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The economic benefits of selecting good teachers

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Teacher Selection Project

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Teacher Selection Project

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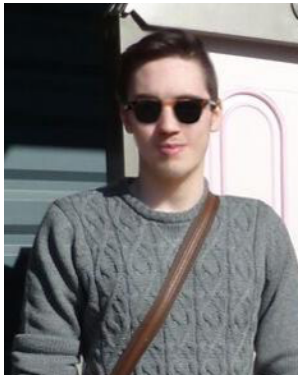

Mark Davies
Animator

Teacher Selection Project

Need for teacher selection methods

- Countries will need to select almost 70 million teachers by 2030 (UNESCO, 2016); in the UK, approximately 30,000 candidates are selected into ITE each year

- There is a growing demand internationally for increased attention to the methods of teacher selection (e.g., Goldhaber et al., 2014; UK House of Commons, 2012)

- BUT, current teacher selection methods have been described as "ad hoc" and "information poor" (Goldhaber et al., 2014)

- Teacher selection research poses fundamental questions about the development of teacher effectiveness

Why don't we pay more attention to teacher selection methods?

Lack of competition for places: Selection methods are less critical if there are more places than applicants (although…)

Complexity of teaching: Teacher effectiveness is complex, and difficult to measure, making prediction challenging

Lack of cross-disciplinary sharing : Little cross-disciplinary talk between researchers in education and other fields (e.g., I/O psychology, medical education, business) about selection

Status: In some countries, teaching is viewed as a low status profession, with the implicit belief that anyone can fill the role

Resistance to the notion of stable individual differences: Some educationists have labelled the belief of stable individual differences between teachers a 'damaging myth' that results in policies that rely on 'some kind of prenatal alchemy' (Darling-Hammond, 2006, p.ix) to identify and prepare effective teachers.

Belief that teaching is unique: Science can't help us predict the 'magic' of teaching

Teacher Selection Project

Today's talk: three parts

1. The state of teacher selection
2. Economic issues in teacher selection
3. Improving teacher selection

Predicting teacher effectiveness has been a challenge for a long time

The relationship between successful teaching candidates and successful teaching performance is largely unknown

FB Knight, 1922

Recruitment/selection and student achievement

Table 6

Relationships Between Quality Assurance Arrangements and National Mathematics Achievement

Country[a]	Recruitment and Selection	Accreditation of Programs	Entry to Teaching Profession	Overall Rating of Quality Assurance	TIMSS 2011 Grade 4	TIMSS 2011 Grade 8	PISA 2012 15-Year-Olds
Chinese Taipei	2.75	3.00	3.00	2.92	591	609	560
Canada	2.50	3.00	2.00	2.50			518
Chile	1.25	1.00	1.00	1.08	462	416	423
Germany (primary)[b]	2.25	2.00	3.00	2.50	528		
Germany (secondary)[b]	2.50	2.00	3.00	2.42			514
Singapore (primary)[b]	2.75	3.00	1.00	2.25	606		
Singapore (secondary)[b]	3.00	3.00	1.00	2.33		611	513
United States (primary)[b]	1.50	3.00	2.00	2.17	541		
United States (secondary)[b]	1.75	3.00	2.00	2.25		509	481
Russian Federation	1.75	3.00	1.00	1.92	542	539	482
Oman	2.50	1.00	2.00	1.83	385	366	
Thailand	1.25	3.00	1.00	1.75	458	427	427
Malaysia	2.00	2.00	1.00	1.67		440	421
Spain	2.00	2.00	1.00	1.67	482		484
Poland	1.75	2.00	1.00	1.58	481		518
Norway	1.50	2.00	1.00	1.50	495	475	489
Switzerland	1.00	2.00	1.00	1.42			531
Georgia	1.25	2.00	1.00	1.08	450	431	
Correlation with TIMSS, Grade 4 (n = 12)	0.48	0.76**	0.28	0.69**			
Correlation with TIMSS, Grade 8 (n = 10)	0.57*	0.75**	0.31	0.76**			
Correlation with PISA (n = 13)	0.54*	0.33	0.52*	0.59*			

Ingvarson & Rowley (2017). Quality assurance in teacher education and outcomes in 17 countries. *Educational Researcher, 46,* 177-193.

