

Skills and Schools: What is the evidence on school-based interventions?

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Overview and Implications for MUVA

While education systems are generally focussed on developing the ‘academic’ cognitive skills, there is increasing recognition that non-cognitive skills have an influence both on post-education life outcomes – primarily employment – and also on cognitive skills outcomes, as measured by schools examination systems. For high income countries, Glewwe *et al* (2013) summarise the evidence in stating that while IQ and other cognitive measures have greater influence on productivity for high-skill jobs and educated workers, non-cognitive skills count across a wider spectrum of workers, especially among low income workers. Limited evidence from developing countries shows a similar relation between non-cognitive skills and later wages. However, the relation is complex and is also mediated by a relationship from non-cognitive skills to educational achievements..

For example, a detailed study in rural China finds that non-cognitive skills have greater predictive power than cognitive skills concerning school-to-work transition. However, a study in central Asia finds non-cognitive skills to be linked to higher levels of schooling – which suggests an indirect link from non-cognitive skills to better labour market options via more formal schooling.

What are the factors producing high non-cognitive skills in the absence of any intervention deliberately improving them? The few available studies suggest that in high income countries, social background and teacher experience have both been found to be associated with students’ levels of non-cognitive skills. This may have particular relevance to MUVA: it suggests a role both for quality teaching/teachers; as also a role played by social inequality in driving personality-labour market associations. In other words, pre-existing non-cognitive skills levels may be related to social advantage and disadvantage.

Can non cognitive skills be changed? Are personality traits malleable? There is a range of evidence that non-cognitive skills are malleable in older children, and may even be more malleable than in younger children. Given that this contrasts with the decreasing malleability of cognitive skills after childhood, one conclusion drawn by commentators is that adolescent remediation strategies should therefore focus on non-cognitive skills, especially since these can affect educational attainment as well as later employment outcomes.

Many remediation programmes in high income countries, however, target both cognitive and non-cognitive skills. Results have been mixed. One review concludes that the most promising programmes offer a mix of mentoring by a peer group, guidance, and information: that is; a mix of cognitive and non-cognitive strategies, and using mentor relationships as a central strategy. Another review finds that factors such as expectations of future success affect the non-cognitive skills of motivation and persistence. If these latter are high – influenced by those factors – this can improve academic results.

Non-cognitive skills programmes in developing countries are often implemented under the terminology of life skills interventions. Rather than 'remedial' strategies – as in high income countries – these interventions are more commonly seen as providing additional skills not yet addressed by school curricula. They are also associated with the promotion of new pedagogical approaches – such as participatory and experiential learning – which in general are designed to target higher-order thinking skills, i.e. cognitive skills. However, evidence is quite limited about the results of these programmes. A recent Evidence Gap Mapping exercise on transferrable skills programmes – targeting non-cognitive skills and higher order thinking skills – in low income countries found limited evidence about courses in formal education settings on topics other than health: that is, little is available about connections with employment. Schools assessment systems also rarely produce evidence on non-cognitive skills levels.

Although life skills interventions have been introduced into schools in a number of different ways, weak monitoring and evaluation systems mean little is known about the impact on academic outcomes or behaviour change, and even less about employment outcomes. A few programmes are producing some useful knowledge. Educate! in Uganda, for example, promises good results from mentoring strategies targeting self-confidence, communication and leadership. In India, the LAHI programme used a hands-on learning approach to develop a range of skills, and has had good results in later TVET enrolment. One review of case studies concludes that key factors in success include targeting various non-cognitive skills; incorporating ICT elements; and emphasising experiential learning.

Many see a focus on the socio-emotional skills and the high-order thinking skills identified by UNICEF for Life Skills Education as fundamental components of quality education, and therefore central to the agendas of all teachers and schools. But the fundamental changes in pedagogical approach required in some contexts for effective life skills education approaches can be difficult to achieve. Teachers need to be able to consistently use experiential methodologies and students need time for hands-on practice. Pre-service teacher training in these approaches has in some cases shown promising results.

