



ICSEI

International Congress for School Effectiveness and Improvement

ICSEI EXPRESS and DIGEST

Volume 7 Issue 3, 2016

Co-Editors' Note

Welcome to the December edition of the ICSEI Express and Digest. This issue features updates related to the work of the Board and our upcoming Congress, as well as news from the Data Use and MoRE networks.

Message from Susan:

It's hard to believe that two years have passed since my being elected to the ICSEI Board and being asked to work on the newsletter with my good friend and colleague, Paige. As anyone else who has ever had the privilege of working with Paige knows, it's always a lot of fun! We have collaborated to bring the ICSEI News to our global membership and have appreciated the positive feedback received - especially in terms of our efforts to further develop the digital format and accessibility of the content shared. In this regard, the ongoing support of Robin (Webmaster) and Jenny (Executive Director) has also been very much appreciated.

The positive response from the Networks to taking a more active role in providing Newsletter items has also been something we have been pleased to facilitate. Many thanks go out to all the Network Coordinators who assisted us by soliciting contributions from their members and consistently worked to meet deadlines.

While I am stepping down from my current role on the ICSEI Board, I look forward to continuing as a member of this worldwide community of colleagues and friends with its focus on school effectiveness and improvement. ICSEI is an organization of which I am very proud to be an active member - and I look forward to seeing everyone in Ottawa for ICSEI, 2017!

Susan E. Elliott-Johns

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Message from Paige:

As an ICSEI board member and co-editor of the Digest and Express I have had the opportunity to connect with the membership in a variety of ways which has offered me many rich learning opportunities. I will never forget Lorna Earl's reminder, during her Congress address in Santiago that the ICSEI membership is a lot like a family - a family that has various perspectives and sometimes disagreements, but is at the core united by mutual respect and affection.

These various perspectives are clearly evident during Congress, where the menu is full of diverse selections in terms of advancing the state of knowledge around school effectiveness, as well as many networking and social events where relationships are formed and sustained. The Express and the Digest offer one of the ways for those relationships to be sustained between our face-to-face gatherings. The news and Digest items that are submitted offer all of us an ongoing window into the work that all of us engage in.

I especially enjoy receiving and sharing the Digest versions of members' ongoing research, which give us an opportunity to 'toe-dip' into our colleague's work with the invitation to seek out further information from the authors. The work of compiling the Express and Digest will pass to new Board members as Susan and I move off of the Board, and we look forward to continuing to support this work, while making space for new ideas, structures and formats. My thanks to all contributors, and especially to Jenny and Robin for their dedicated work behind the scenes, and Susan for her never-ending positivity and astonishing work ethic.

Sincerely, Paige Fisher

1. President's Message

Dear Colleagues and Friends,

After two years serving ICSEI as President, at the Ottawa Conference I will pass the baton onto president elect, Andy Hargreaves, who will lead our agile organization into new times of possible ICSEI futures. Serving this term as President has offered me the privilege to learn a lot about leading a multifaceted community of professionals by getting to know many of you know personally during conferences and in between. However, it has also given me deep insights into the global challenges educators face around the world and how they collectively find creative ways to deal with them.

Having grown up and become a scholar under the notion of Bildung in its original tradition, I deeply trust in educators around the globe who eventually understand, challenge and transform the adversities of our today's world. They do this by providing learning environments which enable young people to provide themselves with the competencies necessary to meet the challenges of an unknown tomorrow, be it in regard to civic life, mental health or workplace. I believe in educative experiences which enable young people to become the person they can possibly be with dignity and respect, with trust and honour.

Such learning experiences enable learners and educators alike to be open to diversity while reaching out for yet unknown possibilities. I believe in pedagogical stewardship as a key responsibility of educators in any country and in any learning context. The UN 2030 Agenda for Sustainable Development targets quality education as one (1) explicit goal¹.

