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TEACHERS' WORK PRACTICES IN KAZAKHSTAN: SOME COMPARATIVE INSIGHTS FROM TIMSS 2011 TO GUIDE CURRICULUM IMPLEMENTATION

This paper[2] looks at the different norms of practice between mathematics teachers in two countries, Kazakhstan and England. These differences pose challenges and opportunities for the implementation of a new secondary curriculum in Kazakhstan; a curriculum that has been shaped by and is grounded in prevailing practice in English educational system. The paper draws on survey data from the 2011 TIMSS exercise and relates it to our observations of classrooms in Kazakhstan over the last 5 years. The analysis draws on various cross-national studies of teachers' work and studies of subject departments. The paper concludes with a discussion of the implications for successful curricula change and how it can be supported by an understanding of prevailing norms of practice. The paper also illustrates the continued value of cross-national comparison of educational practices especially for relatively new nations. It questions the popular notion that global waves of policy solutions have washed, unimpeded and unchanged, across national borders.

Key words: Comparative studies, teacher education, teaching practices, TIMSS.

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Қазақстандағы оқыту тәжірибесі: оқу бағдарламаларын ендіруде TIMSS 2011 бойынша кейбір салыстырмалы бағаларды басшылыққа алу

Мақалада Қазақстан және Англия сияқты екі елдің орта мектептеріндегі математика мұғалімдерінің тәжірибесіндегі айырмашылықтар қарастырылады. Бұл айырмашылықтар Англияның білім беру жүйесінде басымдылық танытатын тәжірибелердің тұжырымдамасына негізделіп қалыптасқандықтан Қазақстанда жаңартылған орта білім мазмұнын енгізуде мәселелер мен мүмкіндіктерді туғызады. Мақала мектептегі математикалық және жаратылыстану білім беру сапасының TIMSS халықаралық мониторингтік зерттеулер аясында 2011 жылы өткізілген сауалнама мәліметтеріне негізделеді. TIMSS зерттеулерінің мәліметтері Қазақстандағы соңғы 5 жыл ішінде өткізілген сабақтардың барысына және біздің байқауларымызға сәйкестендіріледі.

Талдау педагогикалық іс-әрекеттің әртүрлі халықаралық зерттеулердегі айырмашылықтарына және мектеп мұғалімдерінің пәндік қызметінің аясындағы зерттеулерге сүйенеді. Мақала мектептік оқу жоспарларын табысты өзгертудің алғышарттарын талқылау және қолданыстағы тәжірибе нормаларын жетілдіру жолдарын қалай түсіндіру керек екендігін талдаумен аяқталады. Сонымен қатар мақалада білім беру тәжірибесін халықаралық талдаудың құндылықтық тұрақтылығы көрініс береді. Мақала ұлттық шекараларды кедергісіз және өзгеріссіз өтуге саяси шешімдердің жаһандық толқындары мүмкіндік береді деген танымал пікірге күдікпен қарайды.

Түйін сөздер: салыстырмалы зерттеулер, мұғалімдерді оқыту, оқыту тәжірибесі, TIMSS, орта білім, жаңартылған білім беру бағдарламасы.

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Практика преподавания в Казахстане: некоторые сравнительные оценки от TIMSS 2011 для руководства по внедрению учебных программ

В статье рассматриваются различия практик учителей математики средней школы в двух странах – Казахстане и Англии. Эти различия создают проблемы и возможности для внедрения обновленного содержания среднего образования в Казахстане, концепция которого была сформирована и основана на преобладающей практике в системе образования Англии. Статья основывается на данных опроса, проведенного в рамках международного мониторингового исследования качества школьного математического и естественнонаучного образования TIMSS, проведенного в 2011 году. Данные исследования TIMMS соотносятся с нашими наблюдениями за ходом школьных уроков в Казахстане за последние 5 лет. Анализ опирается на различные международные исследования педагогической деятельности школьных учителей и исследования работы учителей в рамках их предметной деятельности. Статья завершается обсуждением предпосылок для успешного изменения школьных учебных планов и анализом вопросов о том, как их можно совершенствовать путем понимания существующих норм практики. Статья также демонстрирует постоянную ценность межнационального анализа образовательной практики. Статья ставит под сомнение популярное мнение о том, что глобальные волны политических решений могут беспрепятственно и без изменений пересекать национальные границы.

Ключевые слова: сравнительные исследования, обучение учителей, практика преподавания, TIMMS.

Introduction

The study is concerned with practice. We use practice in a broad sense, it is not just the act of «instruction» but also lesson planning, assigning and assessing homework, giving feedback to students, collegial exchange, meeting with supervisors and parents. The motivation for studying teachers' work practices is our belief that the successful implementation of reform, of new curricula or new technologies, involves changes in how teachers use their time.

We have chosen England as a reference point to understand the work practices of teachers in Kazakhstan because the new curriculum being piloted is a product of Cambridge International Exams (CIE). While CIE takes an international perspective and serves clients in a variety of national settings it is grounded in English educational practice and educational culture. This bi-lateral comparison comes more than twenty years after Crossley and Broadfoot (1992:100)[1]suggested that with the ascent of «larger scale federations» diminishing the importance of national boundaries the «potential salience of comparative and international studies of education will correspondingly increase.» Without disputing the growth of interest in global and transnational comparative studies, well documented in Kosmutzky's bibliometric study (2015)[2], the emergence of new nations, the rise of post-colonial states, and the re-emergence of states after the breakup of the USSR has seen an increase interest in cross national comparisons. Some of this is expressed through participation in multi-national studies like TIMSS and PISA or in regionally delineated comparative assessment in Africa and Latin America. But it has also seen expression in comparisons between an aspirant nation, like Kazakhstan, and perceived high performance nations like Singapore and Finland. Sometimes this political and practical attention has led to transfers and adaptations of policies and practices as nations have looked for competitive advantage and legitimacy, to use concepts suggested by Holzinger and Knill (2005:780) [3] in their study of cross-national policy convergence. The desire for legitimacy is associated by Bieber & Martens (2011:103)[4]to «situations of high uncertainty» which are likely to be found in new or emergent states.

We have chosen the TIMSS data set because of it availability and because it is well regarded. It provides systematically collected data based on standardized definitions and methods that are regarded as hallmarks of «truly comparative research» (Carnoy, 206:553)[5]. It is also linked with the «intended curricula of the participating countries» (Gonzales 2004:1)[6].

