

Section A		
Institution: Durham University		
Unit of Assessment: 23 Education		
Title of case study: Improving the educational outcomes of children starting school in five countries		
Period when the underpinning research was undertaken: Between 1 January 2000 and 31 December 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Peter Tymms Christine Merrell	Role(s) (e.g. job title): Professor & Director of iPIPS Professor & Deputy Executive Dean SS&H (Research)	Period employed by submitting HEI: 1996 to present 1996 to present
Period when the claimed impact occurred: Between 1 August 2013 and 31 July 2020		
Is this case study continued from a case study submitted in 2014? N		
Section B		
1. Summary of the impact		
<p>The iPIPS project is a monitoring system for the first year of school which has had significant and extensive impact on pedagogical understanding, policy and practice in England, Brazil, South Africa, Russia and Lesotho. Policy changes have included the introduction of assessment at the start of school in England; the creation of new educational instructional material and approaches in Rio de Janeiro, Brazil; the use of data to inform policies in Kazan, Russia; changes to pedagogic practice in Brazil, South Africa, and Lesotho. Additionally, the importance of iPIPS for educational practice and policy has been noted by the Director of Education and Skills at the Organisation for Economic Co-operation and Development (OECD).</p>		
2. Underpinning research		
<p>iPIPS (international Performance Indicators in Primary Schools) builds upon the success of the PIPS Baseline Assessment, which originated in 1994 by Peter Tymms and was further developed in collaboration with Christine Merrell. The PIPS Baseline Assessment aimed to improve children’s educational outcomes by providing teachers with high-quality, pupil-level information to inform their practice through more targeted provision for their pupils, and through feedback quantifying children’s progress over their first year at school. PIPS also aimed to provide policy-relevant information to managers and policymakers to influence system-level developments. Since it began in 1994, the PIPS Baseline Assessment has been used to assess more than 3,000,000 children at the start and end of their first year of school. The psychometric properties of the assessment have been rigorously evaluated over the past 20 years and over 60 scientific papers have been published using data from the project. Two examples are: the recent research output by Tymms, Merrell and Bailey (2018), which found that the benefits of effective education during the first year of school could be seen up to the end of compulsory secondary education at age 16 [R1]. This highlights the need for high-quality data to inform teachers’ practice and to inform policy at the system level. The second is Ivanova et al (2016) which described the formal process of equating scales across countries – a necessary step for an international comparative quantitative study [R2].</p> <p>The PIPS Baseline Assessment has been used in several countries and research has provided evidence that, with careful adaptation, it is a reliable and valid instrument across a wide variety of contexts and cultures around the world [R4], [R5], [R6]. Different countries often have very different policies for their pre-school and primary educational phases; children start at different ages, lessons are conducted in numerous languages, and class sizes vary from 1 to more than 100. Reliable information about children starting school and their progress in that first year can</p>		

help to shed light on this crucial stage of children's education. Amongst other things, this can help to explain differences between jurisdictions seen in later international surveys e.g. PISA (Programme for International Student Assessment), PIRLS (Progress in International Reading Literacy Study) and TIMSS (Trends in International Mathematics and Science Study).

The underpinning research provides evidence that the PIPS Baseline Assessment can be used to make valid international comparisons of children's first year of school. The iPIPS project, which uses the PIPS Baseline Assessment, was launched in 2013 and the impact described occurred in the current REF period. The use of an assessment which can validly identify the variation in children's cognitive and behavioural development at the start of school, and their learners' progress during the school year within and across countries, lies at the heart of this impact-oriented project. Since the launch of iPIPS, further research has supported the use of the assessment to make international comparisons, and policy reports have been produced [R3].

3. References to the research

- 1.) Tymms, P., Merrell, C., & Bailey, K. (2018). The long-term impact of effective teaching. *School Effectiveness and School Improvement*, 29(2), 242 – 261.
<https://dx.doi.org/10.1080/09243453.2017.1404478>
- 2.) Ivanova, A., Kardanova E., Merrell, C., Tymms, P., & Hawker, D. (2016). Checking the possibility of equating a mathematics assessment between Russia, Scotland and England for children starting school. *Assessment in Education: Principles, Policy & Practice*, 1-19.
<https://doi.org/10.1080/0969594X.2016.1231110>
- 3.) Tymms, P., Merrell, C., & Buckley, H. (2016). Children's development at the start of school in Scotland and the progress made during their first school year: An analysis of PIPS baseline and follow-up assessment data. Research report for the Scottish Government. ISBN: 9781785448942. <http://www.gov.scot/Publications/2015/12/5532/0>
- 4.) Tymms, P., Merrell, C., & Wildy, H. (2015). The progress of pupils in their first school year across classes and educational systems. *British Educational Research Journal*, 41(3), 365-380. <https://doi.org/10.1002/berj.3156>
- 5.) Merrell, C., & Tymms, P. (2007). What children know and can do when they start school and how this varies between countries. *Journal of Early Childhood Research*, 5(2), 115-134.
<https://doi.org/10.1177/1476718X07076679>
- 6.) Tymms, P., Merrell, C. & Jones, P. (2004). Using baseline assessment data to make international comparisons. *British Educational Research Journal*, 30, 673-689.
<https://doi.org/10.1080/0141192042000234647>

R1, R2, R4 and R5 are published in very well respected internationally recognised peer reviewed journals.