However, none of the other sixteen (16) goals can be achieved without a concept of education which puts civic engagement, agency, critical thinking, social and economic responsibility as well as social and emotional intelligence at centre stage. In our classrooms of today, the future leaders of the world, future teachers, decision makers, economists as well as nurses, care givers or sweepers learn to learn, learn to take responsibility for themselves and others. Our pedagogical stewardship of today shapes the wellbeing of our societies and planet.

In Ottawa we will congregate and we will get the “chance for deep listening for sensing education`s highest future possibility through the eyes of others“(C.O. Scharmer), under the overarching theme of Collaborative Partnerships for System-Wide Educational Improvement. I am looking forward to meeting you there, listening to you, joining future-oriented discourses, participating in engaging dialogues and becoming part of ICSEI`s future journey.

Yours,
Michael Schratz
ICSEI President



2. ICSEI News and Updates

2.1 Update on Ottawa Congress



It will soon be time for ICSEI 2017 in Ottawa Canada!! We hope you are planning to join us from January 7-10 to explore the theme of “Collaborative Partnerships for System-wide Educational Improvement.” Presenters are coming from across the globe - from New Zealand to Norway and everywhere in between... close to 500 people are registered already for what promises to be a stimulating event, with dozens and dozens of sessions to choose from! Congress participants will also have the opportunity to experience Ottawa, Canada’s capital city, on the year of Canada’s 150th birth-

day. There is no better place to learn about the history of Canada than here - make sure to explore Parliament Hill, the political and cultural heart of the city. Free guided tours are available daily.

Visiting Ottawa in the winter gives you the chance to skate on the largest naturally frozen rink in the world - the Rideau Canal Skateway! Make your Canadian

experience even better by adding a mug of hot chocolate and a beavertail to your list of things to try. The Local Organizing Committee is working on plans for a skating party for registrants - stay tuned for more details! You can also experience winter at the beautiful Gatineau Park. Networked trails provide the opportunity for participants to snowshoe around and explore the sights. Alternatively, the park offers three groomed trails for winter hiking and is a lovely place for a walk in a snow-covered forest.



The Local Organizing Committee will treat you well and is planning a gala to remember - the “Celtic kitchen party!” Be ready to dance and sing along to some of the best party music ever made! And when it’s all over, we’ll hand off to Singapore - the hosts for ICSEI 2018!



2.2 Board activities

The 2017 - 2019 ICSEI Board voting has been finalised and the outcomes approved by the current ICSEI Board. The incoming Board pending the approval of the 2017 AGM is:

President: Andy Hargreaves - USA

Past President: Michael Schratz - Austria

President Elect: Kim Schildkamp - Netherlands

Treasurer: Dorothy Andrews - Australia

Board Members:

Carol Campbell - Canada

Christopher Chapman - Scotland

Karen Edge - England

Helen Malone - USA

Pierre Tulowitzki - Germany

On behalf of the current Board and the membership we sincerely congratulate the members of the ICSEI Board Elect.

2.3 Board activities

At the time of this newsletter going to print the counting has just been completed for the name change with the voting being extremely close for two preferred names. This outcome was discussed by the Executive and a second poll has been forwarded giving the members the opportunity to vote for:

- the International Congress for School Effectiveness and Improvement (ICSEI)
- the International Congress for School Effectiveness, Improvement and Innovation (ICSEII)

Voting closes the 30th December.

2.4 ICSEI Workgroups

As a result of the ICSEI Futures work and discussions at the AGM three workgroups were established to pursue a program of work to grow ICSEI. The workgroups are currently developing reports for the January Board Meeting and for the AGM. Outcomes will be reported in the next newsletter.

The Workgroups on Equity, Social Justice and Diversity: This should address the question: How can a global organization like ICSEI do justice to and reflect as inclusively as possible the diversity of peoples in the world. Do people who want to get to the yearly Congress get the chance to do so? Is the Congress itself modelled in terms of equity and diversity, for example in its selection of speakers and formats (including languages of communication and translation facilities) for presentation?

