

# Skills for Higher Education in Mexico

## Summary Report

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# 1. Introduction

## 1.1 Approach

This project was commissioned by the British Council to explore the need to link secondary school learning outcomes to higher education needs in Mexico, as well as possible mechanisms to accomplish this. It aims to address the following research question: *what skills or abilities are necessary for students to be adequately prepared for higher education and how can they acquire these?* Evidence for the findings has been drawn from international literature and case studies, with specific reference to the experience of the UK. The project was conducted in four key stages: a quantitative review, an international literature review and case studies, and qualitative research in the UK and then in Mexico. The project was structured into these stages to ensure an iterative, evidence-based approach to evaluating the research question.

The **quantitative review**, as outlined in Section 4, was designed to identify countries with students exhibiting high levels of preparedness for higher education, which is considered a necessary pre-condition for success at that level. While the significant limitations on data availability rendered the analysis imperfect, it allowed four countries to be identified as case studies (Finland, Japan, Poland and Slovakia). Their performance in terms of preparedness for higher education indicated that their policies, practices and system would likely be useful to consider when formulating recommendations for good practice.

The **international literature review** considered the contributing factors to preparedness for higher education, as well as the definitions of what '*preparedness*' and '*skills*' actually mean in this context. A variety of topics focused on pre-university education were then selected on the basis of their relevance to preparedness for higher education. These include: the number of subjects studied; the scope of study; the level of devolution of responsibility for curriculum/skills development; the learning environment; education expenditure; teacher education and CPD. These factors were used as the focal points for the remaining stages of the project.

The **case studies** for each of the four countries identified as exhibiting high levels of preparedness for higher education were researched in line with the findings of the international review: key areas considered included the policy environment, the school environment, and initiatives and innovations. Where possible, key points of difference and areas of good practice were identified.

The final stages of the project concerned the **UK and Mexico**. Research focusing on the UK sought to illustrate its experience relevant to preparing students for higher education, and the structures and policies that exist to support it. Alongside desk-based research, interviews with experts in the field were undertaken, and focus groups were conducted with students at three universities, to ensure that their voices were heard. In Mexico, a similar set of research was delivered (desk research, focus groups and interviews) but with a focus on understanding the current situation and education context, so that any recommendations formulated are suitable and relevant.

This summary report contains findings from all stages of research, alongside evidence-based conclusions and recommendations. It is important that while the research focuses on outcomes for Mexico, it also provides recommendations for any country seeking to improve the outcomes of students at tertiary level. Key findings have been structured thematically, focusing on the skills needed at higher education level; the policy environment; the learning environment; and the initiatives and innovations that have proven useful. In each section, key findings from international practice and from the countries with high levels of preparedness are set against findings from Mexico and the UK.

All remaining papers in this series are available separately.



## 2. Quantitative Analysis

An initial quantitative review aimed to identify case study countries; international trends and dynamics were also explored, although this was entirely for the purpose of highlighting areas to explore further in the international review and case studies; it is recognised that the analysis is highly limited due to the lack of good quality international data. Countries selected for the quantitative review were limited to those countries covered by OECD datasets.

In the initial research design, it was intended that the proxy for student performance (or quality) at a higher education level would be tertiary completion and graduation rates. On closer examination of the data, it was determined that a more effective measure would combine measurable skills at 16 (PISA) with tertiary graduation rates. A dataset was constructed which combined the composite indicator and a number of other indicators, selected on the hypothesis that they may be associated with university preparedness.

The majority of data was sourced from the latest data tables provided by the OECD's Education at a Glance. The UNESCO Institute for Statistics was another key data source. A number of indicators were constructed through a review of qualitative information (for example, country reports authored by international organisations), such as the number of subjects studied at lower/upper secondary levels and the level of devolution for setting the curriculum. In the latter cases, value judgements were often made as to appropriate averages or how information should be interpreted.

The lack of good quality, comparable data - and in particular, the lack of a good measure of student preparedness for higher education - means that this was necessarily an imperfect analysis. There are many other contributing factors which could not be controlled for in the analysis, for example the quality of provision at higher education level (which will have a high degree of influence on completion and graduation rates). There is also no way of indicating causality between the variables tested; any links are correlations, and we make no suggestions as to any causal links. Possible reasons behind any correlations are explored further in the international literature review. Finally, the statistical tests used require normal distributions; the small size of the dataset has prevented the normal data manipulation to ensure that the basic statistical assumptions are met.

Countries are listed below in order of preparedness for higher education, according to the composite skills indicator:

1. Finland	13. Czech Republic	25. Italy
2. Japan	14. Austria	26. Estonia
3. New Zealand	15. Germany	27. Belgium
4. Australia	16. Norway	28. Luxembourg
5. Poland	17. USA	29. UK/England
6. The Netherlands	18. Sweden	30. France
7. Iceland	19. Portugal	31. Turkey
8. Ireland	20. Slovak Republic	32. Chile
9. Canada	21. Korea	33. Greece
10. Denmark	22. Israel	34. Mexico
11. Slovenia	23. Spain	
12. Switzerland	24. Hungary	

Countries which are successful in terms of the composite indicator tend to:

- Have higher levels of enrolment between the ages of 15 and 19.
- Spend more per pupil at both lower secondary and upper secondary levels.
- Have lower student-teacher ratios at both lower secondary and upper secondary levels.

- Spend more time on physical education and health in the lower secondary curriculum; and less time on technology.