The use and political popularity of the IEA studies that evolved into TIMSS have grown overtime since the beginnings in the 1960s [7-8] (Husen, 1979, Forshay et al 1962). There are nearly

250 scholarly publications of the IEA web site and many more in referred articles and technical papers. Along with other cross national assessments TIMSS has become «part of the new education currency» used by politicians to develop policies and shape programs (Riley 2003:420-421)[9]. The detailed findings of TIMSS studies can also «identify where the strengths and weaknesses of educational systems lie» [10] (Torrance 2003: 422) and are «potentially rich sites for mathematics education researchers» [11] (Ferrini-Mundy & Schmidt 2005: 167).

We have chosen Mathematics as a field of teaching because it is less bedeviled by language differences and culturally referenced content; the TIMSS mathematical items have been characterized as «meant– to– be neutral» [12] (Artigue & Winslow 2010:3). We elected not to study science because of the strong differentiation of science in Kazakhstan with sharp divisions between Physics, Chemistry and Biology.

We have chosen Grade 8 because that is a useful cross national reference point before differences in the structure of secondary schooling make comparisons more complex. We have avoided studying Grade 4 because there are marked differences in the way teaching and learning are organized with the presence of significant numbers of subject specific teachers in Kazakhstan's early grades of schooling.

Materials and Methods.

Complexities of Comparisons

Even with these simplifying decisions there are still significant differences that may limit some comparisons. Most notably there is a fundamental difference in the ways teachers are compensated. Teachers in Kazakhstan are paid under the «stavka» system which is essentially a payment for a task, usually a defined number of class contact hours. The key features of the 'stavka' system of compensation are its flexibility in terms of teaching hours, the low base pay – one teaching load, fragmentation of the teacher's educational role, lack of transparency, a low salary for beginning teachers, and the cap on total pay [13] (UNICEF 2011:90).

Teachers in England are paid for fulfilling a role. For a teacher in Kazakhstan a «stavka» may be teaching grade 8 Mathematics for a semester. Extra-curricular activities like the school's Chess tournament or cross curricular work with the physics department would be separate tasks.

Our field observations suggest that there are very different professional communities. The teachers in main stream schools in Kazakhstan seem to cohere into singular discipline groups, physics teachers with physics teachers rather than join with all science teachers or all teachers of grade 9 students. But we will look more closely at conceptions of collegiality and co-operation when we present the TIMSS data.

We are looking at these concepts as organizing ideas for activities like communication and interaction between teachers, activities that are regarded as pathways to better practice. Gump (2002:789)[14]for example, reminds us of the importance of interaction and communication between teachers of the same grade level which he describes as the «heart» of Japan's public junior high schools.

Literature on Teachers Work and Cross National Comparisons

Cross national studies of teachers and teaching practice have informed policy debates for over thirty years. These include school site studies like Rohlen's (1983) [15] Japan's High Schools and Peak's works on early education. In the 1990s there was a lot of US policy attention on the instructional practices of teachers in East Asian class rooms ranging from questioning techniques (Stigler & Stevenson 1991) [16] to self-regulating student groupings in classrooms (Stevenson & Stigler, 1992) [17]. TIMSS data has been at the center of many of these comparative studies but some of the uses of the findings have been problematic and politicized, see for example Bracey's (1998) [18]commentary of US political leaders' responses to the results the third survey. Simplistic exhortations to emulate other nations' practices are also criticized by UK scholars Atkin & Black (1997) [19] who concluded TIMSS data did not form a «magic bullet» or reveal a «clear path» (p. 22).

Similarly PISA data was the impetus for a recent study of Shanghai classrooms. Tan's (2013) [20] qualitative study concentrated on «the main factors that contributed to Shanghai's success in PISA» 2009. Using focus groups and class room and field observations in fourteen schools triangulated with a small set of principal and vice principal questionnaires (pp. 11-12) Tan identified four main components for success. These were a «shared moral vision to develop every child» (p. 214), «clear and ambitious standards and policies» that supported student achievement (p. 214), an expectation that head teachers would systematically seek to improve a school's performance, and teachers that were «content experts who excel in transmitting foundational knowledge and skills» (p. 215). Tan echoes Black's cautionary note about

the immediate transferability of policy lessons across cultures commenting that «cultural scripts… mediate policy conception and implementation». These scripts are sets of «coherent and evolving beliefs and assumptions» embedded in tradition and shaped by a sense of national purpose (p. 216). Fang and Gopinathan (2009) [21] addressed this more fully in their essay on comparing teachers and teaching in «Eastern and Western» settings. They point out that «differences exist because teaching is deeply embedded in a cultural system» and because different «cultural beliefs and values» lie behind teaching practices» (p. 558).

Yet a recurring theme in these case studies and in the theoretical literature is the centrality of teachers work. Floden and Huberman (1989) [22]argue that «most educational improvement works through teachers» as they have the best and most knowledge about what changes are taking place, what is actually being implemented (p. 457). Similarly Johnson, (1990)[23] observes that «although teachers generally exert only modest influence on decisions made outside their classrooms, they control most of the instructional policy within them» (p. 182). Sammons et al. (2007) [24] foreshadowed Tan's findings concluding their study with the observation that «committed» teachers have «an enduring belief that they can make a difference to the learning lives and achievements of students» through their identity, the knowledge and skill they bring to the task, how they teach and through the values they exhibit in their work place behavior (p. 696).

It is with this in mind that we have looked at some elements of the work of teachers how it is «divided and done, how it is scheduled» [23] (Johnson 1990:1), how collegial it is or is not and how central is the teacher to the work of the class. We have included the notion of collegiality because of findings like Johnson's that collegial schools «are more satisfying for teachers and more effective for students» (148) and because of the argument of Talbert & McLaughlin (2002) [25] that a «teacher learning community» characterized by collegial feedback and team work promotes good practice (p. 326). This is supported by Tan's (2013) observation that Shanghai teachers have strong professional learning communities in which they share resources, observe the practice of others and which are 'lubricated by long-term trust, respect, negotiation, loyalty and mutual benefit» [20, p. 219]. Collegiality is also a core element, with cooperation and collaboration, in Sach's (2003 & 2012) conception of the teacher as an «activist professional.» [26-27]

We have included the centrality of the teacher in the learning process because this is an integral element in the new curriculum and in the pedagogical methods embedded in the new standards. Our observations and the extensive field observations of others (see Bridges, 2014) [28] reveal that the dominant approach in main stream secondary schools is teacher centered instruction. For many students the school experience is akin to the traditional Shanghai classroom with its three centers; teacher, classroom and text centeredness (Tan 2013: 221) [20] or the East Asian classrooms described by Fang and Gopinathan (2009) [21].