The Workgroups on Generational Inclusion and Renewal: How can ICSEI be more positively and insistently invitational to emerging scholars in its selection of speakers and speaking platforms, in its promotion of mentoring along with recognition and rewards for effective mentoring, in the ways it increases awareness of the specific benefits provided by ICSEI in a climate of scarce resourcing and a crowded conference calendar, in the opportunities it provides for leadership, in the resources it provides to support and subsidize attendance as well as full participation in social and networking events; and in the timing of annual Congresses so that they are compatible with the professional and personal lives of emerging scholars?

The Workgroups on Communication: How can ICSEI support and promote even more activity in networking and publication between conferences especially in terms of local and regional initiatives? How can it enhance and accelerate the presence and impact of ICSEI on digital and social media platforms through blogging, Facebook, twitter and other media? How can it explore opportunities for members to become aware of and to interact with fellow members while safeguarding issues of privacy?

3. Network Updates

The various networks are busily preparing sessions and symposia for the upcoming Congress, yet another exciting feature of the networks is that they keep the work of our international collaborations alive throughout the year. This fact is made clearly evident through the reports from Data Use Network and the MoRE Network, featured in this issue of the Express.

3.1 News from the ICSEI data use network

The ICSEI data use network members have been busy with new publications, projects and tools. In this section you can find an overview of these activities. Furthermore, we are happy to announce that AERA launched a new Special Interest Group on data use: the data-driven decision making SIG. Given the common interest in data use, the ICSEI data use network will work closely together with the AERA data-driven decision making SIG, including the sharing of news items. More information on this SIG can be found below.

We are also happy to announce that we organized two data use symposia for the 2017 ICSEI in Ottawa. The first symposium, chaired by Kim Schildkamp, focusses on data literacy and personal knowledge and beliefs, with speakers from the United States, Belgium, and the Netherlands. This symposium is entitled “Learning how to use data: Data literacy, personal knowledge, and beliefs”, and will firstly address to what extent and how teacher training pays attention to data literacy (Bolhuis, Schildkamp, Voogt, Luyten). The second paper will address the different components of data literacy (Mandinach). The third paper will focus on how we can professionalize teachers in data literacy (Kippers, Poortman, Schildkamp, Visscher). Next, the role of personal knowledge and beliefs will be addressed (Vanlommel, Van Gasse, Vanhoof, Van Petegem). Finally, our discussant, Amanda Datnow, will reflect on the four papers. In the draft program this session is scheduled on January 7 at 15.00.

The second symposium, chaired by Jan Vanhoof will focus on the effects of data use, and

features papers from the Netherlands, the USA, and Belgium. It is entitled “(Antecedents of) Effects of data use by teachers”. We will investigate to what extent the potential of data use is currently being realized by teachers. The first paper addresses the effect of data use (students’ learning outcomes) on instructional decisions of teachers (Gelderblom, Schildkamp, Pieters). So does the second paper, although a specific focus on the effect of data use on widening/narrowing achievement gaps between students is introduced here (Datnow & Park). The third paper describes effects of data use at the intersection of classroom and school level (Van Gasse, Vanhoof, Van Petegem). The symposium will be completed by the critical reflections and suggestions for further research presented by the discussant, Ellen Mandinach. In the draft program this session is scheduled on January 9 at 13.10.

Hope to see you all at ICSEI 2017 in Ottawa!

Kim Schildkamp & Jan Vanhoof
ICSEI data use network chairs

The AERA data-driven decision making SIG

AERA just admitted a new special Interest Group (SIG) on data-driven decision making. The purposes of the SIG are to provide an intellectual home for people working in the area of data-driven decision making; to foster collaboration among interested AERA members with regard to educational research focused on or related to data-driven decision making; and to foster collaboration among university/research entities, local, state, and federal educational agencies, and professionals working in areas of practice related to educational data use.