Selection into ITE or into teaching jobs usually includes:

1. Review of background factors (qualifications, experience, references)
2. Evaluation of cognitive factors: evaluation of cognitive abilities, subject knowledge, numeracy and literacy skills
3. Evaluation of non-cognitive factors using interviews and personal statements

Evaluating non-cognitive attributes in for selection into teacher training

Most ITE programmes use 1-1 or panel interviews, but (unstructured) interviews and personal statements are notoriously unreliable (and unfair) methods for predicting professional outcomes (e.g., Patterson, 2016)

UK ITE programs selectors rely on "a gut feeling" or "a little bit of conversation" to "identify the X factor" in candidates (Davies et al., 2016, p. 297).

Average effect for major contributions to learning

Contribution	Effect size (*d*)
School	.23
Home	.31
Student	.40
Teaching approach	.42
Curriculum	.45
Teacher characteristics	.49

Effect size descriptors for educational outcomes:
small = .20, medium = .40, large = .60

Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement

Contributions from the teacher to differences in student outcomes

	Effect size (*d*)
Teacher training	.11
Subject matter knowledge	.09
Expectations	.43
Teacher-student relationships	.72

Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement

Improving teacher quality starts with improving selection of potential teachers

'The Commission is taking stock of the situation regarding the training of teachers within the European Union (EU) and is identifying ways in which the existing arrangements can be improved'

'The quality of teaching is a key factor in the achievement of the Lisbon objectives for social cohesion, growth and economic competitiveness'

Eurydice Report: Key data on teachers and school leaders in Europe 2013

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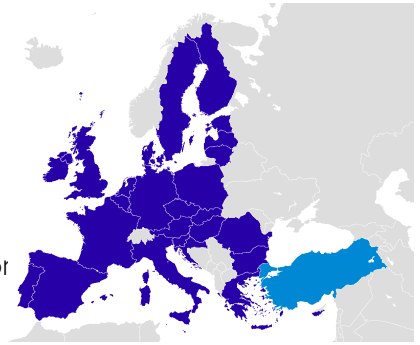
Current state of prospective teacher selection

- There are about 450,000 teachers in mainstream, state-funded schools in England
- About 24,000 newly-qualified teachers enter the profession annually, and about 300,000 teachers enter in other EU countries
- Selection of teachers and prospective teachers is largely "ad hoc" and "un-tested" (Goldhaber, 2014)



Goldhaber, et al., (2014). Screen twice, cut once: Assessing the predictive validity of teacher selection
2014-9. University of Washington., Seattle, WA.

The selection landscape in England

- 6% of 30,000 places unfilled
- 29% of physics training places unfilled
- (118% of history places filled)
- Academic qualifications: 75% of postgraduate entrants have an upper-second degree (up from 63% in 2011)
- Lack of diversity of teaching workforce

National Audit Office (2016). Training new teachers

Teacher selection in the UK

- We surveyed 74 university-based ITE programs in England and Wales (Klassen & Dolan, 2015).
    - All assessed cognitive attributes through a review of academic records (A-levels, GCSE grades in English and Math, and university degree class)
    - Most (97%) programs assessed non-cognitive attributes using individual and group interviews (97%) and assessment of social behaviors through group activities (62%), most using 'holistic' or 'impressionistic' grading schemes
- Qualitative review of teacher selection methods: selectors in the UK relied on "a gut feeling" or "a little bit of conversation" to "identify the X factor" in candidates (Davies et al., 2016)

Meta-analysis of the predictive validity and cost of teacher selection methods

Aim:

- To assess the validity of the methods used for selection of teachers for employment and prospective teachers entering initial teacher education (ITE) programs in predicting measures of teacher effectiveness
- To propose a theory-informed and practical framework for teacher selection

Klassen, R. M., & Kim, L. E. (2017). Teacher selection methods: A meta-analysis. Manuscript in revision with Review of Educational Research.