Selecting Variables for Study

While our choice of variables to study has been informed by the literature we have also been mindful of what is available in the TIMSS data base. TIMSS 2011 is based on a nationally representative sample of students and includes data on their teachers. It also includes teacher questionnaires which ask about classroom and instructional practices and interactions with other teachers. This means that we can describe teacher attributes and self-reported behaviors in terms of the proportions of students in the national sample (Foy et al, 2013, p.9) [29] and in terms of proportions of teachers reporting how frequently certain behaviors occurred.

It has also been informed by observations of classrooms and discussions with teachers, school principals and administrators in Kazakhstan over the last 5 years and by reviewing the assessment methodologies in classrooms and in the Unified National Test (UNT) which is the high stakes exit exam at the end of secondary schooling. We are struck for example by the stress on memorization rather than application of knowledge in classrooms in Kazakhstan and the importance of content recall in the UNT (Winter et al 2014) [30].

There are many variables to choose from in the TIMSS data base, almost too many. To organize them we have used Jackson's (1990) simple three part framework of teaching practice; planning to teach, teaching and post teaching activities Jackson (1990: 151) and Fang and Gopinathan (2009:558) [21] describe these as «three dynamic interactive phases– the pre-active, the interactive and the post-active.»

We have looked at the TIMSS' teacher processes variables in these categories but are mindful that the three phases are cyclical and that conversations between teachers about some element of practice can be either pre– active or post active, or both. Still the three phases are useful because they enable us to

organize the data in a way that creates meaning and generates hypotheses.

Results and discussion

Selected Findings from TIMSS 2011

First of all, it is worth noting that Kazakhstan has participated in four cycles of TIMSS 2007, 2011, 2015 and 2016. England participated six times in the TIMSS since its inception in 1995. TIMSS 2011 sampled students and teachers on the basis of numbers of schools, teachers in 147 schools in Kazakhstan and 118 schools in England responded about the teaching of 8th-grade mathematics (Mullis, Martin, Foy & Arora, 2012) [31].

The International Association for the Evaluation of Educational Achievement (IEA)'s 2011 Trends in Mathematics and Science Study (TIMSS) included a teacher survey which collected data on various work practices. It reported the data in terms of the numbers of students in the national sample. This is readily converted to a percentage and these can be compared across the two countries and tested for significance. The data set is accessible through the US Department of Education's national center for education statistics (http://nces.gov/TIMSS). Looking first at the active phase of teacher's work a noticeable area of difference between England and Kazakhstan is the frequency of written tests and the extent of memorization. Kazakhstan's students can expect a quiz in almost half of all lessons and for a quarter of students there will be a quiz in almost all lessons. This is not the case for English students (Table A). Memorization of formulae is more three times more likely to be stressed in all or nearly all lessons in Kazakhstan's classroom than in English class rooms (see Table B). The differences reported in these tables are statistically significant. Memorization is another legacy of the Russian approach to mass schooling; «learning the lesson is a key learning process…where success in learning is equated with success in memorization» (Hufton & Eliott (2000: 124-125) [32]

Table A: In Class Written Tests or Quizzes

FREQUENCY	KAZAKHSTAN	ENGLAND
Half or More of All Lessons	49%	5%
Every or Almost Every Lessons	25%	1%

Table B: Memorize Formulae

FREQUENCY	KAZAKHSTAN	ENGLAND
Every or Nearly Every Lesson	73%	24%

Other differences in classroom practices include more frequent use of concrete objects as a basis for instruction by teachers in Kazakhstan and their greater tendency to relate mathematics to daily life. Combine these two findings suggest that Mathematics teachers in Kazakhstan pay greater attention to making mathematical content more accessible to students than their English counterparts.

Yet teachers in Kazakhstan twice as frequently report that they use «whole class» strategies in «every or almost every lesson» which suggests there is less individualized instruction in their classes than there is English teachers' classes. This is reinforced by the frequency with which Kazakhstani students work by independently while the teacher is occupied on non-teaching matters. This is likely to happen for nearly 60% of students in half or more of their mathematics classes. This is four times higher than the frequency for English students.

Another notable difference is the centrality of homework in the Kazakhstani teachers' repertoire. Kazakhstani teachers assign homework more often, are more likely to discuss homework in class and are more likely to ask students to correct homework during classes. The estimated time to complete homework also tends to be longer in Kazakhstani classrooms (see Table C). The differences shown in Table C are statistically significant.

The emphasis on homework is a legacy of the Soviet era and is part of general approach to lesson planning in which «there are intimate links between textbook, lesson, homework and assessment.» The typical lesson begins with a reprise of prior classes and latest homework, followed by new material and

ending with synthesis and repetition of new content, synthesis with established content and new homework (Hufton and Elliott, 2000, 122) [32]. This format was observed in the USSR by US mathematics education experts in the 1970's (Davis & Romberg, 1979:7&20) [33].

Table C: The Centrality of Homework

FREQUENCY	KAZAKHSTAN	ENGLAND
Assign Homework 3 or more times a week	95%	2%
Always or Almost Always Discuss Homework in Class	77%	44%
Always or Almost Always Have Students Correct Homework	32%	13%
Homework Takes More than an Hour	10%	1%

In the «planning to teach» and «post-teaching» phases Mathematics teachers in Kazakhstan seem to be more collegial than their English counterparts. They are more likely to work together, to visit another teacher's classroom, to share learning, to discuss concepts with another teacher and collaborate to improve practice. In contrast English teachers seem professionally isolated with almost two thirds saying they «never or almost never» visit another class. Table D shows five variables which we have clustered as collegiality measures as they are professional exchanges, acts of reciprocity, where individuals help each other without monetary incentive or reward. These collegiality measures are very powerful indicators of a desire and willingness to improve practice. «Teachers who collaborate on instruction are more likely to hold high expectations for students and for their colleagues, to innovate in their classrooms, and to have strong commitments to the teaching profession (Talbert & McLaughlin 2002:327).