Other areas which are associated with successful outcomes in terms of some or all of the individual indicators which make up the composite indicator comprise:

- Higher expenditure per pupil at a primary level.
- Less compulsory instruction time at primary and lower secondary levels.
- A higher age at which compulsory arts education ends.
- More devolution to the state (as opposed to national) level in terms of responsibility for setting the curriculum.
- A compulsory CPD requirement for teachers.
- Less curriculum time spent on religious education at a lower secondary level.

Four countries were selected from our analysis for closer study. Finland and Japan were selected as the top-performing countries on the basis of our analysis; Slovakia and Poland were also chosen as high performers against their GDP per capita, which was more comparable to Mexico. Reflections on good practice from these countries are included in the thematic review (Section 6).

## 3. International Literature Review

The purpose of the international literature review was to consider evidence relating to the skills that students require to succeed at university, and to identify the structures and systems that influence the development of these skills. In addition to academic skills, success at tertiary level is linked to a large number of other factors: examples include inherent levels of motivation, psychological stability, students' own expectations, and university services and support. For the purposes of this study, the following components were included as being particularly important for success in higher education: students' non-cognitive or 'soft' skills; their preparedness and ability to transition to university life and modes of study; and their ability to persevere in the face of difficulties.

### 3.1 Preparedness

The transition from secondary education to higher education is supported by the level of university preparedness among students. The better prepared students are, the more likely they are to succeed at higher education (Jansen van der Meer, 2012). Students' levels of preparedness are influenced by a wide variety of factors, ranging from students' academic achievements and overall ability to transition to the nature of university study, the extent to which the university experience meets students' expectations, and their ability to persist at university in the face of difficulties. For the purpose of this study, we include the following components as being particularly important for successful transition to higher education:

- Students' pre-university academic achievements, including cognitive and non-cognitive skills, and subsequent ability to adapt to the nature of university work.
- The extent to which students are capable of entering, persisting in, and graduating from university.

Cook (2010) writes that study habits formed in secondary school tend to persist until the end of the first semester of higher education. Thus, the quality of upper secondary education is thought to be an important factor contributing to students' preparedness at higher education institutions. Because of the strong link between students' achievements at secondary education and their subsequent success at university, we have chosen to focus mainly on factors influencing preparedness and academic performance at the secondary school level, with the exception of certain short-term interventions and incentives that can follow students from secondary school and through to university. Moreover, we have chosen to exclude potential non-academic psychological and social factors associated with university preparedness for this study, as it is an area that is particularly difficult to measure (Jansen and van der Meer, 2012) and would risk making the scope of the study excessively broad. Further research in order to explore possible links between preparedness and social and psychological factors is recommended, and would likely complement the findings and recommendations of this study.

### 3.2 Skills

This research project has aimed to identify the skills or competencies that are necessary for students to be adequately prepared for higher education. Different individuals and organisations have different ways of defining, describing, and grouping skills and competencies. For example, the World Bank separates cognitive skills, affective skills, psychomotor skills, and 'basic' skills, such as problem-solving, learning, communication, personal, and social skills (World Bank, 2015). The Inter-American Development Bank (IDB) identifies the skills relevant for different stages of education: cognitive skills, metacognitive strategies, self-efficacy, and social skills (Bassi et al., 2012).

The table below provides a framework for the skills that we identify as being applicable to the context of higher education. Information is taken from the wider academic literature, including the skills frameworks mentioned above and distinctions between cognitive and non-cognitive skills, as well as findings from the qualitative research for this project.

Non-Cognitive or 'Soft' Skills	Personal Behavioural Skills	Levels of self-management, motivation, persistence, grit, self-esteem, emotional stability, and locus of control.	Core Skills
	Interpersonal/Social Skills	Teamwork skills and the ability to motivate others and delegate tasks. Effective communication skills and the ability to interact with others. Flexibility and adaptability.	
Cognitive or 'Hard' Skills	Basic Academic Skills	Basic literacy, numeracy/quantitative, and writing skills. Computer literacy.	
	Study Skills	Note-taking skills, concentration techniques, examination strategies, information sourcing and organisation, referencing skills, problem-solving, and analytical and critical thinking skills.	
	Subject Knowledge/ Specialised Skills	Intellectual grasp of the subject matter of various academic subjects such as language, mathematics, various pure and applied sciences, and the social sciences, as well as other specialised skills, such as quantitative skills required for certain degree studies.	

Cognitive skills are those traditionally associated with academic performance: the skills typically assessed directly through tests and examinations. Non-cognitive skills, in contrast, are referred to as the methods of thinking, attitudes and behaviours that contribute to success in school and at university (Gutman and Schoon, 2013). We find that the distinction between soft and hard skills, whilst often used interchangeably with or as a substitute for cognitive and non-cognitive skills, is a more ambiguous terminology. Moreover, the terminology of 'soft' and 'hard' skills is often used in the context of skills for employability (see Andrews and Higson, 2008), whereas the terminology related to cognitive and non-cognitive skills is more established in the wider literature surrounding education and academic performance (Gutman and Schoon, 2013). 'Core skills' refer to skills that are likely to be applicable across different courses and subjects at higher education, whereas subject knowledge and specialised skills may vary according to the area of degree study. Certain courses in science, technology, engineering and mathematics (STEM), for example, are likely to require higher levels of quantitative and/or technical skills than courses in other disciplines. Conversely, language courses are likely to require higher levels of linguistic and writing skills. Distinguishing between core and specialised skills, opens up the possibility that there may be certain differences among students in the skills required for higher education as a consequence of their choice of degree subject.