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Part 2: Economic issues in teacher selection

Economic issues in teacher selection

- Implications for variability in teacher effectiveness
- Implications for teacher turnover

Selection based on predicted levels of effectiveness

- The aim of (prospective) teacher selection is to select candidates who are most likely to demonstrate the highest level of effectiveness
- Teacher effectiveness can be measured using multiple means (e.g., student academic achievement, student evaluation of teacher effectiveness, classroom observations)
- Economists tend to measure teacher effectiveness using student academic achievements (or a variation of this – e.g., value-added)
- The terms 'teacher effectiveness' and 'teacher quality' are used interchangeably

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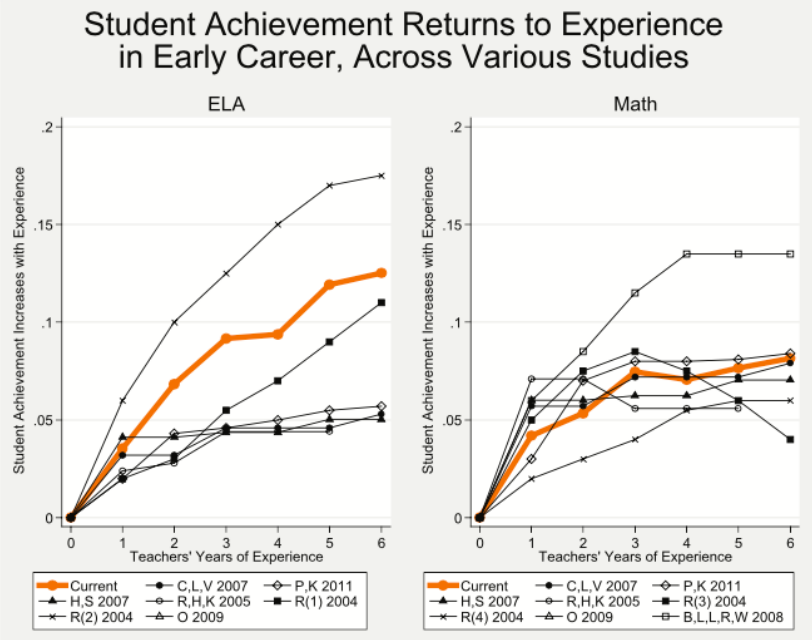
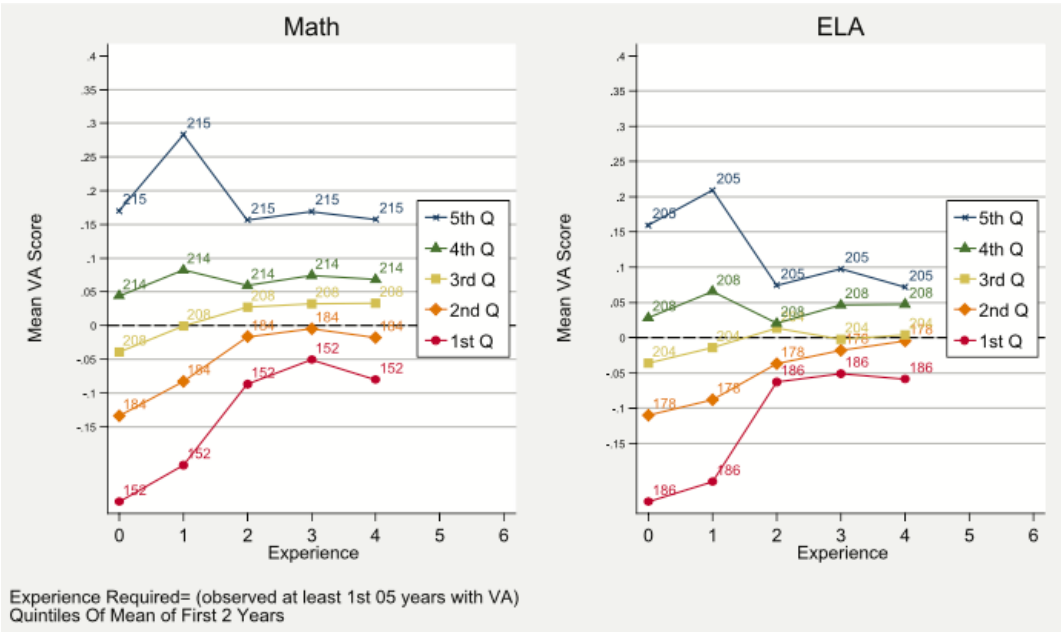
Teachers vary in their levels of effectiveness





Teachers become more effective with years of experience

Teachers' levels of effectiveness are relatively stable over time

Atteberry, A., Loeb, S., & Wyckoff, J. (2015). Do first impressions matter? Predicting early career teacher effectiveness. *AERA Open, 1*(4), 1–23.