Data-driven decision making is a diverse topic of examination and data use is the foundation for most of educational research. It is fundamental. That said, the original conception for the SIG was to include several areas of focus and/or collaboration. They include, but are not limited to:

- components of data use (e.g., professional learning, data teams, data coaches, facilitators and barriers of data use);
- uses of “big data” and data analysis;
- longitudinal data systems; use of local data systems;
- theoretical issues related to data use;
- leadership for data use;
- uses of data by teachers, students, parents, school leaders, and system/district leaders;
- continuous improvement efforts in schools and cultures of inquiry;
- data literacy/capacity efforts;
- policy issues that surround data use; and
- issues of data privacy.

The leadership team of this SIG consist of: Ellen Mandinach (chair), Jo-Beth Jimerson (secretary), Elizabeth Farley-Ripple (treasurer), Edith Gummer (program chair), Kay Uchiyama (co-chair), Kim Schildkamp (social media representative), Jeff Wayman (membership representative), John Stevens (webmaster), and Kristin Vanlommel (graduate student representative).

More information:

Website: <http://www.aera.net/SIG179/Data-Driven-Decision-Making-in-Education-SIG-179>

Facebook: <https://www.facebook.com/DDDSIG/>

Twitter: @AERASIGDDDM

The launch of a new data use tool

The U. S. Department of Education and REL Appalachia have released the Teacher Data Use Survey. Jeff Wayman led the research team that developed this survey, working with Vincent Cho, Ellen Mandinach, Jon Supovitz, and Stephanie Wilkerson. The TDUS focuses on teacher data use and has 3 versions: one for teachers, one for administrators, and one for instructional coaches. All versions ask about teacher data use, thus offering a triangulated picture of teacher data use. The survey, a user's guide, and tools for reporting results are freely available at <http://www.relappalachia.org/products/rel-appalachia-reports/teacher-data-use-survey-tools-and-administration-guide/>. Furthermore, Stephanie Wilkerson and Jeff Wayman are going to conduct a webinar series on how to use the TDUS. The first one was hosted at Oct. 14, but more will follow. Interested people can read about the webinar series and register at <http://relappalachia.org/events/teacher-data-use-survey-webinar-series/>.

ICSEI data use twitter chat December 13

We wanted to experiment with organizing a twitter chat: "A Twitter chat is where a group of Twitter users meet at a pre-determined time to discuss a certain topic, using a designated hashtag (#) for each tweet contributed.

A host or moderator posed questions (designated with Q1, Q2...) to prompt responses from participants (using A1, A2...) and encourage interaction among the group. Chats typically last an hour." (<https://blog.bufferapp.com/twitter-chat-101>).

We focused on the concept of data literacy: what attitude, knowledge and skills are needed for effective data use.

The chat was organized on December 13, using #ICSEIdata. Curious about the results? Go to Twitter and search for #ICSEIdata. Hopefully we will continue the conversation in January at ICSEI 2017 in Ottawa.

Special issue on data-based decision making for Teaching and Teacher Education

Several members of the ICSEI data use network and AERA SIG have been involved in a special issue on data-based decision making for the journal Teaching and Teacher Education. This special issue is scheduled to be published in November 2016, and is edited by Cindy Poortman, Kim Schildkamp and Mei Kuin Lai. The special issue is entitled: Professional development in data use: An international perspective on conditions, models, and effects. This special issue is based on a previous AERA invited session, and addresses the impact of data-use professional development on teaching practice and student learning in a variety of international settings (Lai & McNaughton, 2016; Poortman & Schildkamp, 2016; Van den Hurk, Houtveen, & Van de Grift, 2016). It also includes related issues, such as the importance of teacher collaboration (Van Gasse, Vanlommel, Vanhoof, & Van Petegem, 2016), data literacy (Mandinach & Gummer, 2016), the combination of conditions that may lead to particular instructional responses to data (Farrell & Marsh, 2016; Hoogland, Schildkamp, Van der Kleij, Heitink, Kippers, Veldkamp, & Dijkstra, 2016), and the involvement of students in the use of data (Jimerson, Cho, & Wayman, 2016). The papers are already published online. An overview of the papers:

- Poortman, C.L., Schildkamp, K., & Lai, M.K. (2016). Professional Development in Data Use: An International Perspective on Conditions, Models, and Effects. *Teaching and Teacher Education*.
- Mandinach, E.B. , & Gummer, E.S. (2016). What does it mean for teachers to be data literate: Laying out the skills, knowledge, and dispositions. *Teaching and Teacher Education*.
- Hoogland, I., Schildkamp, K., Van der Kleij, F.M., Heitink, M.C., Kippers, W.B., Veldkamp, B.P., & Dijkstra, A. (2016). Prerequisites for data-based decision making in the classroom: Research evidence and practical illustrations. *Teaching and Teacher Education*.
- Van Gasse, R., Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2016). Teacher collaboration on the use of pupil learning outcome data: A rich environment for professional learning? *Teaching and Teacher Education*.
- Farrell, C., & Marsh, J. (2016). Contributing conditions: A qualitative comparative analysis of teachers’ instructional responses to data. *Teaching and Teacher Education*.
- Jimerson, J.B., Cho, V., & Wayman, J.C. (2016). Student-Involved data use: Teacher practices and considerations for professional Learning. *Teaching and Teacher Education*.
- Poortman, C.L., & Schildkamp, K. (2016). Solving student achievement problems with a data use intervention for teachers. *Teaching and Teacher Education*.
- Lai, M.K., & McNaughton, S. (2016). The impact of data use professional development on student achievement. *Teaching and Teacher Education*.
- Van den Hurk, H.T.G., Houtveen, A.A.M., & Van de Grift, W.J.C.M. (2016). Fostering effective teaching behavior through the use of data-feedback. *Teaching and Teacher Education*.
- Mandinach, E.B., & Jimerson, J.B. Teachers Learning How to Use Data: A Synthesis of the Issues and What is Known. *Teaching and Teacher Education*. *Teaching and Teacher Education*.

Data use publications from ICSEI data use network members and AERA SIG members

- Bolhuis, E. D., Schildkamp, K., & Voogt, J. M. (2016). Improving teacher education in the Netherlands: data team as learning team? *European Journal of Teacher Education*, 39(3), 320-339.
- Dede, C. (2016). Next steps for “big data” in education: Utilizing data-intensive research. *Educational Technology*.
- Dede, C., Ho, A., & Mitros, P. (2016). Big data analysis in higher education: Promises and pitfalls. *EDUCASE Review*, 51(4), 23-33.
- Ebbeler, J., Poortman, C. L., Schildkamp, K., & Pieters, J. M. (2016). The effects of a data use intervention on educators’ satisfaction and data literacy. *Educational Assessment, Evaluation and Accountability*.
- Gelderblom, G., Schildkamp, K., Pieters, J., & Ehren, M. (2016). Data-based decision making for instructional improvement in primary education. *International Journal of Educational Research*, 80, 1-14.
- Heitink, M. C., Van der Kleij, F. M., Veldkamp, B. P., Schildkamp, K., & Kippers, W. B. (2016). A systematic review of prerequisites for implementing assessment for learning in classroom practice. *Educational Research Review*, 17, 50-62.