### 3.3 Key Success Factors

In broad terms, influences on success levels at university can be viewed in four different areas: individual skills levels; policy and education expenditure; school-level influences; and interventions and incentives. According to our analysis, the area which yields the most significant external influence on students' outcomes at university level is the secondary school environment, encompassing curricula, the quality of the

school, the quality of teaching and the learning environment itself. These areas are outlined further in the following thematic sections.

## 4. Thematic Findings

The key areas identified as being of importance in determining success at tertiary education level from the international literature review included: the skills possessed by students; the policy environment; the school environment; and interventions and initiatives. In the following analysis, evidence from all parts of the research project have been drawn together: the case studies, the literature review, the UK review and the Mexico review.

### 4.1 Skills for Higher Education

#### 4.1.1 Skills Requirements

##### **Cognitive and non-cognitive skills**

Higher education preparedness is strongly associated with the skill set of students upon entering university. A review of the available literature suggests that a wide range of skills are important for academic performance during higher education. Cognitive skills, or the intellectual skills traditionally associated with academic testing, play an important role. Memory capacity and attention (Kyndt et al., 2011), as well as numeracy and literacy (Duncan et al., 2006), have been found to be strong predictors of success at higher education. Importantly, some cognitive skills, such as basic literacy and numeracy, are not particularly malleable when a person reaches adolescence, suggesting that measures taken to improve cognitive skills are more likely to be effective when implemented in the early school years (Dee and West, 2011).

Non-cognitive skills, or the thinking patterns, attitudes and behaviours that contribute to success in school and at university (Gutman and Schoon, 2013), are also important for success in higher education. Skills such as persistence, interpersonal skills, self-esteem, tolerance and communication skills contribute to long-term educational outcomes (Dee and West, 2011). Indeed, Kautz et al. (2014) argue that non-cognitive skills can in many cases exceed the predictive power of cognitive skills for outcomes such as academic achievement. Students with strong non-cognitive or social skills are more likely to stay in school past the age of 16 and to progress to higher education (Carneiro et al., 2007). There is, in addition, a strong relationship between the development of reading and mathematical skills and non-cognitive skills (Haahr et al., 2005).

In the UK, cognitive skills were reported by students to be most important for tertiary preparation: focus group participants most frequently mentioned writing skills, quantitative/numerical skills, independent learning skills, time-management skills, and other study skills, such as note-taking and referencing skills. Some interviewees stressed the importance of high levels of resilience, 'grit' and motivation. One interviewee also highlighted the link between the locus of control measures (the extent to which individuals believe that they can control their life) and success at university.

Conversely, in Mexico, non-cognitive skills were most often reported as being important. Students in focus groups also highlighted the need for communication skills, as well as time management and the ability to 'self teach'. Requirements differ by university; essay writing and research skills, for example, were only mentioned at one of the three university focus groups, with students at one of the other universities pointing out that essays are written only by postgraduate students. In terms of traits, focus group participants highlighted the value of confidence and the ability to overcome fears.

##### **Understanding tertiary requirements**

For many students, there is a significant disconnect between the characteristics of study at secondary and higher education level. Cook (2009) writes that the transition from secondary education to university involves a switch from teacher-dependent to independent learning. Some interviewees from the UK suggested that there is a need for more communication and better dialogue between universities and secondary schools in terms of the skills necessary for higher education. There are 'myths' on both sides of

the divide between secondary and higher education concerning preparation for university, said an interviewee, who is involved with university governance. Universities may not always understand the teaching styles, curricula and skills expectations in schools, and vice versa. In the UK, secondary school tutors are more likely to see their role as optimising assessment outcomes and reaching performance targets. University tutors, on the other hand, are more likely to see their role as *'motivating students to develop an enthusiasm for the subject, together with independence, self confidence and problem-solving abilities'* (Crabtree and Roberts, 2007, p.345). Another interviewee suggested that teachers, as part of their continuing professional development, could visit higher education institutions to gain an understanding of the skills that their students would need for university, perhaps through reviewing examples of the work expected from undergraduates.

- Both cognitive and non-cognitive skills are important predictors of success in higher education, but many cognitive skills - such as basic literacy and numeracy - are most effectively developed in the early school years.
- In the UK, cognitive skills were reported by students as being most important for tertiary preparation; in Mexico, non-cognitive skills were most often reported as being important.
- Mexican students also note the ability to 'self-teach' and resilience as being important.
- There is a significant disconnect between study traits at university and secondary school; better communication by teachers from both types of institution could help to smooth the transition.

## 4.1.2 Skills Gaps

One study by the Higher Education Funding Council for England found that the lack of preparation and necessary study skills was a major factor contributing to non-completion rates at higher education institutions (Evans, 2000). Moreover, in Brüssow's (2007) study of higher education preparedness in South Africa, four of the five most important factors contributing to the academic failure of students were directly related to students' basic academic skills and study skills:

Factor	Responses
Lack of reading and writing skills	73.4%
Language barriers (where English, the medium of instruction, is not the students' first language)	64.5%
Employing a surface learning approach	64.5%
Lack of effective study skills	58.1%
Lack of intrinsic motivation	56.5%

In Mexico, a key gap is evident in basic academic skills. A 2011 school evaluation found that just under half of upper secondary students have deficiencies in reading, and three quarters in maths (Girón et al., 2014). This finding is echoed by reviews of university entrance exams, which highlight that EMS students are falling short of basic literacy and maths skills (Backhoff et al 2011, Larrazolo et al 2013). The same was reported by focus group participants in the UK, who noted difficulties with statistical and mathematical skills when beginning university. It was unclear from the focus groups whether these skills gaps represented difficulties with general numeracy rather than skills specific to their degree course. However, the students said that specific catch-up modules, taught at university, as well as A level subjects involving quantitative methods, had been valuable in this regard.