Table D: Collegiality Measures

FREQUENCY	KAZAKHSTAN	ENGLAND
Teachers Never or Almost Never Work Together	2%	35%
Teachers Never or Almost Never Visit another Class	1%	64%
Never Discuss Concepts with Another Teacher	3%	12%
Never Share Learning with Another Teachers	1%	14%
Teachers are Very Collaborative to Improve Learning	48%	24%

In summary the TIMSS data and our time in classrooms leads us to conclude that there are different norms of practice between mathematics teachers in the two countries. Within the boundaries of their discipline group Kazakhstan's mathematics teachers are more collegial than English teachers.

Within any class session Kazakhstan's teachers are more likely to set a written quiz, ask students to memorize formula and to mark homework. These align with the common practice on post-soviet schools of assigning a grade to each student after every lesson (Huffton & Elliot, 2000:123) [32]. These grades are usually carried forward and averaged after every lesson reinforcing the strong emphasis on summative assessment in Kazakhstan's schools. Grades are also usually recorded in the student's day book with the expectation that parents will see and sign their child's day book on a weekly basis.

Mathematics teachers in Kazakhstan are more likely than their English counterparts to use «whole class» teaching strategies either by preference or by necessity as they attend to non-teaching tasks. English teachers seem more likely to engage in

individualized instruction. These differences pose challenges and opportunities for the implementation of a new curriculum, one that has been shaped by and is grounded in prevailing practice in England. Some are critical of the teacher centered approach to teaching in post-Soviet nations (Elliott & Tudge, 2007; Joldoshalieva, 2007 &Takala, & Piattoeva, 2012) [34, 35, 36] but Zuzovsky (2013) [37] presents evidence suggesting that teacher-centered approach can be positively associated with student achievement in mathematics and science in a range of countries.

Implications for Reform Implementation

Teachers in Kazakhstan share «a culture of professionalism» that is an enduring legacy of the Soviet era (Gallagher 2005:125) [38]. They are well educated and operate inside clearly established, sometimes highly specified norms. There is a strong subject specific identity shared among teachers of a discipline underpinned by the nature of initial teacher education which reifies content knowledge. Both contribute to the collegiality revealed by the TIMSS data. Our field observations suggest that the close interaction between teachers is bounded by the subject department. Physics teachers are very likely to talk to other physics teachers but less often to teachers of chemistry or history. This separation is reflected in the design of the curriculum and even in architecture of new schools. We saw subject departments operating as «distinct subcultures within the schools» whose members identified as subject specialists, speaking to each other in terms particular to their discipline, in much the same way as Siskin (1991: 143 & 154) [39], observed in California, US.

While there are disadvantages from very deep and definite separation and associated specialization the tightly linked subject teams can serve as an entry point for dissemination of new materials and techniques. It would suggest that professional development be delivered to subject specific groups to leverage, existing professional linkages and accelerate the development of «communities of practice» which Wenger, McDermott and Snyder (2002:4) [40] define as «people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.». The aim would be to develop and deepen a culture of «activist professionalism founded …on principles of mutual exchange, reciprocity and work together» and «shared inquiry into patterns of practice» (Sachs 2003:89) [26]. This culture can be «based on democratic and participative principles (which) can counteract the tendency towards a state controlled and regulated teaching profession» (Groundwater-Smith & Sachs 2002: 346) [41].

Using the subject departments as a locus for delivering professional development takes advantage of the shared interests and the common content language of teachers of the same discipline. Communication is easier and «individual thinking can be expanded upon or challenged by peers who share a commitment to the goals of the subject (Wineburg & Grossman 1998:352) [42].

Strong subject departments can be either a barrier to reform in secondary schools or a leverage point (Grossman & Stodolsky 1995, Little 2002) [43-44]. Where subject departments are highly inclusive and committed to improving teaching practice, they act as learning communities (Siskin 1994) [45]. Members of these communities would share teaching and assessment strategies, learning materials, look at examples of student work and talk about how students learn. The community leaders would model «a set of values and an established set of practices and conditions that …open up teachers' opportunities to learn» how to better practitioners (Little 2002:703) [44]. Alternatively, a subject department may also constrain professional practice by «enforcing a single view» and rebuking those who seek to divert from it (Wineburg & Grossman 1998:352) [42]. Where a department has a strong tradition oriented culture «teachers unite to preserve their preferred conceptions of subject and pedagogy even in the face of student failure» (Little, 2006:16) [46].

Where the goals of reform are inter-disciplinary or school wide 'strong' subject departments can impede collaboration by insulating subject teachers from wider concerns or the wider purposes of secondary schooling like the development of young leaders and good character (Siskin and Little 1995:2)[47]. A particular challenge for Kazakhstan is that effective implementation of the tri-lingualism strategy depends on cross department implementation (Mehisto 2015:118) [48].

The existence of strong discipline departments and the persistence of disciplines in the new curricula developed for Kazakhstan strongly suggest that professional development activities and dissemination strategies should focus on subject groupings both with in schools and across schools. Subject associations at national and regional levels can be fostered and strengthened to reinforce communities of practice and to deepen commitment to new standards and practices.

It is also important in designing programs to introduce reforms and new standards to acknowledge that there are different pedagogical traditions and cultures in different disciplines. These differences come from «the disciplinary socialization» that is embedded in initial teacher education, from the different histories and epistemologies of subject domains and from the varying degrees of consensus about the different knowledge domains (Grossman & Stodolsky 1995:6) [43].

Conclusion

The Value of Bi-lateral Studies

We noted above that some scholars had predicted a growth in relevance of broadly based comparative studies as the force of national boundaries faded with greater economic and institutional integration. There is no doubt that the political and social benefits of cross national harmonization of processes and standards shaped the Bologna Process in higher education and stimulated the rapid expansion of the European Higher Education Area to over 45 nations by 2012 (European Commission, 2015:29) [49]. This reduced cross national difference on some significant dimensions like nomenclature and time to first degree. Similarly the popularity of international ranking systems and the wide spread use of rankings to set policy goals (Kehm,2006, Horta,2009, Hazelkorn, 2014 & Douglas 2014) [50-53] have led some to speculate that there is, or will be, greater homogeneity in the universities of the world. For example King (2009) [54] argues that «universities are quite homogeneous worldwide in many of their key features – curricula and subjects offered, for example, display remarkable consistency around the world despite high variations in local circumstances.» Others, like Jarocka (2012) [55] see groups of like universities emerging within nations or regions or even globally as national and institutional policy tends to mimic desired practices as much as resources permit. While Marginson (2014:57) [56] argues that there is a «normalized institutional form» embedded in the six most commonly consulted ranking schemes which favors size, breadth of offerings and «the practices of the ideal Anglo-American research university».