- Konstantopoulos, S., Li, W., Miller, S. R., van der Ploeg, A. (2016). Effects of interim assessments on student achievement: Evidence from a large-scale experiment. *Journal of Research on Educational Effectiveness*.
- Konstantopoulos, S., Li, W., Miller, S. R., van der Ploeg, A. (2016). Effects of interim assessments across the achievement distribution: Evidence from an experiment. *Educational and Psychological Measurement*, 76(4), 587-608.
- Lai, M. K. & Schildkamp, K. (2017). In-service teacher professional learning: Use of assessment in data-based decision-making. In G. T. L. Brown & L. R. Harris (Eds.). *Handbook of human and social conditions in assessment* (pp. 77-94). New York, NY: Routledge.
- Mandinach, E. B. & Gummer, E. S. (2016). *Data literacy for educators: Making it count in teacher preparation and practice*. New York, NY: Teachers College Press.
- Mandinach, E. B. & Gummer, E. S. (2016). Every teacher should succeed with data literacy. *Phi Delta Kappan* 97(8), 43-46.
- Rankin, J. G. (2016). *Designing data reports that work: A guide for creating data systems in schools and districts*. New York, NY: Routledge/Taylor & Francis.
- Rankin, J. G. (2016). *Engaging and challenging gifted students: Tips for supporting extraordinary minds in your classroom*. Alexandria, VA: ASCD.
- Rankin, J. G. (2016). *How to make data work: A guide for educational leaders*. New York, NY: Routledge/Taylor & Francis.
- Rankin, J. G. (2016, August). Over-the-counter data: The heroics of creating easily interpreted information. *Mensa Bulletin*, 592(2016), 22-26.
- Rankin, J. G. (2016). *Standards for reporting data to educators: What educational leaders should know and demand*. New York, NY: Routledge/Taylor & Francis.
- Schildkamp, K., Poortman, C.L., Luyten, J.W., & Ebbeler, J. (2016). Factors promoting and hindering data-based decision making in schools. *School Effectiveness and School Improvement*.
- Schildkamp, K., Poortman, C. L., & Handelzalts, A. (2016). Data teams for school improvement. *School Effectiveness and School Improvement*, 27(2), 228-254.
- Snodgrass Rangel, V., Monroy, C., & Bell, E. R. (2016). Science teachers' data use practices: A descriptive analysis. *Education Policy Analysis Archives*, 24(55).
- Van der Scheer, E. A., & Visscher, A. J. (2016). Effects of an intensive data-based decision making intervention on teacher efficacy. *Teaching and Teacher Education*, 60, 34-43.
- Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2016). Data use by teachers: The impact of motivation, decision-making style, supportive relationships and reflective capacity. *Educational Studies*, 42(1), 36-53.
- Wayman, J. C., Cho, V., Mandinach, E. B., Supovitz, J. A., & Wilkerson, S. B. (2016). *Teacher data use survey (REL 2015-2016)*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. Retrieved from <http://ies.ed.gov/ncee/edlabs>
- Wayman, J. C., Wilkerson, S. B., Cho, V., Mandinach, E. B., and Supovitz, J. A. (2016). *Guide to using the teacher data use survey (REL 2015-2016)*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. Retrieved from <http://ies.ed.gov/ncee/edlabs>.

3.2 News and perspectives from the MoRE Network

Daniel Muijs & Marcus Pietsch

Introduction: The MoRE Network

This issue of the ICSEI digest features the MoRE network, the network on Methods of Researching Educational Effectiveness, which came to life at ICSEI 2006 in Barcelona. Members of the network have consistently submitted papers and symposia to the annual conference throughout the years. An annual business meeting of the network takes place during ICSEI conference and provides a forum for members to exchange ideas and to discuss future activities in a relaxed and supportive environment.

During recent years, the network has become more or less dormant for several reasons, while a core group of members stayed in contact and remained connected, trying to organize the networks' activities and to attract new members as well as to enthuse long standing companions to get more actively involved in forming and improving the network. However, at the moment the MoRE network is one of the smaller networks of the ICSEI. This is startling, as the application of empirical methods is the overarching characteristic that frames all the research on effective schools and effective teaching since the early days of school effectiveness movement. Methods are the driver for the majority of research projects within the field and facilitate the improvement of practice, the development of theory and the advancement of the field. When looking at other areas, it is clear that fields which have developed sophisticated common methodological frameworks allied to constant methodological renewal are those that make the greatest progress in advancing knowledge.