Study skills are also held to be lacking: in Mexico, a survey of educación media superior (EMS) schools' headteachers found that only 8% of upper secondary students are able to learn on their own initiative, 13% are able to approach problems keeping in mind a fixed objective, and 10% are capable of innovating and proposing solutions to problems as they arise (La Jornada 19.12.2013). In the UK, students reported skills gaps in note-taking: several students said that they had found this difficult given that they were unfamiliar with lecture-based teaching.

Gaps in socio-emotional skills have also been identified as an issue. Self esteem is a particular issue for students in Mexico, particularly those from low-income backgrounds. Echoing the focus group findings mentioned above that students require confidence, one Mexican expert said that students need to feel *'more confident, to feel proud of their knowledge [and be] able to speak in front of the community'*. Students at the focus groups in Mexico mentioned a range of areas in which their non-cognitive skills were lacking upon arrival at university. Social skills and the ability to network were both considered to be important and, often, lacking in students in their first semester or trimester at higher education, particularly as they are unlikely to know anybody when they first arrive (focus groups, 2015).

This finding was also echoed in the UK, with one interviewee discussing the importance of confidence and resilience among students from disadvantaged backgrounds. Students who are the first in their family to attend university often lack the *'cultural script to drawn upon'*, as well as the guidance and support of relatives who have previously attended university and are often liable to drop out in the first term of university. The interviewee argued that educators need to instil a sense of confidence in the students who do not come from privileged backgrounds with *'consistent and robust messages to tell them that they're capable'*.

- Lack of basic reading and writing skills are linked with non-completion rates at university.
- Basic academic skills gaps were reported by students in Mexico and in the UK; remedial modules at university in the UK can mitigate this issue, however.
- Study skills are lacking in Mexico, with a severe lack of problem-solving and initiative reported.
- While not strictly a skill, self esteem is an important gap, with many young people lacking the confidence needed to succeed at university.
- Socio-economic backgrounds may be a contributing factor to a lack of resilience and confidence in students, leading to non-completion at tertiary level.

### 4.1.3 Completion Rates

Preparedness is associated with students' abilities to persist in and graduate from university. The decision to withdraw from university is likely to be the result of a number of factors, including socioeconomic background, ethnicity, gender, age, financial situation, and motivation. The complex nature of contributing factors, in addition to the prevalence of relatively small-scale studies of higher education non-completion rates, mean that it is difficult to get an accurate overview of which factors are the most important when it comes to raising the proportion of students that graduate from university. There is a relative shortage of studies comparing university non-completion rates across different countries, making it difficult to determine why university completion rates are lower in certain countries compared to others.

The average tertiary education dropout rate for OECD countries is 31%, ranging from more than 40% in Mexico, New Zealand, Sweden and the United States, to just over 10% in Japan (OECD, 2010). In Europe, the average tertiary dropout rate is 21.8%, ranging from 28.3% in the Netherlands to 14.7% in Germany (Schnepf, 2014). Argentina has one of the highest university dropout rates in the world and approximately 73% of students leave before completing their studies (Bonasegna Kelly, 2013).

The UK has one of the lowest reported higher education dropout rates in Europe: 16% of adults between the age of 20 and 65 have dropped out of university. Various causes for the UK's low drop out rates have

been suggested, including the potential role of university-provided accommodation for students (NAO, 2002), short course-length and low student-to-teacher ratios (Hall, 2001). The selectiveness of admissions policies may also be a factor; students at the most selective institutions are less likely to drop out. In addition, there is evidence that admission policies based on selective tests lead to higher levels of performance at higher education (Bagabir, 2012). In the UK, it has also been found that parental background is a strong factor contributing to students dropping out during their first year at university: students with parents who worked in either routine or semi-routine occupations, and students with parents who had not been to university, were more likely to drop out. Moreover, age, ethnicity, gender and prior levels of academic achievement were all important factors contributing to university non-completion (McCulloch, 2014).

Dropout levels are a significant issue in upper secondary education in Mexico and have an impact upon the number of students that are able to progress to higher education. There are a wide range of factors associated with dropout in Mexico, including low family income, lack of parental support, low self-esteem, pregnancy, violence, dislike of school, and low academic achievements, to name a few (SEMS, 2015). According to one expert interviewed for this study, *'the major cause of young people dropping out of school is because they don't like going to school, rather than the cause being economic. They don't relate to school.'* This could be addressed by raising the pedagogical skills of teachers and by ensuring the subjects taught are those needed by the labour market. Supporting teachers so that they can talk to at-risk students can also prevent dropout, according to experts interviewed.

- There is a lack of research indicating the comparative non-completion rates between countries and difficulty in understanding the reasons behind countries with lower rates.
- The UK has a relatively low drop-out rate, with reasons postulated as including subsidised accommodation; shorter course length; low student to teacher ratios; and admission policies.
- Admission policies based on selective tests lead to higher levels of performance at higher education levels.
- Parental influence can also impact on drop-out rates; students with parents with no tertiary education are more likely to drop out.
- Dropout rates at secondary level in Mexico have an impact on progress to higher education; reasons include low family income, lack of parental support, violence and low academic achievement.
- Suggested actions in Mexico include improved pedagogical skills and increased relevance of education to the labour market, and supporting teachers to target at-risk students.