Some education reform and broad education inclusion strategies also provide relevant examples for building non-cognitive skills and working towards better employment outcomes. These include an active-learning reform programme in Senegal and a mixed-skill programme for better including Maasai girls in education in Tanzania, which have shown promising results.

For MUVA, the following broad conclusions can be drawn:

- Non-cognitive skills clearly affect labour outcomes in developing countries, and are found to be changeable in adolescence. These therefore represent a group of target skills. But most programmes with successful outcomes also target cognitive skills to some degree.
- Improving non-cognitive skills may require fundamental changes in pedagogical approach, with a move towards experiential and participatory learning. Active-learning approaches tend to also aim to support higher-order cognitive skills.
- Teachers' practice may therefore be significant in addressing non-cognitive skills deficits; their experience is also known to be relevant in non-cognitive skills levels among their students.

The literature also calls for better monitoring of schools-based interventions, and impact assessment which tracks academic outcomes (exam results) as well as labour market outcomes. There is an opportunity for MUVA to significantly contribute to understanding in this little-understood area if a robust theory of change and M&E systems are in place. In addition, it is clear that more precision in the skills targeted is a prerequisite for developing reliable ways to measure these. Developing a clear picture of exactly which skills are to be improved will be important.

1 Introduction

The distinction between cognitive and non-cognitive skills has been especially significant in the education sector, but agreement on precisely which skills belong in which grouping is not always forthcoming. For the purposes of these Briefs, cognitive and non-cognitive skills are defined as follows:

- **Cognitive skills:** are ‘academic’ skills related to classic intelligence and include knowledge, comprehension, application, analysis, synthesis and evaluation – following Bloom’s 1956 taxonomy of thinking skills.
- **Non-cognitive skills:** are the Big Five broad personality traits of agreeableness, conscientiousness, emotional stability, extraversion and autonomy, PLUS socio-emotional skills such as self-awareness, self-management, social awareness, relationship skills and responsible decision-making.

For the purposes here, non-cognitive skills and soft skills are synonymous, but the terminology of non-cognitive skills is used when the perspective is one of education; whereas soft skills are used when the perspective is employment. When employment skills are discussed in the context of school-based education, the terminology of non-cognitive skills will still be used.

- **Soft skills**, here, include the same skill sets but emphasise work values such as team work, leadership, communication, cooperation and negotiation.
- **Life skills** are generally the same as soft skills but can also include sector-specific knowledge (such as health knowledge) and are relevant here because they are associated with a broader approach emphasising participatory/interactive and experience-based learning methodologies, and have played a role in education reform in some cases.

In the education sector, awareness has been growing on the different roles in particular of cognitive and non-cognitive skills across various life outcomes, as well as directly to educational outcomes. That is, there is growing recognition that it is not only the standard cognitive skills targeted through education that impact on post-education outcomes. Moreover, there is increasing evidence of a relationship between non-cognitive and cognitive skills, such that improved non-cognitive skills can have positive results in schools testing that aims primarily to measure cognitive skills.

While education is generally focussed on cognitive skills, there is increasing recognition that non-cognitive skills have an influence both on post-education life outcomes and also on cognitive skills as tested by schools examination systems.

With schools’ curricula primarily focused on developing cognitive skills, various methods have been introduced address this gap and bring non-cognitive skills development more systematically into school based learning. In high income countries, these initiatives take a variety of names. Information about these programmes accessed by this review arises out of interventions seeking remediation strategies for disadvantaged children or young people at risk of criminal or drug-related activity.

In developing countries, education interventions promoting non-cognitive skills have tended to take on the terminology of life skills, and are not seen in terms of remedial education (which tends to focus on cognitive skills), but rather in terms of “additional” skills important to many demographic groups whatever their education outcomes.¹ In schools, life skills programmes are most commonly an add-on or supplementary curriculum. However, some efforts have been made to integrate life skills approaches more generally into the school curriculum. In this, there is an allegiance between life skills and moves towards pedagogical reform more generally – towards education methods which promote higher-order cognitive skills such as critical thinking, problem solving and the application of knowledge and understanding to “real” situations.