Students' human capital

Students taught by more effective teachers are

- more likely to obtain
  - higher test scores
  - complete high school
  - take SAT
  - intend to attend college
  - attend college
  - attend higher-ranked colleges
  - live in higher SES neighbourhoods
  - save more for retirement
  - higher future salaries
- less likely to
  - drop out of school
  - have children as teenagers

Chetty, Friedman & Rockoff, 2014; Hanushek, 2011; Jackson, 2013

Students' human capital - salaries

- "One standard deviation above mean effectiveness *annually* generates marginal gains of over $400,000 in present value of student future earnings with a class size of 20 and proportionately higher with larger class sizes." (Hanushek, 2011, p. 466)
- "Replacing a teacher whose VA is in the bottom 5 percent with an average teacher would increase the present value of students' lifetime income by approximately $250,000 per classroom." (Chetty, Friedman, & Rockoff, 2014, p. 2633)

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Teacher turnover

2/11/2017 Four in 10 new teachers quit within a year | Education | The Guardian

theguardian

Four in 10 new teachers quit within a year

Teachers union launches scathing attack on government's education policy, which has tripled the exodus of newly qualified teachers

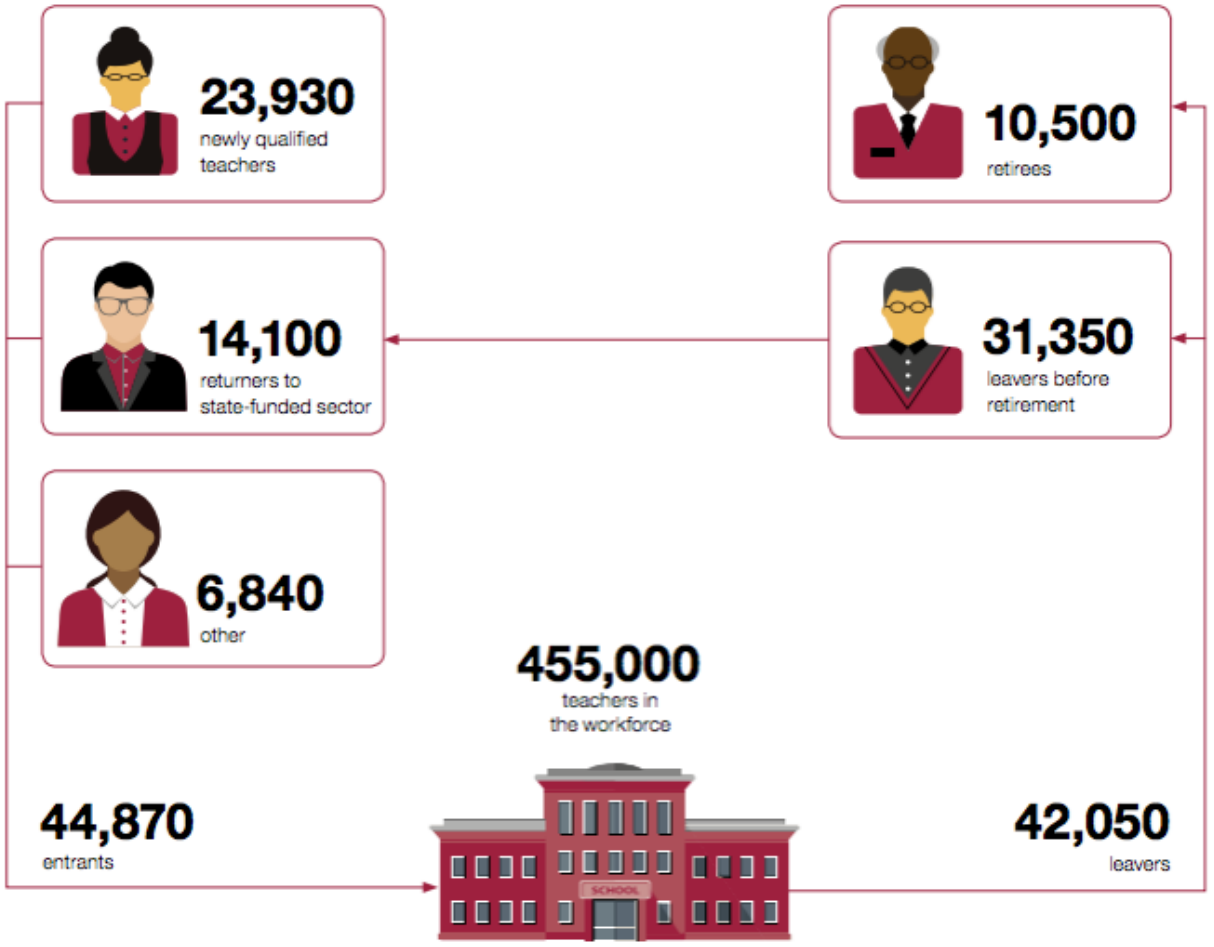
'Teachers are exhausted, stressed and burnt out in a profession being monitored to within an inch of its life.' Photograph: Agencja Free/Alamy