In the school sector there have also been arguments that there is a global reform agenda that has reduced cross national differences. (Sahlberg 2006 and 2011) [57-58] as polices have travelled, fully formed and immutable across national borders. League tables based on TIMSS or PISA are also seen to foster isomorphism as nations draw on policies and practices in higher performing settings (Breakspear 2012, 16 & 23, Bieber & Martens 2011) [59]. Yet the reality in Central Asia is more complex. While there is a tendency to «copy paste» the words of particular European or North American or Nordic policy documents, the practices the words denote are adapted, adjusted and «hybridized» (Silova 2005:50) [60] to be integrated into the prevailing pedagogical culture. Ideas about educational practice that have been developed over generations in «cultures with very different basic values» are not easily imported, nor are they simply and immediately taken up by professional educators who have developed and used their own distinctive repertoire of teaching strategies (Elliott & Tudge 2007: 107) [61]. The process is more akin to «acclimatization,» as proposed changes in educational policies and practices are shaped by changes in the broader national context and interpreted by teachers through current and previous norms and tried, evaluated and adjusted and in some cases abandoned (see for example DeYoung, 2005) [62].

This is not to underestimate the sweep and depth of the larger changes in the national context. As we point out above the last twenty years have seen new states emerge and others re-emerge after periods of colonial rule. In those states the importance of national identity and the desire for recognition as a nation state has influenced policies choices, like the selection of languages of instruction (Mehisto, 2015) [48]. These choices have tended to differentiate national systems.

While language and identity choices will differentiate systems the competitive forces that drive «policy convergence» are still evident in these newer nations. Economic competiveness and participation in the global economy are seen to be very important to the Kazakhstan economy. The State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016-2019 has as its sole goal of «improving the competitiveness of education and science, development of human capital for sustainable economic growth» (Decree of the President of the Republic of Kazakhstan, as of 1st of March, 2016) [63].

Education is a key part of the nation's competiveness strategy which has led it to look for lessons in other nations. One result is a new curriculum as we have discussed above. The successful implementation of this reform may be helped by comparative studies. But as Fang and Gopinathan (2009: 569)[22] observe «the research frameworks guiding large scale international studies

(TIMSS) can not reveal the elements that lead to differences in student performance. More fine grained discourse analysis and a systematic view of teaching is needed.» This small study points to ways in which a curriculum change initiative could be supported more effectively because of a better understanding on the realities of school practice. It also illustrates the value of bi-lateral comparison and smaller scale tightly focused comparative research and inquiry.

References

1. Crossley M., Broadfoot, P. Comparative and international research in education: scope, problems and potential // British Educational Research Journal, 1992. – 18(2). – P. 99-112.
2. Kosmützky A. In defence of international comparative studies. On the analytical and explanatory power of the nation state in international comparative higher education research // European Journal of Higher Education (ahead-of-print). – 2015. – P. 1-17.
3. Holzinger, K., Knill, C. Causes and Conditions of Cross-National Policy Convergence // Journal of European Public Policy. 2005. – №12. – pp 775-796.
4. Bieber, T., Martens, K. The OECD PISA study as a soft power in education? Lessons from Switzerland and the US // European Journal of Educationю -2011. – №46(1). –P. 101-116.
5. Carnoy, M. Rethinking the Comparative- and the International // Comparative Education Review. – 2006. – 50(4). – P. 551-570.
6. Gonzales, P., Guzmán, J. C., Partelow, L., Pahlke, E., Jocelyn, L., Kastberg, D., Williams, T. Highlights from the Trends in International Mathematics and Science Study (TIMSS), 2003. NCES 2005-005. US Department of Education. 2004.
7. Husén, T. An international research venture in retrospect: The IEA surveys // Comparative Education Review. 1979. – P. 371-385
8. Foshay, A. W. Brief history of IEA // AW Foshay, RL Thorndike, F. Hotyat, DA Pidgeon, & DA Walker Educational achievement of thirteen-year-olds in twelve countries. Hamburg: UNESCO Institute for Education. Retrieved October, 30, 2007.
9. Riley, K. Big Change Question // Journal of Educational Change. – 2003. – 4. – Pp 419 -421.
10. Torrance, H. Big Change Question // Journal of Educational Change. – 2003. – 4. – Pp 421 -425.
11. Ferrini-Mundy, J., & Schmidt, W. H. International comparative studies in mathematics education: Opportunities for collaboration and challenges for researchers // Journal for Research in Mathematics Education. – 2005. – P. 164-175.
12. Artigue, M., Winsløw, C. International comparative studies on mathematics education: A viewpoint from the anthropological theory of didactics // Recherches en didactique des mathématiques. – 2010. – 30(1). – P. 47-82.
13. UNICEFTeachers: a regional study on recruitment, development and salaries of teachers in the CEECIS region. Geneva, UNICEF regional office CEECIS // www.unicef.org/ceecis/UNICEF_teachers_web_pdf 2011.
14. Gump, S. Getting to the Heart of Public Junior High Schools in Japan. Phi Delta Kappa. – 2002. – 83(10). – Pp. 788-791.
15. Rohlen, T. Japan's High Schools. – Berkeley: University of California Press, 1983.
16. Stigler, J., Stevenson, H. How Asian teachers polish each lesson to perfection // American Educator. – 1991. – 15(1). – Pp.12-20.
17. Stevenson, H., Stigler, J. The Learning Gap. New York, Summit Books, 1992.
18. Bracey, G.W. TIMSS, Rhymes with 'Dims,' as in 'Witted' / Third International Mathematics and Science Study). Phi Delta Kappa, 1998. – 79(9). – Pp. 886+.
19. Atkin, M., Black, P. Policy perils of International Comparisons: The TIMSS Case. Phi Delta Kappa. – 1997. – 78(1). – Pp 27.
20. Tan, C. Learning from Shanghai: Lessons on achieving educational Success. – Dordrecht: Springer, 2013.
21. Fang, Y., Gopinathan, S. Teachers and teaching in eastern and western schools: A critical review of cross-cultural comparative studies / In Saha, L.J., &Dworkin,A.G. (eds) International handbook of research on teachers and teaching. – New York: Springer, 2009. – Vol 21. – Pp. 557-572.
22. Floden, R.E., Huberman, M., Teachers' professional lives: the state of art // International Journal of educational research. – 1989. – 13 (4). – Pp 455-466.
23. Johnson, S.M. Teachers at Work: Achieving Success in our Schools, Basic Books. – New York, 1990.
24. Sammons, P., Day, C., Kingston, A., Gu, Q., Stobart, G., & Smees, R. Exploring Variations in Teachers' Work, Lives and Their Effects on Pupils: Key findings and Implications from a Longitudinal Mixed Method Study // British Educational Research Journal. – 2007. – 33(5). – Pp 681-701.
25. Talbert, J.E., McLaughlin, M. Professional Communities and the Artisan Model of Teaching. Teachers and Teaching: theory and practice. – 2002. – 8 (3). – Pp 325-343.
26. Sachs, J. The Activist Professional // Journal of Educational Change. – 2003. -N 1. – Pp 77-95.
27. Sachs, J. (2012,). Teacher Professionalism: Why Are We Still Talking About It? // 37 th ATEE Conference, Eskisehir, Turkey. – 2012. – August. – Pp. 33- 47.
28. Bridges, D. (Ed.). Education Reform and Internationalization. – Cambridge, Cambridge University Press, 2014.
29. Foy, P., Arora, A., Stanco, G.M., (Eds). TIMSS 2011 User Guide for the International Database, TIMSS& PIRLS International Study Centre & IEA. – Boston. 2013.
30. Winter, L., Rimini, C., Soltanbekova, A., Tynybayeva, M. Culture and Practice of Assessment in Kazakhstan: The Unified National Test, Past and Present // Bridges, D. (Ed.). Education Reform and Internationalization. – Cambridge, Cambridge University Press, 2014.
31. Mullis, I.V., Martin, M.O., Foy, P., Arora A. TIMMS 2011 International Results in Mathematics. – Boston, MA: Lynch School of Education, Boston College. 2012.