Non-cognitive skills programmes in developing countries are often called life skills interventions. Rather than ‘remedial’ strategies, these interventions are more commonly seen as providing additional skills. They are also associated with the promotion of new pedagogical approaches.

¹ Life skills interventions have been significant in education settings, but are not limited to these settings – they also take place in non-school settings such as in community or employment promotion initiatives.

2 What difference do non-cognitive skills make?

2.1 High income countries

Most literature focused on factors influencing the transition from schools or higher education into work uses the terminology of cognitive and non-cognitive skills, because education produces measurable cognitive-focused outcomes used by employers to select employees. Although the evidence on how these cognitive skills affect employment is much more developed than evidence about non-cognitive skills and employment, there is also a growing literature on the role played by non-cognitive skills in high income countries – and, it is generally conclusive that non-cognitive skills play an important role in employment and earning levels. Glewwe *et al* (2013) summarise the evidence stating that while IQ and other cognitive measures have greater influence on productivity for high-skill jobs and educated workers, non-cognitive skills count across a wider spectrum of workers, especially among low income workers. Linqvist and Vestman (2011), for example, they found that in Sweden one standard deviation improvement in measured non-cognitive skills increases wages by 4–8%; in the US, Heckman *et al* (2006) estimate an 11.2% increase for the same quantum. This study also found that this increase was similar to the effect of cognitive skills and that these skills also affect a person's chances of completing school, suggesting an interaction between types of skills in producing employment and wage outcomes. A study in Canada, however, found non-cognitive skills to have a positive effect on earning independent of cognitive skill levels (Green 2001). Heckman and Kautz (2012) find that “conscientiousness” predicts both educational attainment and labour market performance more than measures of intelligence. Brunello and Schlotter (2011) also report that personality traits play an important role in school attainment.

For high income countries, Glewwe et al (2013) summarise the evidence in stating that while IQ and other cognitive measures have greater influence on productivity for high-skill jobs and educated workers, non-cognitive skills count across a wider spectrum of workers, especially among low income workers.

2.2 Middle and low income countries

For middle and low income countries, there are fewer studies available – not least because with large informal sectors, wage data across this spectrum in developing countries is harder to come by. In addition, developing country household surveys do not generally measure non-cognitive skills during childhood, which can then be followed into adulthood to observe employment and wages. But for those where studies are available, conclusions are broadly similar. As discussed in other briefs from this series, there are mixed results; there is evidence for an indirect relation – via more education – between skills and employment outcomes; and skills in general (both cognitive and non-cognitive) that may produce even higher economic returns in developing countries (R4D 2012).

In Peru, for example, Díaz *et al.* (2012) find that returns to the socio-emotional trait of perseverance are as high as returns to average cognitive ability; in Bangladesh, Paris (2015b) finds that literacy levels and agreeableness (from the Big Five personality traits) each have significantly positive effects on wages of approximately the same degree. In a study in rural China, Glewwe *et al.* (2013) examine the impact of both cognitive and non-cognitive skills, measured when children are 9-12, 13-16, and 17-21 years old, on labour force participation and wages at 17-21. Results indicate that both cognitive and non-cognitive skills strongly influence the decision to stay in school or enter the labour force. However, after controlling for years of schooling and experience there is no evidence that measures of cognitive skills have an impact on wages and only suggestive evidence that non-cognitive skills influence wages. Overall, they find that non-cognitive skills have significant predictive power for the school-to-work transition over and above the predictive power of cognitive skills.

Limited evidence from developing countries shows a similar relation between non-cognitive skills and later wages as in high income countries.

However, the relation is complex and is mediated by a relation between non-cognitive skills and educational achievements as well.

In Tajikistan and Uzbekistan, Zlatko and Ajwad (2014) also find a strong link between employability and both types of skills, but evidence that higher skilled people are more likely to pursue higher levels of education leads them to posit an indirect link between skills and labour market, via skills gained through formal education. For non-cognitive skills specifically, they find that these are positively correlated with schooling, but that non-cognitive skills are not always better among higher educated people.