- Varies by country, district, school, subject, certification route of teacher, year of statistic
- US national attrition rate: 8%
- In the UK, more than10% leave within one year of qualifying and 30% of teachers leave within five years

Weale, S. (2015) *Four in 10 new teachers quit within a year*. Retrieved from: https://www.theguardian.com/education/2015/mar/31/four-in-10-new-teachers-quit-within-a-year
Carver-Thomas, D. & Darling-Hammond, L. (2017) *Teacher turnover: Why it matters and what we can do about it*
Department for Education (2016) *School workforce in England: November 2015*, 30 June 2016, p. 6

Figure 3

Flows into and out of state-funded schools in 2014



Notes

1 Other sources include qualified teachers from overseas and trainees who deferred entering the state-funded sector.

2 Entrants and leavers are for the period November 2013 to November 2014. The size of the workforce in November 2014 was 455,000.

3 The 42,050 leavers include 200 serving teachers who died during the year.

4 All figures are full-time equivalent.

Source: Department for Education school workforce data

National Audit Office (2016) *Training new teachers.*

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Costs of teacher turnover

- Around 90% of the US nationwide annual teacher demand is created when teachers leave the profession, with two-thirds of teachers leaving for reasons other than retirement
- Cost of turnover is estimated to be $2.2 billion dollars per year in the USA
- It costs more than $20,000 to replace a teacher who leaves an urban school district
- Schools can calculate how much teacher turnover has cost them

Alliance for Excellent Education (2005). *Teacher Attrition: A Costly Loss to the Nation and to the States*. Washington, CD: Alliance for Excellent Education.
Carver-Thomas, D. & Darling-Hammond, L. (2017) *Teacher turnover: Why it matters and what we can do about it*

Costs of teacher attrition

- Separation costs (e.g., removing from payroll, paying substitutes)
- Recruitment and hiring costs (e.g., advertising, conducting interviews, conducting background checks)
- Training costs (e.g., school induction, programme coordination)

- Student academic achievement is negatively affected, even for students whose teachers remained in school (Hanushek, 2011)

Learning Policy Institute. (2017, September). *About teacher turnover calculations*. Retrieved from https://learningpolicyinstitute.org/about-teacher-turnover-calculations#distestimates

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Part 3: Improving teacher selection methods

www.teacherselect.org

Teacher Selection Project

Teacher Selection Project: Three project phases (2015-2020)

1. Developing selection tools based on practice and theory
2. Exploring longitudinal predictive validity of selection tools
3. Developing video-based (and VR) selection tools to select prospective teachers