Methods: A researcher's toolbox

During the recent decade some methodological approaches emerged as standard when it comes to research on effective schools and effective teaching:

- **Multi-Level Modelling:** Multi-level modelling refers to a set of techniques in which the data can be measured at several levels, such as individuals, classes, schools, regions, and so forth. The models recognize the existence of such data hierarchies by allowing for residual components at each level in the hierarchy. Thus, the residual variance is in principle partitioned into a between and a within component. This procedure leads - compared to traditional multiple regression techniques - to more accurate inferences, as standard errors of regression coefficients will be estimated correctly, resulting in a correct identification of statistical significance. Furthermore these models allow for researching group effects as well as for drawing inferences to a population from a group.
- **Structural Equation Modelling:** Structural equation modeling is a combination of factor analysis and regression or path analysis. It allows the study of direct and indirect as well as reciprocal effects and offers the possibility to test theoretical constructs and logic models. In this juncture the assumption is made that the attribute of real interest cannot be observed directly, but that it latently represents the basis for observed behavior. Thus, the technique is used to inspect causal relationships between

- variables as well as to check for the fit of theoretically justified measurement models to empirical data.
- **Mixed Methods Research:** Educational effectiveness research has also increasingly been developing mixed methods studies, where quantitative methods are combined with qualitative methods, and most typically case studies. While earlier studies tended to use outlier designs, where quantitative methods were used to identify highly effective schools, which were then used as case studies for further exploration, the field has evolved to more sophisticated concurrent designs, in which quantitative and qualitative data are collected simultaneously or iteratively, and teams of quantitative and qualitative researchers will jointly discuss and analyse data from both sources.
- **Handling Missing Data:** Missing data is a problem because nearly all standard statistical methods presume complete information for all the variables included in an analysis. The absence of data reduces the representativeness of a sample and therefore can distort inferences about a population. As a result, the precision of confidence intervals may be harmed, statistical power could be weakened and the parameter estimates may be biased. Within recent years two techniques have been emerged as a standard for dealing with missing data in surveys and tests: Maximum Likelihood approaches and Bayesian-based Multiple Imputation. Maximum Likelihood estimation focuses on the likelihood of the observed data, namely the mean vector and variance-covariance matrix. Thus, one obtains estimates for the means and the variance-covariance matrix of the variables of interest, and then uses these parameter estimates to obtain model parameters such as the regression coefficients. Multiple Imputation in turn generates several possible values for each missing observation in the data by sampling values from the posterior probability distribution in order to obtain a set of several parallel completed data sets. These data sets could be analyzed separately by applying standard analysis procedures. Afterwards the estimates will be combined to obtain multiply-imputed estimates. Both approaches deliver correct parameters even if the propensity for a data point to be missing is not completely random.
- **Correction for Sample Selection Bias:** Often it is impossible to generate experimental data and a randomized control trial within a real world setting. In this case matching methods allow researchers to post-hoc set up a quasi-experimental design by pairing treatment and comparison groups based on their observable characteristics and thus, to control for sample selection bias in observational studies and to conduct counterfactual analysis. The most commonly used method is Propensity Score Matching. The logic here is that balance on observed covariates is achieved through matching on a single score. The propensity score then is defined as the probability of receiving treatment based on measured covariates. Hence, it expresses how likely a person is to select the treatment condition given observed covariates. This could be done for example by applying a logistic regression in which the treatment assignment is used as the outcome variable, and the selected covariates as predictors. After the estimation of the scores, treated and untreated cases of a data set are matched - very often 1 to 1 - by their estimated propensity scores.

- **Measurement and Item Response Theory:** Poor measurement reduces the reliability of our constructs, and high levels of measurement error mean that substantive relationships can become swamped. As a result of this, educational effectiveness research has increasingly paid attention to issues of measurement. More sophisticated models, such as Item Response Theory and the Rasch model, as well as Generalizability Theory have been used to improve the quality of measures. Item Response Modelling (IRT) is closely linked to SEM, in that it is also a latent variable or latent class model, predicated on the understanding that what we actually want to measure are latent constructs, with actual items or variables acting as indicators of these underlying constructs. The basic premise underlying IRT is that a score on a test item is determined by two factors, item difficulty, and person ability, and is described by an Item Characteristic Curve (ICC). This method allows us to disentangle item and person effects, and has been a major improvement in developing valid measures.