R3 was commissioned by the Scottish Government and is published on their website.

4. Details of the impact

This impact case study focuses on the iPIPS project and shows how the underpinning research has led to an expansion in the reach and significance of impact in the current REF period.

Between 1 August 2013 and 31 July 2020, 42,308 children in Brazil, Lesotho, Russia and South Africa have been assessed as part of the iPIPS project and the data used to inform policy and pedagogic practice [E1]. Additionally, advice to the Department for Education in England has led to policy-related impact in the current REF period.

Policy

In England, iPIPS contributed to the Government's policy for accountability in primary schools, which was introduced in the 2015/16 academic year. Tim Leunig, then Chief Educational Adviser at the Department for Education, became familiar with iPIPS and gained an understanding of the importance of knowing children's developmental levels at the start of

school [R4], [R5], [R6] when holding schools to account for the progress made by the end of the primary phase. Later, he wrote *“it was the initial approach [about iPIPS] by Durham to the DfE which triggered a series of actions that resulted in the decision to introduce a new baseline assessment policy in England at the start of school”* [E2]. The details of the policy requiring schools to use a baseline assessment with children in the Reception year have evolved since its introduction but the same principle of having one as a national assessment to measure pupils’ progress in their primary school years remains with a new incarnation of baseline assessment to be launched in Autumn 2020.

iPIPS was first used in Russia in Autumn 2013 [R5], [R6] involving 310 children in 21 schools. Participation rapidly increased and by 2018, a total of 24,708 children from 8 different regions had been assessed twice [E1]. At a conference in Kazan, Russia, in 2017, Mukhametov Ildar Rinatovitch, Deputy Minister, Ministry of Education and Science, Tatarstan Republic Tatarstan, Russia, explained how the data from iPIPS had informed educational policy. He stated: *“Educational assessment has become a priority for the Tatarstan Republic, and we take the issue seriously. About ten years ago, we assessed through intuition but now we use methods with a scientific underpinning to gain a deeper understanding. We need good data to make reliable decisions. When we talk about assessment we often talk about older children, but pre-school and first grade are important too. We have educational standards for this age, and we need assessment and so we started iPIPS”* [E1]. At the same conference, Fyodorova, from the General Education Board of the Tatarstan Republic, said *“We use iPIPS data for important reports including to the President of the Republic and these are used to make decisions”. “We ‘synchronize watches’ by iPIPS. Annually in August conferences when we report to the President and a large pedagogic community, we use a table with iPIPS results”* [E3].

At the same conference in Kazan in March 2017, Evgeniya Panasenko from Crimea described how iPIPS had been officially used to evaluate the implementation of Russian Standards (curriculum) in the region. She explained *“Also, we could use iPIPS to evaluate the impact of receiving the new equipment and materials ... This led to us organizing more training for teachers”* [E3].

More recently, the team at the Higher School of Economics, Moscow, responsible for coordinating the iPIPS project across Russia has developed its own version on the basis of their earlier experiences of delivering iPIPS [R2], [R1]. This new version has been used between 2018 and 2020 to assess 8,041 children. [E1]

Influencing policy-makers’ thinking

Andreas Schleicher; Director of Education and Skills at the OECD has acknowledged that iPIPS has *‘paved the way’* for the OECD’s International Early Learning and Child Well-being Study [R1 to R6]. This is an OECD international study which assesses children’s development at age 5. It began in 2018 and reported findings from England, Estonia and the United States in March 2020. Additionally, he wrote *“The developments you have led in the field of early learning assessment are significant. In particular, this work has contributed to a growing emphasis on the importance of children’s development in their early years, as well as the critical need for reliable and valid data to inform policy and practice. Your work across diverse cultures and languages, from South Africa to Scotland, has demonstrated that such assessments can be undertaken in a reliable way across diverse settings. And I support your focus on a direct assessment of the child, as well as indirect measures, and the use of technology to improve accuracy and reduce the costs of implementation”* [E4].