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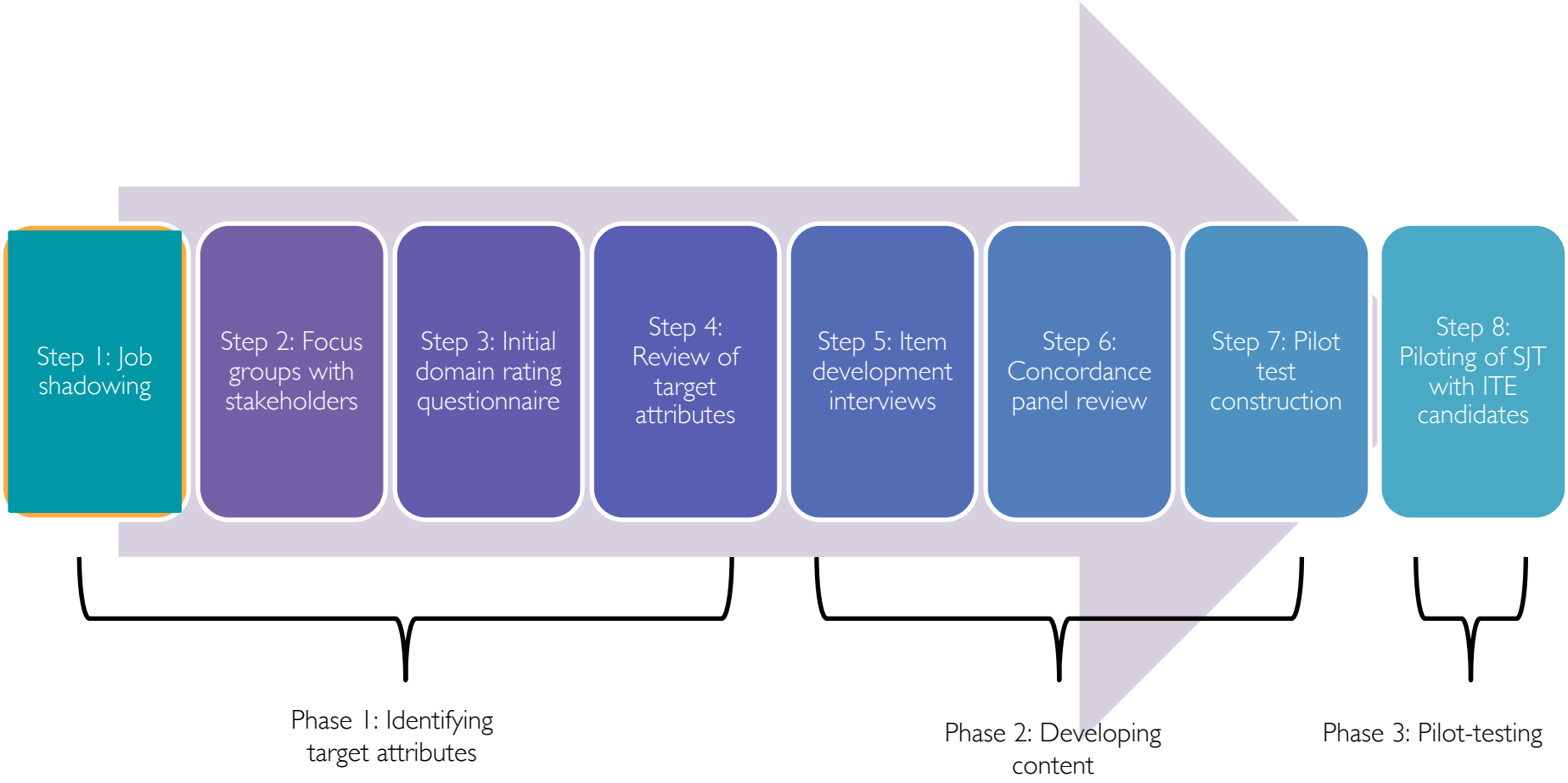
Development of selection tools (2013-2017)



Klassen et al. (2017). Developing a proof-of-concept selection test for entry into primary teacher education programs. *International Journal of Assessment Tools in Education, 4*, 96-114.