## 4.2 Policy Influences

A student's decision to go to university, and his or her eventual ability to gain a university education, are the *'the result of a complex process that begins at the 7th grade, if not earlier'* (Cabrera et al., 2006, p.1). In this sense, larger scale structural changes may be more successful in tackling systemic problems at secondary education related to higher education under-preparedness and academic failure. The following sections review secondary education policy in order to identify any salient structures which have an influence on the extent to which young people are prepared for university education. They explore possible links between student performance, drop-out potential, and other proxies for university preparedness and key areas such as teacher quality, school curriculum, education expenditure and learning environment.

### 4.2.1 Education Expenditure

International literature shows a complex relationship between education expenditure, and academic performance and university preparedness. Some studies find correlations between increased expenditures

and the skills associated with preparedness for university (e.g. PISA scores), particularly for countries where relatively little is spent on education (e.g. Fuchs and Woessmann, 2004). Per student funding explains 15% of between-country variances in mathematics and 17% of between-country variances in reading (Haahr et al., 2005). The nature of the relationship between expenditure and outcomes varies considerably between countries, however; two of the countries chosen as case studies for this research project - Japan and Finland - achieve some of the highest education outcomes in the OECD while maintaining levels of expenditure that are close to the OECD average. Our analysis suggests that the benefits of increased expenditure may decrease after reaching certain levels of quality within an education system.

Unlike the majority of OECD countries that tend to have similar spending distributions across primary and secondary education, Finland invests more resources in lower secondary education where there are most problems (Laukkanen, 2006).

Funding sources demonstrate interesting differences between our case study countries. In Finland, private sector education institutions are virtually nonexistent and 98% of the funding for education expenditure is covered by the government (Darling-Hammond, 2010). Similarly, in Japan, the majority of education spending is public - 93% of education spending for primary, secondary and post-secondary non-tertiary education comes from public sources (OECD, 2014b). The exception, however, is in tertiary education, where the majority comes from private sources. Also in Poland, the majority of education spending is public - 94% of education spending for primary, secondary and post-secondary non-tertiary education comes from public sources (OECD, 2014b). In the UK, although the majority of spending for primary, secondary and post-secondary non-tertiary education comes from public sources (86%), it is the second lowest for any OECD country, and it is only slightly ahead of Mexico's level (OECD, 2014b). For tertiary education, only 30% of spending comes from public sources, compared with the OECD average of 69%. This is also the second lowest for any OECD country.

One interviewee argued that there had been a trend in the UK to increase expenditure which in some cases made a difference to outcomes, and in other cases did not. For this expert, a crucial issue was the distribution of expenditure throughout the phases of education. Many countries spend a very high amount on higher education in comparison to the earliest years of education, whereas it is often in the earliest years that educational interventions make the greatest difference.

It is clear that simply putting more money into an education system will not improve outcomes without a detailed understanding of where to make the additional investments. Distribution of expenditure across different levels of education a key consideration, as is the relationship of education expenditure to other areas of the economy. Many countries spend disproportionately high amounts on higher education relative to the earlier phases of education, despite evidence that the earlier phases of education are more important to improving overall education outcomes. How money is spent, rather than how much, is likely to be the most important question in understanding how to improve preparedness for higher education.

- There is conflicting evidence as to the impact of higher education expenditure and the skills associated with preparedness for university.
- The benefits of increased per pupil expenditure may reduce as school quality increases: Japan and Finland achieve some of the highest education outcomes in the OECD whilst maintaining close to average levels of expenditure.
- Targeted spending at different education levels may have a positive impact: Finland invests more resources in lower secondary education, where there are most problems.
- Higher spending as a percentage of GDP is also not strictly linked with positive educational outcomes: while Finland invests 6.5% of GDP (against an average of 6.1%), Japan only invests 5.1%.
- Amongst case study countries, higher levels of public funding are associated with higher levels of preparedness and education outcomes: Finland and Japan have significantly higher levels of public funding than the UK and Mexico.
- It is essential to gain an understanding of where exactly increased investment might usefully be spent in terms of raising outcomes (and reducing dropout rates at the upper secondary level).

## 4.2.2 Education Policies

Secondary education policies within a country have an influence on the extent to which young people are prepared for university education, particularly in terms of curricula, focus on numeracy and literacy skills, and school accountability. General issues - concerning the way policy is made and structured - are also important. Haahr et al. (2005) identify a number of important policy considerations and challenges that have a bearing on student achievement. Their report highlights key factors and conditions at different levels:

- **Systemic level:** considerations at the systemic level focus on differences among educational systems. Variations in student performance are much higher within, as opposed to between, countries. Student performance is positively correlated with high degrees of competitiveness in national education systems (for example, through use of entry examinations) and per student funding levels.
- **Structural level:** the structural level is concerned with the gender, ethnicity and socio-economic background of students.
- **School level:** considerations at this level focus on aspects of school management. Variation in student performance between and within schools is an important factor to consider in terms of how schools are influencing student outcomes. While students in private schools tend to perform better in PISA tests, this is largely due to the socio-economic profile of students at such schools, rather than more effective school management.

Interviews with UK experts revealed that stability in policy making, providing a stable basis for schools to develop developing students' skills, was perceived as important. The UK system has been characterised by change in recent years, with policy shifts occurring frequently and with continual revision. Policy reforms are also evident in other case study countries, however: Japan has undergone a series of reforms since 1971 focusing on standardisation and decentralisation; Finland also embarked on comprehensive reforms in the 1970s. Poland has undertaken four key changes to the education system following transformation of the political system in 1999, and Slovakia embarked on their major reform programme from 1989 onwards, following the end of communist rule. The significant difference between these policy reform programmes and that of the UK, however, appears to be that they are defined and linked to key goals; change in the UK has largely occurred in response to changes in the governing party's policies, and have included significant reforms (and re-reforms) to qualification structures. According to one expert interviewed for this report, communication and co-operation between different government departments are also seen to be valuable in creating a coherent policy approach to skills development (expert interviews, 2015).