Commenting upon the success of iPIPS in Lesotho, the Principal Secretary of Basic Education in the Ministry of Education noted: *“The assessment and teacher guidance were clearly valuable. This was evident from the feedback that participating principals and Grade 1 teachers gave. In both written responses and verbally they were very positive about how helpful the materials had been for their practice”* and *“It [the MoET] is very supportive of scaling up the study so that more primary schools in Lesotho can learn and implement the assessment and*

use the teacher guidance, with the aim of improving the education levels of learners across the country.” [E5]

Pedagogical Practice

Detailed pupil-level reports have been provided to teachers in Russia (32,749 learners from 1,436 classes who were assessed with either iPIPS or its derivative), Cape Town, South Africa (3,000 learners across 112 schools), Rio de Janeiro, Brazil (6,379 learners assessed up to 3 times in 190 schools [E1]), Lesotho (180 children from 13 schools) [R1], [R3], [R4]. In total, 42,308 students have been assessed using iPIPS in 4 countries over 6 years. Teachers in each of these areas have used the feedback from the assessment to inform their practice. For example, in Lesotho, one teacher commented: *“The [iPIPS] results changed my methods of teaching especially in reading”*. Another commented: *“Because now I know their strengths and weaknesses I can help learners”* [E6]. Mr Davis Pasa, Acting Principal of Holy Innocent Primary School, Maseru, Lesotho wrote: *“Based on the study, I ... requested for donations ... reading materials. Not only did they donate books but they also trained my teachers to establish reading clubs. Teachers at the Holy Innocent Primary School, Maseru, used the iPIPS information to improve their instruction skills. They began having high expectations of their pupils in Grade 1. ... Our classroom seating arrangement is now a round table model, whereby low achievers learn from high achievers. We also sat down as a staff and developed school-based policies, We have also used the iPIPS assessment as a diagnostic assessment when admitting transfers into our school. ... On a personal level, the project motivated me to explore new skills as a teacher and administrator”* [E6].

In Russia, some teachers commented that they shared the iPIPS results with parents so that they could work in partnership to help improve their children’s learning. Another group of teachers commented: *“We created a group for migrant children and called it the Russian Second Language group. We used a speech therapist as well as a specialist teacher for this group. We created a unified educational environment in which children felt motivated. Children from more deprived backgrounds thrived.”* [E3].

In South Africa, 97% (n=58) of teachers who attended a professional development workshop agreed that they would be using the children’s iPIPS assessment results to inform their teaching, tailoring lessons to the children’s developmental levels [E7]. A report was produced by the CEA, University of Pretoria, South Africa, detailing the outcomes of workshops and meetings held with District Officials, Head Teachers and Teachers in Cape Town, South Africa [E7]. The high percentage of teachers appreciating the value of iPIPS was echoed when it was used in Brazil [E8]. One teacher wrote: *“Based on the information from the report, it was necessary to take a new look at our pedagogical planning. We have perceived through the students’ results, some specific areas that needed more attention. It also enabled us to advance in the field of reading/vocabulary where the increase in performance was expressive. Reading activities were intensified, generating an improvement in vocabulary”*.

In Rio de Janeiro, Brazil, after using iPIPS with a sample of schools as part of a longitudinal research study, Marcio da Costa, the Municipal Secretary of Education in the Department of Education, Rio de Janeiro and the Director of the Paulo Freire Training School committed staff resources and found external funding to develop a games-based assessment and teaching resources for Grade 1 teachers of municipal schools where there is no systematic assessment system. This was based upon the principles of iPIPS but used the different assessment items. It used a teacher-friendly approach to assessing and then teaching children in a novel way which suited the local context. In a pilot involving 13 schools in autumn 2018, the materials were well-received by teachers who found them useful. This is evidenced in the testimonials from Professor Da Costa and photos of some of the materials. The materials were further developed in 2019 and by February 2020, Professor Da Costa was aiming to expand their use, stating that *“the expertise of Professors Merrell and Tymms has helped us to enhance the education offered to our pupils in Rio and to confront the many challenges we have to make a really good education system”* [E9].

In conclusion, iPIPS has impacted on policy and practice in a number of countries and the impact to date has paved the way for sustainable use in years to come; we have well established links with local teams in Brazil, Russia, Lesotho and South Africa to continue the work independently of Durham.

5. Sources to corroborate the impact

E1: Breakdown of numbers of children assessed in each country (2013 – 2019)

E2: Email from UK Chief educational advisor Tim Leunig (2016)

E3: Report from two conferences in Russia (Kazan and Moscow), which detail speeches and comments from teachers and policy makers, and teacher feedback from Russia. (2017)

E4: Testimonial from the Director of the Directorate of Education and Skill, Andreas Schleicher, at the OECD, confirming the influence of iPIPS. (2018)

E5: Improving Basic Education in Grade 1 in Lesotho: Letter of Support from the Principal Secretary for Basic Education, Ministry of Education and Training, Lesotho. (2019)

E6: Teachers' comments from project in Lesotho (2019)

E7: Report produced by the CEA, University of Pretoria, South Africa, detailing the outcomes of workshops and meetings held with District Officials, Head Teachers and Teachers in Cape Town, South Africa. (2017)

E8: Brazil: Report summarising teachers' opinions of iPIPS and how they have used the information (2020)

E9: Testimonial and ongoing information from Marcio da Costa with regards to the development of games-based assessment and teaching activities for Grade 1 teachers in Rio de Janeiro, and the evaluation of the pilot of materials. (2018)