32. Hufton, N., Elliott, J.. Motivation to learn: The pedagogical nexus in the Russian school: Some implications for transnational research and policy borrowing // Educational Studies. – 2000. – 26(1). – P. 115-136.

33. Davis, R.B., Romberg,T.A., Common Practices in Present Soviet Schools // Davis, R.B., Romberg,T.A., Rachlin,S., & Kantowski, M.G., An Analysis of Mathematics Education in the Union of Soviet Socilaists Republics, ED182 141, ERIC/IRC, Columbus Ohio, 1979.

34. Elliott, J., Tudge, J. The impact of the west on post - Soviet Russian education: change and resistance to change // Comparative Education. 2007. – N43(1). – P. 93-112.

35. Joldoshalieva, R. Continuing teacher professional development in post - Soviet Kyrgyzstan // Journal of In - Service Education. – 2007. – N33(3). – P. 287-300.

36. Takala, T., Piattoeva, N. Changing conceptions of development assistance to education in the international discourse on post-Soviet countries // International Journal of Educational Development. – 2012. N32(1). – P.3-10.

37. Zuzovsky, R. What works where? The relationship between instructional variables and schools' mean scores in mathematics and science in low-, medium-, and high-achieving countries // Large-scale Assessments in Education. – 2013. – N1:2. – Pp 1-17.

38. Gallagher, T. Mediating Globalization: Local responses to Political and Economic Pressures // British Educational Research Journal. – 2005. – N 31 (1). – Pp 121-128.

39. Siskin, L.S. Departments as Different Worlds: Subject Subculture in Secondary Schools // Educational Administration Quarterly. – 1991. – N 27(2). – P 134-160.

40. Wenger, E., McDermott, R., Snyder, W.M. Cultivating Communities of Practice: a guide to managing knowledge. – Boston, Harvard business School Press, Mass, 2002.

41. Groundwater-Smith, S., Sachs, J. The Activist Professional and the Reinstatement of Trust // Cambridge Journal of Education. – 2002. – N 32(3). – P. 341-358.

42. Wineburg, S., Grossman, P. Creating a Community of Learners among High School Teachers. Phi Delta Kappa. – 1998. – V. 79(5). – P 350- 353.

43. Grossman, P. L., Stodolsky, S. S. Content as Context: The Role of School Subjects in Secondary School Teaching // Educational Researcher, 1995. – November. – P. 5-11.

44. Little, J.W. Professional community and the problem of high school reform // International Journal of Educational Research. – 2002. – N37. – P. 693- 714.

45. Siskin, L.S. Realms of knowledge: Academic departments in secondary schools. – London: Falmer Press, 1994.

46. Little, J.W. Professional community and professional Development in the Learning Centered School. National Education association. – Washington, DC, 2006.

47. Siskin, L. S., Little, J. W. The subject department: continuities and critiques // Siskin L. S., Little J. W. (Eds.) The subjects in question: Departmental organization and the high school. – New York: Teachers College Press, 1995. – P. 1–22.

48. Mehisto P. Kazakhstan: From Twenty Trilingual Schools to Thousands? // Mehisto, P. & Genese, F. (eds). Building bilingual education systems: forces, mechanisms and counterweights. – Cambridge, Cambridge University Press, 2015.

49. European Commission/EACEA/Eurydice // The European Higher Education Area in 2015: Bologna Process Implementation Report. – Luxembourg: Publications Office of the European Union, 2015.

50. Kehm, B. The German "Initiative for Excellence" and the Issue of Ranking" // International Higher Education. The Boston Center for International Higher Education. – 2006. – Number 44 Summer.

51. . Horta, H. Global and National Prominent Universities: Internationalization, Competiveness and the Role of the State. Higher Education. – 2009. -N 58(3). – P. 387-405.

52. Hazelkorn, E. Striving for "World Class Excellence": Rankings and emerging Societies // Araya, P. & Marber, P., (Eds) Higher Education in the Global Age: Policy, Practice and Promise in Emerging Societies. New York: Routledge, 2014. – P. 246-270.

53. Douglas, J.A. Profiling the Flagship University Model: An Exploratory Proposal for Changing the Paradigm from Ranking to Relevancy. – California, Berkeley, 2014.