Example: The Connection of School Leadership, Instructional Practices and Student Achievement

In an effort to illustrate the relevance of these methods as a solution for improving research within the school effectiveness agenda, we would like to provide an exemplary study in which we used multilevel and structural equation models as well as maximum likelihood estimation and propensity score matching simultaneously within a single analysis.

In that study, we investigated the interplay of instructional and transformational leadership and their relations to other inner-school variables (Pietsch et al., 2016). In order to measure transformational leadership a short form of the Multifactor Leadership Questionnaire (MLQ, Bass & Avolio, 1995) was used. Instructional leadership was measured using a scale from the Teaching and Learning International Survey (TALIS, OECD, 2011), which is a derivative of Hallingers (1994) Principal Instructional Management Rating Scale (PIMRS).

In a first step we analyzed the cross-sectional data of $n=1,663$ teachers from 37 secondary schools within a SEM-framework. As expected all leadership facets were highly correlated, with latent r -coefficients ranging from $-.76$ (instructional with laissez-faire leadership) to $.98$ (transformational with transactional leadership). The correlation of transformational with instructional leadership was $r=.79$, indicating a large amount of shared variance between the two leadership facets.

Thus, we modelled leadership as a nested factor model with a leadership g -factor and specific leadership facets, so that there was a general factor that accounted for the commonality shared by the facets, and there were also multiple specific factors, each of which accounted for the unique influence of the specific component over and above the general factor.

As Chen et al. (2006) state such models are potentially applicable when (a) there is a general factor that is hypothesized to account for the commonality of the items; (b) there are multiple domain specific factors, each of which is hypothesized to account for the unique influence of the specific domain over and above the general factor; and (c) one may be interested in the domain specific factors as well as the common factor that is of focal interest.

Therefore, in a next step we tested the direct and indirect effects of leadership on teaching practices by applying an indirect path model. Drawing on a framework by Leithwood et al. (2002, 2008) variations in the success of leadership behavior could then be explained in terms of their influence on teachers' motivation and capacities as well as their working conditions that facilitate changes in school and finally their teaching practices.

We found that at high-performing schools (schools with value added for reading and mathematics in the highest quartile for 5 years in a row after controlling for SES and school size by applying a propensity score matching) the total effect of instructional leadership on the instructional practices of teachers was much higher than at lower performing schools (depending on the type of classroom instruction ranging from four up to 97%). Beyond that, transformational leadership always had small significant negative total effects on the instructional practices of teachers, when controlled for the other leadership facets. The same applied to the g-factor.

In summary, the chosen approach enabled us to disentangle general leadership and specific leadership facets and to check for the unique influence of each science-based facet as well as of general leadership factor on the instructional practices of teachers within a common framework. As we are able to research the schools of the sample within a longitudinal design we will in the future be able to apply this approach to investigate the differential effects of the varying leadership styles on school improvement and change.

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4. The Next Edition

Expect the next issue early in 2017. We will share highlights from the Ottawa Congress, and feature updates and perspectives from selected Networks.

If you have an announcement that you would like to have featured, or you would like to submit a 'Digest' version of a paper or project (500-1000 words) that you presented at Ottawa's Congress, we will accept submissions until March 1 for the next issue.

All queries and submissions should be sent to Jenny Lewis jennylewis@icsei.net until the next editors are appointed.

PLEASE NOTE: If you are interested in exploring the possibility of hosting an ICSEI conference in your country, the guidelines are posted on the ICSEI website www.icsei.net and you can contact Jenny Lewis at the ICSEI Secretariat admin@icsei.net for additional information.