2.3 Employers and enterprise demand non-cognitive skills

As elaborated in other briefs from this series, it is clear that employers in developing countries – like employers elsewhere – see non-cognitive skills as very important but often find them missing in new recruits. In a Latin American study (International Finance Corporation and Islamic Development Bank 2011), 33% of employers found inadequate levels of negotiation, networking and collaboration skills among new recruits. Burnett and Jayaram (2012) find in sub-Saharan Africa and SE Asia that employers sought, among other skills, an openness to learning, oral and written communication skills; good work habits and capacity for teamwork.

Similarly in sub-Saharan Africa, a study among 83 employers in Benin, Burkina Faso, Kenya, Senegal and Uganda concludes that non-cognitive skills are much more important for the informal sector than previously recognised, and may be more important here than in the formal economy (R4D 2013). Authors note that non-cognitive skills are becoming increasingly important as economies change; with most informal workers being self-employed and thus needing to be able to work along the entire value chain, non-cognitive skills such as discipline, confidence, negotiation, communication, and decision making are very important. Blom and Saeki (2011) find evidence in India that employers of engineers emphasise interpersonal skills such as reliability and willingness to learn more than skills such as literacy and numeracy (in Paris 2015b).

2.4 What is associated with better non-cognitive skills in the absence of intervention?

There is a limited amount of research from high income countries on what produces good non-cognitive skills in the absence of interventions aiming to improve them. For the US, Garcia Garcia (2013) has found a strong link between teachers with more experience and better non-cognitive skills among their students.² A similar relation was found in another study in New York (reported in Brunello and Schlotter 2011). In the UK, personality along the lines of the Big Five, and including aspirations, has in a recent study (de Vries and Rentfrow 2016) been found to be strongly affected by social background: those from more advantaged backgrounds, whose parents had professional jobs, had substantially higher levels of extraversion and economic aspirations (especially among men). In addition, they found that these traits are associated with higher earnings in later life. In other words, children from more advantaged backgrounds appear more likely to develop personality characteristics which benefit them in the labour market.

In the absence of any intervention targeting skills improvements, social background and teacher experience have both been found to be associated with students' levels of non-cognitive skills in high income countries.

While this review found no similar studies of the relationship between social background and non-cognitive skills for low income countries, the role potentially played by both social inequality and teachers' experience in driving personality-labour market associations is worth noting.

² An example of how to support teachers to develop non-cognitive skills in students is given in Section 3.2 Teacher training.

3 Types of programmes for adolescents, and outcomes

It is well established in the literature that cognitive skills are increasingly inflexible in later childhood, and that programmes aiming to increase cognition are best targeted to early childhood and early primary schooling (see e.g. Heckman and Kautz 2012; Cunha *et al.* 2010). There are also some studies suggesting cognitive remedial programmes for adolescents are (sometimes) ineffective (Cunha *et al.* 2006; Knudsen *et al.* 2006). But for non-cognitive skills, the picture is different. There is a range of evidence that non-cognitive skills are malleable in older children, and may even be more malleable than in younger children (Kautz 2014), and that adolescent remediation strategies should (therefore) focus on non-cognitive skills (Cunha *et al.* 2010), which can affect educational attainment as well as later employment outcomes. Cunha *et al.* (2006) report that 16% of the variation in educational attainment is explained by adolescent cognitive traits, 12% is due to adolescent personality (socioemotional traits), and 15% is due to measured parental investments.

There is a range of evidence that non-cognitive skills are malleable in older children, and may even be more malleable than in younger children, and that adolescent remediation strategies should (therefore) focus on non-cognitive skills which can affect educational attainment as well as later employment outcomes.

3.1 Evidence from interventions in high income countries

Partly due to the focus on cognitive skills and therefore to early childhood intervention, the evidence base is larger on the long-term effectiveness of interventions that start in early childhood and primary school compared to their adolescent counter-parts (Kautz *et al.* 2014). Studies on adolescent interventions tend to have shorter follow up and analyse fewer outcomes. Nevertheless remedial or supplementary education programmes for at-risk groups – which may focus on cognitive or non-cognitive skills or both – have a reasonably long and complex history in high income countries.