54. King, R. Governing universities globally: Organizations, regulation and rankings. Edward Elgar Publishing, 2009.

55. Jarocka, M. University ranking systems–from league table to homogeneous groups of universities // World Academy of Science, Engineering and Technology. – 2012.- V. 66. – P. 800-805.

56. Marginson, S. University rankings and social science // European Journal of Education, – 2014.- N49(1). – P. 45-59.

57. Sahlberg, P. Education Reform for Raising Economic Competiveness // Journal of Educational Change, 2006.- V.7. – P. 259-287.

58. Sahlberg, P. The Fourth Way of Finland // Journal of Educational Change. – 2011. – V. (12). – P. 173-185.

59. Breakspear, S. The policy impact of PISA: AN EXPLORATION OF THE NORMATIVE EFFECTS OF INTERNATIONAL BENCHMARKING IN SCHOOL SYSTEM PERFORMANCE. – Paris: Organization for Economic Cooperation and Development (OECD), 2012.

60. Silova, I., Travelling Policies: hijacked in Central Asia // European Educational Research Journal. – 2005. – Volume 4, Number 1. – P. 5–59.

61. Elliott, J., Tudge, J. The impact of the west on post - Soviet Russian education: change and resistance to change // Comparative Education, 2007.- N 43(1). – P. 93-112.

62. Deyoung, A. J. Problems and trends in education in Central Asia since 1990: The case of general secondary education in Kyrgyzstan // Central Asian Survey. – 2006. – V. 25(4). – P. 499-514.

63. The State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016-2019. Decree of the President of the Republic of Kazakhstan, as of 1st of March, 2016. – Astana, 2015.

References

1 Artigue, M., & Winsløw, C. (2010). International comparative studies on mathematics education: A viewpoint from the anthropological theory of didactics. Recherches en didactique des mathématiques, 30(1), 47-82.

2 Atkin, M. & Black, P., (1997). Policy perils of International Comparisons: The TIMSS Case. Phi Delta Kappa. 78(1) pp 27.
3 Bieber, T., & Martens, K. (2011). The OECD PISA study as a soft power in education? Lessons from Switzerland and the US. European Journal of Education, 46(1), 101-116.
4 Bracey, G.W., (1998). TIMSS, Rhymes with 'Dims,' as in 'Witted'. (Third International Mathematics and Science Study). Phi Delta Kappa, 79(9), pp 886+.
3 Breakspear, S. (2012). The policy impact of PISA: AN EXPLORATION OF THE NORMATIVE EFFECTS OF INTERNATIONAL BENCHMARKING IN SCHOOL SYSTEM PERFORMANCE. Paris: Organization for Economic Cooperation and Development (OECD).
4 Bridges, D. (Ed.). (2014). Education Reform and Internationalization. Cambridge, Cambridge University Press.
5 Carnoy, M., (2006). Rethinking the Comparative– and the International, Comparative Education Review, 50(4), 551-570.
6 Crossley, M., & Broadfoot, P. (1992). Comparative and international research in education: scope, problems and potential. British Educational Research Journal, 18(2), 99-112.
7 Davis, R.B., &Romberg,T.A., (1979). Common Practices in Present Soviet Schools in Davis, R.B., &Romberg,T.A., Rachlin,S., & Kantowski, M.G., An Analysis of Mathematics Education in the Union of Soviet Socilaists Republics, ED182 141, ERIC/IRC, Columbus Ohio.
8 Douglas, J.A., (2014). Profiling the Flagship University Model: An Exploratory Proposal for Changing the Paradigm from Ranking to Relevancy. Research and Occasional paper series: CSHE.5.14. University of California, Berkeley. http://cshe.berkley.edu/
9 Deyoung, A. J. (2006). Problems and trends in education in Central Asia since 1990: The case of general secondary education in Kyrgyzstan. Central Asian Survey, 25(4), 499-514.
10 European Commission/EACEA/Eurydice (2015). The European Higher Education Area in 2015: Bologna Process Implementation Report. Luxembourg: Publications Office of the European Union.
11 Fang, Y., & Gopinathan, S. (2009). Teachers and teaching in eastern and western schools: A critical review of cross-cultural comparative studies. In Saha, L.J., &Dworkin,A.G. (eds) International handbook of research on teachers and teaching Vol 21. (pp. 557-572), Springer New York.
12 Ferrini-Mundy, J., & Schmidt, W. H. (2005). International comparative studies in mathematics education: Opportunities for collaboration and challenges for researchers. Journal for Research in Mathematics Education, 164-175.
13 Floden, R.E., & Huberman, M., (1989). Teachers' professional lives: the state of art. International Journal of educational research, 13, (4) pp 455-466.
14 Foshay, A. W. (1962). Brief history of IEA. AW Foshay, RL Thorndike, F. Hotyat, DA Pidgeon, & DA Walker (1962). Educational achievement of thirteen-year-olds in twelve countries. Hamburg: UNESCO Institute for Education. Retrieved October, 30, 2007.
15 Foy, P., Arora, A., & Stanco, G.M., (Eds) (2013). TIMSS 2011 User Guide for the International Database, TIMSS& PIRLS International Study Centre & IEA, Boston.
16 Gallagher, T., (2005). Mediating Globalization: Local responses to Political and Economic Pressures. British Educational Research Journal, 31 (1), pp 121-128.
17 Gonzales, P., Guzmán, J. C., Partelow, L., Pahlke, E., Jocelyn, L., Kastberg, D., & Williams, T. (2004). Highlights from the Trends in International Mathematics and Science Study (TIMSS), 2003. NCES 2005-005. US Department of Education.
18 Grossman, P. L., & Stodolsky, S. S. (1995). Content as Context: The Role of School Subjects in Secondary School Teaching. Educational Researcher, November pp 5-11.
19 Groundwater-Smith, S. & Sachs, J., (2002). The Activist Professional and the Reinstatement of Trust., Cambridge Journal of Education 32(3), pp341-358.
20 Gump, S. (2002). Getting to the Heart of Public Junior High Schools in Japan. Phi Delta Kappa 83(10), pp. 788-791.
21 Hazelkorn, E.,(2014). Striving for «World Class Excellence»: Rankings and emerging Societies. In Araya, P. & Marber, P., (Eds) Higher Education in the Global Age: Policy, Practice and Promise in Emerging Societies. Routledge, New York pp 246-270.
22 Horta, H.,(2009). Global and National Prominent Universities: Internationalization, Competiveness and the Role of the State. Higher Education. 58(3) pp 387-405.
23 Holzinger, K., & Knill, C., (2005). Causes and Conditions of Cross-National Policy Convergence. Journal of European Public Policy, 12, pp 775-796.
24 Hufton, N., & Elliott, J. (2000). Motivation to learn: The pedagogical nexus in the Russian school: Some implications for transnational research and policy borrowing. Educational Studies, 26(1), 115-136.
25 Husén, T. (1979). An international research venture in retrospect: The IEA surveys. Comparative Education Review, 371-385
26 Jarocka, M. (2012). University ranking systems–from league table to homogeneous groups of universities. World Academy of Science, Engineering and Technology, 66, 800-805.
27 Johnson, S.M., (1990). Teachers at Work: Achieving Success in our Schools, Basic Books, New York.
28 Joldoshalieva, R. (2007). Continuing teacher professional development in post‐Soviet Kyrgyzstan. Journal of In‐Service Education, 33(3), 287-300.
29 Kehm, B. (2006). «The German «Initiative for Excellence» and the Issue of Ranking». International Higher Education. The Boston Center for International Higher Education. Number 44 Summer.
30 King, R. (2009). Governing universities globally: Organizations, regulation and rankings. Edward Elgar Publishing.
31 Kosmützky, A. (2015). In defence of international comparative studies. On the analytical and explanatory power of the nation state in international comparative higher education research. European Journal of Higher Education, (ahead-of-print), 1-17.
32 Little, J.W. (2002. Professional community and the problem of high school reform. International Journal of Educational Research, 37, pp693– 714.
33 Little, J.W. (2006). Professional community and professional Development in the Learning Centered School. National Education association, Washington, DC.
34 Mehisto P., (2015). Kazakhstan: From Twenty Trilingual Schools to Thousands? In Mehisto, P. & Genese, F. (eds). Building bilingual education systems: forces, mechanisms and counterweights. Cambridge, Cambridge University Press.