In the Mexican context, large scale structural changes may be necessary to tackle systemic problems at elementary and secondary education levels in order to address higher education under-preparedness and academic failure. Stability and the management of reforms are important issues. Policy implementation in Mexico must also be considered in light of teaching unions. Teaching unions were described as a barrier to reform by several Mexican experts interviewed. As Puryear, Santibañez and Solano, argue, '*without changes to the laws and changes giving SNTE [a teaching union] a co-governing role in education, it will be hard for any government to make significant progress*' (2012, p. 108).

- Stability in policymaking and coherent reforms, are essential to achieving long term educational improvements.
- Communication and cooperation between government departments are also valuable in achieving systemic policy approaches.
- A key issue in Mexico is the existence of teaching unions, which are viewed by some experts as being a significant barrier to effective reform.

## 4.3 School Influences

Aspects of school-level education that can influence the skills and preparedness of secondary students for entry to tertiary education include curriculum and subject area; streaming and ability setting; school accountability and quality; teacher quality; and the learning environment.

### 4.3.1 Curriculum and Subject Area

#### Curriculum

The design of the upper secondary school curriculum is likely to be important in order to ensure the development of key skills for university. We found, however, that there is a broad range of curricula which can lead to high achievement levels for students, and different structures work well in different countries. There is also a significant lack of research exploring the relationship between the scope of study at upper secondary education - measured by the number of subjects studied - and the development of key skills for higher education.

Anderson-Levitt (2008) argues that there is more than one curriculum and pedagogy that can lead to high achievement levels for students. We can distinguish between three broad kinds of curriculum design structures:

- **Central curricula:** curricula that are developed by national or state bodies, departments or institutions, and are usually compulsory for all students regardless of school. Anderson-Levitt (2008) writes that there has been a global movement towards the development of national curricula, including mandated textbooks and scripted lessons.
- **Integrated curricula:** curricula that are the result of collaboration between central, regional and school levels in the curriculum development process. The integrated curriculum usually involves a national core curriculum that sets key standards and objectives for learning, but regions and individual schools have the autonomy to develop aspects of the curriculum. Integrated curriculums are found in Finland and Japan.
- **School-based curricula:** curricula that is developed by individual schools. A wide range of schools in England develop their own curricula.

The Japanese school curriculum is characterised by being very demanding, but also highly coherent, as subjects follow a logical progression from year to year. Each subject is developed in great detail and, in the case of mathematics and science, emphasis is placed on the understanding of fundamental underlying concepts; this approach has led to increased performance levels relative to other OECD countries (OECD, 2011). In Finland, the development of the school curriculum is a highly decentralised process where municipalities, schools, and individual teachers enjoy high levels of autonomy in the development aspects of the curriculum. This kind of *'network collaboration has been a means of increasing the ownership of education providers and schools in the curriculum process'* (Vitikka, Krokfors and Hurmerinta, 2012, pp. 3-7).

Secondary education in the UK is characterised by high levels of specialisation in particular subjects. Hodgson and Spours note that post-15 education curriculum in England, Wales and Northern Ireland has traditionally been *'voluntarist, qualifications-focused, and market-driven with no common requirements for all learners'* (Hodgson and Spours, 2003, p. 127). The Department for Education is responsible for developing the national curriculum, but individual schools have the autonomy to develop the whole curriculum in order to reflect their particular needs and circumstances (Eurydice, 2011).

Our study found conflicting evidence as to whether it would be better to teach generic competencies through key subject areas or as subjects in their own right in terms of increasing students' abilities in such competencies, and thereby their preparedness for higher education. Recent Mexican reforms have aimed at the former, but questions have been raised about teachers' skills levels in delivering such subject-based competency teaching (expert interviews, 2015). Several experts highlighted limitations in the Mexican school curriculum in terms of the technical and scientific education of students, as well as the development of soft or social skills in the classroom. Others highlighted the need for more space in the curriculum

devoted to written assignments, practical work and team-based activities.

### Subject area and scope

Certain subjects have been found to have a positive influence on academic performance at the higher education level. In a study from England, Smith and Naylor (2001) found that students that had taken corresponding subjects at upper secondary education were more likely to complete their university degrees. Moreover, Calderon, Dobson and Wentworth (2000) found that students taking maths and languages other than English tended to gain higher tertiary entry scores in Australia.

Our quantitative data analysis found that countries with higher levels of compulsory instruction time for subjects in physical education and health were likely to have students that were better prepared for higher education. A range of studies explore the effects of physical education on student performance. Bailey (2006) studies the effects of physical education and sports using data from an international research project covering more than 50 countries. He finds that increased levels of physical education in schools is in many instances associated with improved academic performance, as students are found to have greater levels of attentiveness (Bailey, 2006). Our quantitative analysis also showed a correlation between the level of compulsory instruction time for religion subjects and student performance. Countries with higher levels of compulsory instruction time in religion were less likely to have high levels of higher education preparedness among secondary school students. Top performing countries such as Japan and Finland spent near or below average compulsory instruction time on subjects in religion - three and four percent respectively (OECD, 2014). Similarly, we found that countries with higher levels of compulsory instruction time in technology subjects were less likely to have high levels of higher education preparedness among secondary school students. Välijärvi (2006) found that heavy computer use is related to poorer performance in reading literacy, whereas moderate use of computers has a positive impact on performance.

