buying expensive new curriculum materials to improve student achievement in a certain subject area, whereas the cause of low student achievement was a lack of high quality instruction in the classroom. These types of improvement actions cost time and money and will not improve student achievement. We therefore assert that, it is worth using data, which can determine the causes of a problem, before taking improvement actions.

Moreover, our work shows that it is important to use different types of data and evidence. Firstly, it is important to use formal data, that is, information that is systematically collected, analyzed, and
interpreted. These may include assessment results, surveys, and structured classroom observations. Together with colleagues Cindy Poortman and Rilana Prenger, and (former) PhD students Johanna Ebbeler, Mireille Hubers, Wilma Kippers, Erik Bolhuis, and Gert Gelderblom, we are investigating how to support schools in data-based decision making. For example, the data team intervention that we developed has two goals: professional development and school improvement. The results of our studies show that this intervention is successful when it comes to professional development. For example, we found a significant effect on data literacy among school personnel. Moreover, we found that data teams are able to solve context-specific problems in their school. For example, we found a significant effect on student achievement. However, our results also show that it is challenging to continually engage with data use and school improvement. Therefore, in one of our current projects, together with our PhD student, Anne Tappel, we are focusing on the sustainability of data use in schools.

Secondly, it is also important to use what we call informal data in schools: Information that is not systematically collected. The use of this type of information is often referred to as Assessment for learning. This is something that teachers and students do every day. They collect data from interactions, classroom discussions, and unstructured observations, and translate these data into information to use in ways that enhance learning. Together with two of our PhD students, Wilma Kippers and Christel Wolterinck, we are studying how we can support teachers in the use of formal and informal data.

Another type of evidence that is important to use in education is research evidence. Together with my colleagues Chris Brown and Mireille Hubers, we are working on a proposal in which we suggest that it is important that decisions in education are based on a combination of formal data, informal data and research-based evidence. Such a combination is likely to lead to equitable, effective, and efficient decisions, which take into account the local context of schools, and are steeped in practices that have been shown to be effective elsewhere.

Given your focus on international perspectives and practices in data use for educational reform, what would be some major lessons we can learn from educational changes in your local context and from those taking place in the global context?

I have been involved in several international projects, and have had the privilege to work with scholars from different countries including USA, Belgium, England, Germany, Poland, Lithuania, New Zealand, South Africa, and Canada. Moreover, together with students from our Educational Science and Technology Master program at the University of Twente, we have been able to conduct studies into the use of data in developing countries, such as Kenia, Tanzania, Ethiopia, Indonesia, and the Philippines. I have learned valuable lessons from all these different studies. A perhaps simple but important lesson is that schooling
can only happen if some basic conditions are fulfilled. For example, in one of our studies conducted in a developing country, we discovered that several students were not going to school because they had to work to be able to support their family. In another study, we found that students were coming to school hungry. These are some very basic human rights that we need to address first.

Moreover, what we also found is that independent of context, similar factors such as leadership, knowledge and skills of teachers seem to be important when it comes to the use of data use in schools. We also found out that the way these factors influence the use of data in schools can play out differently in different countries. For example in the Netherlands, schools are accountable to the Inspectorate, and this influences the types of problems data teams chose to investigate. These problems mostly pertained to achievement problems, as this is one of the main aspects that the inspectorate holds schools accountable for. In Sweden, on the other hand, schools are accountable to the inspectorate, but also to the municipality. Swedish municipalities also stress the importance of goals in the social domain, such as safety and well-being, and this is reflected in the problems the data teams chose to investigate (Schildkamp, Smit, & Blossing, 2015).

Context-dependent differences aside, what has become clear from our work is that teachers, independent of the part of the world they teach in, need professional development in the use of data. From a systematic comparison of two data-use professional-development interventions—one from New Zealand and one from the Netherlands—we have learned that successful professional developments seem to have seven features in common:

1. a shared and urgent focus on addressing student learning;
2. teacher ownership of the student learning problem and its solution;
3. teachers’ beliefs about the relevance of the data being used for decision-making;
4. structures and protocols that provide a scaffold for teachers to develop their knowledge and skills in data use;
5. teachers’ development as adaptive experts to use data (e.g., professional development interventions need to take teachers’ expertise as a starting point and combine this expertise with data);
6. professional learning communities to support data use; and
7. inter-dependence with a range of learning partners (e.g., university-school partnerships).