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Current Project Sites

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Key points

1. Choosing the right candidates for teaching is important
2. The evidence base for current teacher selection methods is not very strong
3. There are economic implications for (prospective) teacher selection
4. Research-based selection methods may improve teacher quality

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Recent Publications

Kim, L. E., Dar-Nimrod, I., & MacCann, C. (2017) Teacher personality and teacher effectiveness in secondary school: Personality predicts teacher support and student self-efficacy but not academic achievement. *Journal of Educational Psychology. Advance online publication*. http://doi.org/10.1037/edu0000217

Kim, L.E., & MacCann, C. (in press) Instructor personality matters for student evaluations: Evidence from two subject areas at university. *British Journal of Educational Psychology.*

Klassen, R. M., & Kim, L. E. (2017). Teacher selection methods: A meta-analysis. In revision with Review of Educational Research.

Klassen, R. M., Durksen, T. L., Györi, J., Alhashmi, W., Kim, L. E., Longden, K., Metsäpelto, R.-L., & Poikkeus, A. M. (2017). Cultural context and teacher characteristics: Exploring the non-cognitive attributes of prospective teachers in four countries. In revision with Teaching and Teacher Education.

Klassen, R. M., & Kim, L. E. (2017). Assessing critical attributes of prospective teachers: Implications for selection into initial teacher education programs. In D. W. Putwain, & K. Smart (Eds.), British Journal of Educational Psychology Monograph Series II: Psychological Aspects of Education (pp. 5-22). Oxford: Wiley.

Klassen, R. M., Durksen, T. L., Kim, L. E., Patterson, F., Rowett, E., Warwick, J., Warwick, P., & Wolpert, M. A. (2017). Developing a proof-of-concept selection test for entry into primary teacher education programs. International Journal of Assessment Tools in Education, 4, 96-114.

Klassen, R. M., Durksen, T. L., Patterson, F., & Rowett, E. (2017). Filtering functions of assessment for selection into initial teacher education programs. In D. J. Clandinin & J. Husu (Eds.), International handbook of research in teacher education. Thousand Oaks, CA: Sage.

Klassen, R. M., & Tze, V. M. C. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. Educational Research Review, 12, 59-76.

Klassen, R.M., Durksen, T.L., Rowett, E., & Patterson, F. (2014). Applicant reactions to a situational judgment test used for selection into initial teacher training. International Journal of Educational Psychology, 3, 104-125.

Recent Conference Presentations

Kim, L. E. & Klassen, R. M. (2017, August). What's going on in a teacher's mind? How expert, beginner, and novice teachers cognitively processes difficult classroom scenarios. Invited Symposium conducted at the bi-annual meeting of the European Association for Research on Learning and Instruction, Tampere, Finland.

Kim, L. E. & Klassen, R. M. (2017, July). Situational Judgement Tests for prospective teacher selection: preliminary evidence. Symposium conducted at the bi-annual meeting of The International Society for the Study of Individual Differences Conference, Warsaw, Poland.

Klassen, R. M. & Kim, L. E. (2017, September). Selection methods for teachers and prospective teachers: A meta-analysis. In A. Poikkeus (Chair), Improving teacher selection methods: key challenges and steps forward. Symposium conducted at the bi-annual meeting of the European Association for Research on Learning and Instruction, Tampere, Finland.

Klassen, R. M., & Durksen, T. L. (2016, August). Educational psychology and teacher selection: Bridging the gap between theory and practice. Paper presented at the annual meeting of the American Psychological Association, Denver, CO.

Klassen, R., Kim, L., Durksen, T (2016, June). Can we measure the judgement of candidates for ITE in a reliable, valid, and a fair manner?. In L. Sheridan & A. Phelan (Chairs), W(h)ither professional judgement?. Symposium conducted at the European Association for Research on Learning and Instruction SIG 11 (Teaching and Teacher Education)SIG 11 (Teaching and Teacher Education), Zurich, Switzerland.

Metsäpelto, R.-L., Poikkeus, A.-M., & Klassen, R. M. (2016, June). Developing student selection for initial teacher training: Adapting the situational judgment test in Finland. Paper presented at the bi-annual meeting of the European Association for Research on Learning and Instruction SIG 11 (Teaching and Teacher Education), Zurich, Switzerland.

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