Secondary level education systems around the world are divided between those that provide general level education, and those that provide a high degree of subject specialisation from the age of sixteen. For example, students at upper secondary schools in England usually study three to four subjects in-depth, whereas students in Poland have to complete 13 compulsory subjects (see country case studies). It is difficult to say whether one system is superior to the other. Two of the top performing countries in the global PISA tests - Japan and Finland - are remarkably different when it comes to the number of subjects studied at upper secondary education level. In Japan, roughly 70% of teaching time is devoted to just five subjects, meaning students go into greater depth in core subjects than do students in other countries (OECD, 2011). In Finland, however, students take a much wider mix of subjects and there is a strong emphasis on the development of broad knowledge. Despite these different systems, both countries perform exceptionally well in global student performance tests.

In addition to broader curriculum design, it is also likely that the subject mix taken at upper secondary education has an impact on the skills that students develop. For example, in the UK, students studying sciences at upper secondary schools in the UK are thought to have particularly low levels of exposure to writing tasks, whereas students studying arts and humanities are thought to lack the quantitative skills necessary for some degree courses in social sciences (expert interviews, 2015). Again, however, this is an under-researched area internationally. In the UK, students taking corresponding subjects at upper secondary education - subjects that relate to the topic of their chosen degree study - are more likely than others to complete their university degrees (Smith and Naylor, 2001). This was particularly the case for students taking science-related courses at university. Smith and Naylor suggest that taking corresponding subjects are likely to lead students to be better prepared for their particular degree study and, thus, less likely to drop out as a result.

Students at the Mexican focus groups felt that there were specific subjects available to them at secondary level that equipped them with necessary skills for university. Maths, for example, provided two students with problem-solving skills. Music lessons helped another student 'store information', improving his memory. One student studying graphic design had benefited from subjects at his technical high school, such as history of art, and had already learned about 'the theory of colours, architecture, creative industries...' which helped him on his university course, as well as drawing and sculpture. Other students at Tecnológico de Tláhuac III believed

that every subject taught at school provided them with skills which would be applicable at university and beyond. Students at the UK focus groups identified a wide range of subjects that they felt had provided them with valuable preparation for university, including: English, which can help with clarifying arguments and communication skills; Creative Arts, which required motivation and creative thinking; and History and Philosophy, which helped to develop critical reasoning skills: *'it gave me an advantage, the capacity to pick apart an argument and work out the salient points and the flaws... you can apply [these skills] to any degree, whether its science or art based.'*

- Further academic research is needed on the relationship between curriculum structure and subject mix on the one hand, and educational outcomes and university preparedness on the other. It is possible that there is no one ideal mix, and that ideal structures vary by education system and by culture. Testing this further, and internationally, would be useful.
- Countries with higher levels of compulsory instruction time for physical education and health were more likely to produce students that were better prepared for higher education.
- Countries with higher levels of compulsory instruction time for technology subjects and religious studies subjects were more likely to produce students with lower levels of preparation for higher education.
- Students in Mexico felt that specific subjects available to them at secondary level, such as maths, helped to improve their problem solving skills. Students in the UK felt that subjects including English, Creative Arts and History helped to refine critical reasoning and communication skills.

### 4.3.2 Streaming and Ability Setting

There is a relative lack of research exploring the effects of streaming, a practice whereby students are grouped according to academic ability, on educational outcomes and university preparedness. The limited evidence base suggests that while streaming can improve outcomes for higher ability students, it tends to entrench socio-economic differences; streaming tends to increase the gap between low and high achieving students, and students from poor backgrounds are more likely to be in lower streams.

The UK is a case in point, with an education system characterised by high levels of grouping according to academic ability. The practice of ability grouping appeared during the 1990s as a means to raise performance standards (Hallam and Parsons, 2013). Ireson identifies four main types of ability grouping in the UK (Ireson, 2000):

- Streaming: students are assigned to class on the basis of general ability and remain in streamed classes for most subjects.
- Banding: a given year group is divided into two, three or four bands on the basis of general ability. Students may be regrouped within each band, but bands remain consistent across subjects.
- Setting: students are regrouped into classes for different subjects on the basis of their ability in the specific subject.
- Mixed ability: no grouping according to academic ability, but students may be grouped to ensure a balanced mix of social background or gender.

Ability grouping has been a favoured policy by many UK governments and is adopted on the belief that it allows for teaching to be tailored to the individual needs of students (Campbell, 2013). A 2005 government white paper report argues that *'grouping students can help to build motivation, social skills and independence; and most importantly can raise standards because pupils are better engaged in their own learning'* (HM Government, 2005). However, the practice of ability grouping has been criticised by academics foracerbating differences between students. A study by Hallam and Parsons (2013) of 2,544 year two pupils found that ability streaming increased the gap between high and low achieving pupils. Moreover, ability streaming tended to deepen socio-economic differences, as students from poorer backgrounds were more likely to be in lower streams.