We recommend not only to incorporate these seven features in any data-use professional-development program, but also to contextualize these features to the needs of teachers and school leaders undertaking the professional development. Such needs may differ within the same context, across different contexts, and even over time (Lai & Schildkamp, 2016).

Young people (students) are the focus of educational change for improvement. From your perspective, what are the key needs of young people at this time and what might
the field of educational change prioritize in order to meet these needs?

In my opinion, it is crucial that students take ownership over their own learning process. They should be in charge of their own learning, set their own learning goals, collect data on their own learning process, and use these data to improve their learning. Such ownership also implies more flexibility in the curriculum than currently exists in most countries.

Teachers also play a crucial role in supporting students in their learning process. Both teachers and students can collect data on the learning process of students. Teachers can use these data as a form of feedback towards their own instruction. They can also use the data to provide students with feedback on their learning process. Students can use data as a form of feedback on their own learning process so that they can decide where to go next. This potential for data use implies that we need to pay more attention to teachers’ and students’ data literacy. Teachers need to be data literate (having the knowledge and skills to collect, analyze, interpret, and use data to take improvement actions), but students also need to be data literate to be able to steer their own learning process. A question that the field needs to answer is what exactly does it mean for students to be data literate, and how can we support student data literacy.

Data literacy is an important concept in our constantly changing society, in which one’s ability to read and interpret data is paramount. Therefore, I think data literacy is a skill that both teachers as well as students need not only now, but also in the future. It is important to take into account different forms of data and evidence in decision-making processes, to optimize learning and achievement.

What do you think are the most important issues in educational change today? What excites you about the educational change field today?

What excites me is that I see more and more examples of researchers working together with policymakers and practitioners to improve education. I believe that researchers cannot work in isolation from practitioners and policymakers. Practitioners and policymakers cannot base their decisions solely on hunches, intuition, and past experience. They need to be informed by research. Together, we can work on improving the quality of teaching and learning for all, which I believe lies at the heart of educational research.

What also excites me is the potential of data use in education. The use of data can improve the quality of decision making in education. I have seen several examples where the use of data resulted in increased learning and achievement. We have worked with schools that had experienced student achievement problems for many years. These schools had tried to solve these problems in so many different ways, which never worked. By using data to investigate the causes of their problems, they were finally able to identify and introduce solutions, which resulted in increased student achievement. As we have more sophisticated tools that support collection, storage, and analyses of
Far richer data than were available in the past, we can use these tools and layers of data in the process of educational change and school improvement.

However, we must not forget the potential dangers associated with data misuse. Data use requires a lot of knowledge and skills of teachers, so we must invest in both pre-service as well as in-service programs for teachers, to prevent teachers from misusing data. For example, low quality data analysis may lead to wrong decisions. In our teacher training college ELAN, from the University of Twente, we incorporate data use in our pre-service program, and we also offer it in-service programs.

Unfortunately, it is easy to abuse data. We all have heard of examples of schools where data are used to focus on teaching to the test instead of on student learning. Moreover, data have the potential to be used to predict—at a young age—who will not do well at the university. These insights could be used to support specific students, rather than to decline admission of these students to the university. With the rise of data in education, the opportunities increase, but so do the chances of negative implications. Our focus should be on the opportunities, but we should always keep track of these negative side effects and the ethics surrounding data use. The guiding question should be how we can use data to improve the learning for all students.

References


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Dr. Kim Schildkamp is an associate professor in the Faculty of Behavioural, Management, and Social Sciences of the University of Twente. Kim’s research focuses on (professional development in) data-based decision making and formative assessment. She has been invited as a guest lecturer and keynote speaker at several conferences and universities. She has been appointed as the president elect of ICSEI (International Congress on School Effectiveness and Improvement), and she is the chair of the ICSEI data use network.

Furthermore, she is the chair of the AERA division H international relations committee and she is an executive member of the newly established AERA data-driven decision making SIG. She developed the datateam® procedure, and she has won awards for her work. She has published widely on the use of (assessment) data, for example she is editor of the book *Data-based decision making in education: Challenges and opportunities*, published by Springer.