35 Mullis, I.V., Martin, M.O., Foy, P., Arora A. (2012) TIMMS 2011 International Results in Mathematics. Boston, MA: Lynch School of Education, Boston College.

36 Marginson, S. (2014). University rankings and social science. European Journal of Education, 49(1), 45-59.

37 Peak, L., (1991). Learning to go to School in Japan: the transition from home to pre-school life. University of California Press, Berkeley.

38 Riley, K., (2003). Big Change Question. Journal of Educational Change, 4, pp 419 -421.

39 Rohlen, T., (1983). Japan's High Schools. University of California Press, Berkeley.

40 Sachs, J., (2003). The Activist Professional, Journal of Educational Change, 1, pp 77-95.

41 Sachs, J. (2012, August). Teacher Professionalism: Why Are We Still Talking About It? In 37 th ATEE Conference, Eskisehir, Turkey (pp. 33– 47).

42 Sahlberg, P., (2006).»Education Reform for Raising Economic Competiveness», Journal of Educational Change, 7, pp 259-287.

43 Sahlberg, P., (2011 b). «The Fourth Way of Finland», Journal of Educational Change, (12), pp 173-185.

44 Sammons, P., Day, C., Kingston, A., Gu, Q., Stobart, G., & Smees, R., (2007). Exploring Variations in Teachers' Work, Lives and Their Effects on Pupils: Key findings and Implications from a Longitudinal Mixed Method Study. British Educational Research Journal, 33(5), pp 681-701.

45 Silova, I., (2005). «Travelling Policies: hijacked in Central Asia» European Educational Research Journal, Volume 4, Number 1, pp 5—59.

46 Siskin, L.S. (1991). Departments as Different Worlds: Subject Subculture in Secondary Schools. Educational Administration Quarterly, 27(2),pp 134-160.

47 Siskin, L.S. (1994). Realms of knowledge: Academic departments in secondary schools. London: Falmer Press.

48 Siskin, L. S., & Little, J. W. (1995). The subject department: continuities and critiques. In L. S. Siskin, & J. W. Little (Eds.), The subjects in question: Departmental organization and the high school (pp. 1–22). New York: Teachers College Press

49 Stevenson, H., & Stigler, J., (1992). The Learning Gap. New York, Summit Books.

50 Stigler, J., & Stevenson, H., (1991). How Asian teachers polish each lesson to perfection. American Educator, 15(1) pp.12-20.

51 The State Program for the Development of Education and Science of the Republic of Kazakhstan for 2016-2019. Decree of the President of the Republic of Kazakhstan, as of 1st of March, 2016.

52 Takala, T., & Piattoeva, N. (2012). Changing conceptions of development assistance to education in the international discourse on post-Soviet countries. International Journal of Educational Development, 32(1), 3-10.

53 Talbert, J.E., & McLaughlin, M., (2002). Professional Communities and the Artisan Model of Teaching. Teachers and Teaching: theory and practice, 8 (3), pp 325-343.

54 Tan, C., (2013). Learning from Shanghai: Lessons on achieving educational Success. Springer, Dordrecht.

55 Torrance, H. (2003). Big Change Question. Journal of Educational Change, 4, pp 421 -425.

56 UNICEF, (2011). Teachers: a regional study on recruitment, development and salaries of teachers in the CEECIS region. Geneva, UNICEF regional office CEECIS. www.unicef.org/ceecis/UNICEF_teachers_web_pdf

57 Wenger, E., McDermott, R., & Snyder, W.M., (2002). Cultivating Communities of Practice: a guide to managing knowledge. Harvard business School Press, Boston, Mass.

58 Wineburg, S. & Grossman, P., (1998). Creating a Community of Learners among High School Teachers, Phi Delta Kappa 79(5), pp 350– 353.

59 Winter, L., Rimini, C., Soltanbekova, A., & Tynybayeva, M., (2014). Culture and Practice of Assessment in Kazakhstan: The Unified National Test, Past and Present. In Bridges, D. (Ed.). Education Reform and Internationalization. Cambridge, Cambridge University Press.

60 Zuzovsky, R., (2013). What works where? The relationship between instructional variables and schools' mean scores in mathematics and science in low-, medium-, and high-achieving countries. Large-scale Assessments in Education, 1:2, pp 1-17. http://www.largescaleassessmentsineducation.com/content/1/1/2