Many remediation programmes in high income countries target both cognitive and non-cognitive skills, but results have been mixed. One review concludes that the most promising programmes offer a mix of mentoring by a peer group, guidance, and information: that is; a mix of cognitive and non-cognitive strategies.

Kautz *et al.* (2014) analyse a number of programmes in USA and Canada. Most of these have components targeting cognitive and non-cognitive skills. They include the “unsuccessful” Quantum Opportunity Program (QOP), an intensive after-school programme providing mentoring, education services and financial incentives. QOP was not successful in improving risky behaviours especially among boys; girls had better educational outcomes during the programme but the control group had caught up 3 years later. Chicago’s “Becoming a man” programme, on the other hand – providing mentoring targeting non-cognitive skills and academic tutoring – did improve academic outcomes. Similarly, Toronto’s Pathways programme and the Big Brothers Big Sisters mentoring programme were seen as successful. Success was, variously, seen as supported by active engagement of parents; regular and lengthy mentor-mentee meetings; and avoiding the grouping of highest-risk students. The authors conclude that the most promising adolescent interventions offer mentoring, guidance and information.

Gutman and Schoon (2013) conclude from a literature review on the impact of non-cognitive skills on outcomes for young people that children’s perception of their ability, their expectations of future success, and the extent to which they value an activity influence their motivation and persistence – and when these are high, this can lead to improved academic outcomes, especially for low-attaining pupils. They also state that that motivation and aspiration/expectation can be developed in children and young people through intervention. Less optimistically, Holmlund and Silva (2009) report on a remedial education programme in secondary schools in England for which they found little evidence that the programme significantly improved participants’ age 16 test outcomes.

Another review finds that factors such as expectations of future success affect the non-cognitive skills of motivation and persistence. If these latter are high, this can improve academic results.

In Portugal, on the other hand, the large-scale EPIS programme, which targeted students likely to perform poorly in small group sessions working on study skills, motivation and self-esteem. Quasi experimental evidence from this programme (Martins 2010) found that it reduced grade retention (repeating the year due to failed annual exams) by at least 10%.

3.2 Evidence from interventions in low income countries on non-cognitive and life skills

Systematic evidence is limited

Evidence on the efficacy of school-based non-cognitive skills interventions in low income countries is much thinner, with mixed results and greater gaps, and tends to be focused on interventions associated with the life skills school-of-thought. At the same time, a good proportion of life skills interventions and studies of them address health issues, especially HIV, and therefore produce evidence concerning health outcomes rather than employment, or academic outcomes. Brown *et al* (2015) in their Evidence Gap Map of transferable skills programming, find “limited evidence about courses in the formal education setting on other topics [than health] such as work readiness and prevention of violence”.

Unicef (2012) adds that the focus in schools exclusively on assessment through traditional examinations testing knowledge acquisition and retention has compounded the lack of assessment of non-cognitive skills. The Education Development Centre study also notes that efforts to incorporate transferable skills training into secondary schools have largely not been assessed.

Life skills have been introduced in schools in a variety of ways – as a new subject, as extra-curricular provision, or as integrating this focus to some degree into regular subject teaching (Unicef 2012). Some countries have succeeded in embedding transferrable skills in the (senior) secondary curriculum, such as Nigeria, as reported by Obioma *et al.* (2014). Unicef (2012) reviews major life skills programmes taking place in schools, including non-health focused interventions using case studies from Kenya, Armenia, Barbados, Myanmar and Jordan. These integrate life skills of various descriptions into school routines, mainly as add-on classes. But the report concludes that weak systems for monitoring and evaluation mean that too little is known about behaviour change as a result of the programmes, or impact on academic outcomes. While the document collects a good quantity of anecdotal and qualitative information reporting positive outcomes for many individuals, no systematic or experimental trials are in place here.

One programme with early evidence available is the Educate! programme in Uganda, a student mentorship scheme aiming to develop the leadership and business skills of secondary school students. About 30 students are selected from partner schools based on commitment and motivation and paired with mentors who are recent graduates from local universities. These work directly with students to help build non-cognitive skills such as self-confidence, communication and leadership. Students continue to receive mentorship after they graduate from school. The programme emphasises experiential learning – participants are encouraged to develop and test-run an enterprise in their communities, and includes a Teaching and Mentorship programme to help teachers in partner schools support the process. Analysis of Educate!’s impact is not yet complete, but early signs of success has meant that the curriculum has now been integrated into Uganda’s entrepreneurship curriculum. Early participants had started 284 enterprises and created more than 50 jobs (Bermingham and Engmann 2013).

A recent Evidence Gap mapping exercise on transferrable skills programmes in low income countries found limited evidence about courses in formal education settings on topics other than health: that is, little is available about connections with employment. Schools assessment systems also rarely produce evidence on non-cognitive skills levels.

Although life skills interventions have been introduced into schools in a number of different ways, weak monitoring and evaluation systems mean little is known about the impact on academic outcomes or behaviour change.

In India, the Lend a Hand India (LAHI) programme aimed to foster life skills such as planning, problem solving, teamwork and entrepreneurship by exposing secondary students to technical trades and developing 40 different skill sets relevant to life in rural areas. It is conducted using hands-on course work which emphasises application alongside theory. Results include that attendance at the programme is nearly 100%; and 25% of students go on to TVET courses, in an area where the average is only 5%.

The evidence is mixed, however. For example, evidence from younger children (Grades 5-7) in Ghana's Aflatoun programme – essentially a financial education programme which also targets social skills, attitudes and behaviours – assessed through an RCT capturing results from randomly created groups receiving different levels of intervention, found in the short term that there was impact on the savings behaviours directly targeted, but none on a range of other social skills or on test scores.

Bermingham and Engmann (2013) synthesise information from a number of case studies of interventions of different types and list underlying factors for success, among others as:

- targeting non-cognitive skills of various kinds;
- incorporating elements of ICT;
- emphasising experiential learning.

Teacher training

Some limited information is available about experience with teacher training for life skills. As GPYE (2014) notes in its Standards of Excellence guidance, for life skills teaching, the methods of delivery are as important as the curriculum itself. Trainers/teachers must be properly trained and consistently use experiential teaching methodologies. Students should have the opportunity to practice the skills they are learning in groups and individually in the classroom, as well as outside the classroom. This is not easy to achieve – a study of teacher training in Mozambique, for example, found that teacher training lecturers were able to define and discuss learner-centred pedagogy but did not use it (Vavrus *et al.* 2011 quoting Guro and Weber 2010). Some positive examples, however, are given by Unicef (2012) who note that a peer education programme has been introduced in pre-service training in Myanmar; and the partnership between Domasi Teacher Training College and Theatre for a Change in Malawi that uses participatory methods in Life Skills Education (LSE) training with trainee teachers, including self-assessment, journals, observation of role-played situations and one-to-one discussions. Authors also note, however, that these fundamental changes in pedagogical approach are “difficult changes in traditional education systems”. When national examination systems test certain kinds of knowledge/content and lower order thinking skills, teachers – even when they have the skills to change their teaching approach – may be reluctant to change the emphasis to non-cognitive skills and/or higher order thinking skills (Vavrus *et al.* 2011).

A few programmes are producing some useful knowledge. Educate! in Uganda promises good results from mentoring strategies targeting self-confidence, communication and leadership. In India, the LAHI programme used a hands-on learning approach to develop a range of skills, and had good results in later TVET enrolment. One review of case studies concludes that key factors in success include targeting various non-cognitive skills; incorporating ICT elements; and emphasising experiential learning.

The fundamental changes in pedagogical approach required in some contexts for effective life skills education approaches can be difficult to achieve. Teachers need to be able to consistently use experiential methodologies and students need time for hands-on practice. Pre-service teacher training in the approach has in some cases shown promising results.

3.3 Education quality and evolving pedagogical approaches

Attempts to embed transferrable skills, or life skills, into all subject-based curricula are one step towards an even deeper process, often noted by commentators on and advocates of life skills education. The affinity between LSE and advocates of pedagogical reform is evident in that it is sometimes difficult to distinguish 'life skills' interventions from interventions aiming at a much broader and more fundamental reform of secondary level teaching-learning processes. As Unicef (2012) comments, "Life skills education's psycho-social aims require a conceptualisation of the curriculum that includes not only knowledge and skills but also behaviour, attitudes and values. This has been a driver to use more participatory and interactive teaching and learning methodologies in the delivery of life skills education".

Many see a focus on the socio-emotional skills and the high-order thinking skills identified by UNICEF for LSE as fundamental components of quality education, and therefore central to the agendas of all teachers and schools. Methods for developing these skills have been identified as participatory and involving active teaching and learning – the same methods promoted as integral to quality education (Unicef 2012; Bermingham and Engmann 2013). Many of the aims of LSE – promoting creativity, self-esteem, critical thinking, expressing opinions etc. – are the same as the aims of educationists who advocate a move away from concentration at the lower end of Bloom's taxonomy of thinking skills in "remembering" and "understanding" skills towards the higher-order thinking skills at the upper end – of "analysing", "evaluating", and "creating".

Many see a focus on the socio-emotional skills and the high-order thinking skills identified by UNICEF for Life Skills Education as fundamental components of quality education, and therefore central to the agendas of all teachers and schools.

Two examples show promise for reforming school models to improve overall teaching-learning outcomes. In Senegal, a programme to improve the quality and relevance of middle school, sought to improve active learning and orient schools towards the world of work and good governance. It provided teachers with programme guides for each discipline and teaching/learning strategies. It sought to develop critical thinking skills and to strengthen the link between communities and schools, as well as introduce computers to enable students and teachers to both access and create content. Early qualitative results suggest an increase in interactive classroom strategies; more lesson planning; and more internet usage (Bermingham and Engmann 2013).

Alternative models designed to accommodate vulnerable/disadvantaged groups, like that developed by the Emusoi centre in Tanzania, have also made progress in re-orientating traditional education systems to some extent. Emusoi provides support to secondary school aged Maasai girls in the form of remedial education, preparation for interviews/private school entrance exams, financial support and life skills workshops on self-worth, community involvement etc. The programme has shown good results in terms of participants continuing in school and forging a variety of careers.

Some education reform and broad education inclusion strategies therefore are relevant examples for building non-cognitive skills and working towards better employment outcomes. These include an active-learning reform programme in Senegal and a mixed-skill programme for better including Maasai girls in education in Tanzania, which have shown promising results.

On the other hand, pedagogical reform has often shown slow progress, and life skills education often remains restricted in its capacity to move beyond knowledge and into the development of socio-emotional, attitudes and behaviours due to the traditional educational environments into which they are inserted. Unicef (2012) notes that this is particularly apparent in the treatment of gender relations through life skills education, because "awareness of gender inequalities and gendered roles may be raised, but opportunities and conducive environments (both in and beyond the classroom) to challenge and develop alternative gender relations and gendered identities are limited".

4 Evidence gaps and challenges

Much remains to be done, then, both to fully develop school-based non-cognitive skills orientation as well as to measure the results of interventions along a range of parameters. These include, as mentioned, better monitoring/assessment of the impacts of interventions both in education (exam results and continued education) and in terms of labour market outcomes. Which interventions actually improve student's employment prospects (and why) is not yet adequately understood (Paris *et al* 2015; Bermingham and Engmann 2013).

More precision is also needed in the skills targeted for improvement, not least so that reliable ways of measuring improvements in these can be developed. As Unicef (2012) comments, although non-cognitive/life skills in a broad sense have acquired increasing attention from and space in schools, identifying and prioritising the precise skills sought remains a challenge.

Better monitoring and impact assessment of schools based interventions, tracking exam results as well as labour market outcomes, is urgently needed. In addition, more precision in the skills targeted is a prerequisite for developing reliable ways to measure these.

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