Conversely, in Japan, the curriculum is based on the idea that academic success is the result of effort as opposed to ability. No Japanese students are held back or promoted on the basis of their academic ability and all students are expected to learn the same demanding curriculum. In Finland, however, there is little comparative grading of students and little numerical grading that occurs: *'by fifth grade, Finnish pupils no longer*

receive numerical grades that would enable directly comparing pupils with one another. In fact, grades are prohibited by law' (Sahlberg, 2007, p 155). Instead, teachers rely on descriptive assessment to give feedback on student performance. As a result of this, student testing is seen more as opportunities for learning, as opposed to a method for assessing students. The grading system follows a scale of 4-10, with 4 indicating a fail and 10 indicating an excellent result (Ministry of Education and Culture, 2015). The absence of a rigorous marking system appears to have contributed towards Finnish students experiencing less stress and anxiety than students in other countries; only 7% of Finnish students report feeling anxious when completing maths homework, compared with 52% of Japanese students (Sahlberg, 2007).

- While streaming can improve outcomes for high-ability students, it can entrench socio-economic differences.
- Streaming is favoured by the UK government as a way of raising standards; research has showed, however, that it increases the gap between high and low performing students.
- Students are not held back or promoted on the basis of ability in Japan or Finland.
- Finland has little comparative and numerical grading, relying more on descriptive assessment by teachers.
- Comparative grading can cause anxiety and stress for students: fewer students in Finland than in Japan experience anxiety when completing maths homework.

### 4.3.3 School Accountability and Quality Assurance

This section reviews literature concerning school accountability and quality assurance with an aim to discover whether, and in what circumstances, strong accountability systems or school autonomy are important for student outcomes. One global trend in education policy and reform has been the increased emphasis on school accountability, measured by adopting processes for accrediting, promoting and inspecting schools (Sahlberg, 2007). In the US, the 'No Child Left Behind' act of 2001 has incorporated school accountability at the centre of policy (Hanushek and Raymond, 2004). Schools are measured and held accountable by the National Assessment of Educational progress, and failure to achieve specific performance targets can lead to school intervention. There are typically three or four elements to school accountability systems, each of which is discussed in detail below:

- Standardised testing
- School inspections/evaluations
- Public reporting of school performance
- Rewards or sanctions based on some measure of school performance or improvement.

#### Standardised Testing

A key trend in global education policy is the increased emphasis on school accountability, measured by adopting processes for standardised testing of students, as well as accrediting and inspecting schools. Standardised tests have become a method for tracking improvements in student performance, and for holding schools accountable to specified education goals and standards. A recent report by the World Bank notes that '*a common feature of high-performing countries is the existence of high-stakes examinations at the end of secondary school, which determine university prospects and create strong incentives for students to apply themselves to their studies*' (De Gregorio et al., 2015, p 97). Haahr et al. (2005) note that there is some evidence that centrally set examinations have a positive bearing on student performance in maths and science. They also find that schools with frequent teacher-developed tests tend to perform better in some countries. Moreover, a study by Fuchs and Ludger (2004) on student performance in PISA tests found a positive relationship between standardised testing, particularly external exit exams, and student

achievement. However, the study noted that the effects of standardised testing on student achievement could backfire if the tests are not accompanied with clearly specified policy goals and standards for the school system.

Japan is a highly meritocratic society and standardised tests form a crucial part of the education environment. Japanese students take high-stakes tests at each education level and the outcome of these tests help determine students' eligibility for schools at the next education level. Moreover, performance in these tests represent gateways to status in Japanese society. A report by the OECD notes that: '*Exam success does not only reflect on the individual, but also on their mother, the other family members and teachers. this constellation of support shares the responsibility for failure and creates pressure to succeed*' (OECD, 2011, p 141). There are also standardised examinations for all levels of education in Poland and in Slovakia.

Finnish schools, however, do not measure student performance through the use of standardised tests, indicating that there may not be a clear link between their usage and preparation for tertiary education. Instead, the Finnish National Board of Education conducts national assessments of student performance for sample groups of students, usually those in ninth grade (Laukkanen, 2006). Assessment outcomes are used for the development of education policy, and presented in national profiles and individual sample school profiles. These profiles, alongside individual feedback reports, are then used by schools in order to set new teaching objectives. Moreover, as student assessment takes place in the form of samples, there are no published school ranking lists (Laukkanen, 2006). Teacher developed tests are the main form of assessment for students at all levels of education. Primary schools are so-called 'testing-free zones' where emphasis is placed on sustaining natural curiosity rather than assessing student achievement (Sahlberg, 2007).

Students at two of our UK focus groups said that they had found standardised testing useful in terms of university preparation. Students felt that the practice had developed skills, through revision periods, for working strategically and managing time, as well as allowing them to feel more comfortable with assessment practices at university. There are significant limitations attached to standardised testing, however, in the UK. Some students questioned the value of frequent examinations, with one student saying that it caused students to be more interested in exam technique rather than fully focusing on the content of their studies (UK focus groups, 2015). Additionally, standardised tests do not measure all important factors for academic achievement, such as non-cognitive skills - skills that may be particularly important in terms of preparedness for higher education (Kautz et al., 2014). Our review of international literature suggests that unintended consequences can include test manipulation and lack of attention to regional differences.

## Inspections

The effectiveness of school inspections on student performance is widely disputed in the academic literature. Some studies claim school inspections do not lead to improved academic performance (Luginbuhl and Webbink, 2009; Cullingford and Daniels, 1999). Other studies claim that inspections can have a positive effect on school improvement, behavioural change of teachers, or student performance if implemented in the correct way (Klerks, 2012).

Despite international studies identifying a positive relationship between school accountability policies and student performance, the effectiveness of Ofsted's inspections in the UK is a matter of considerable controversy. One study found that GCSE results were higher for non-inspected schools than inspected schools (Cullingford and Daniels, 1999). Similarly, another study argues that '*there exists no evidence that the occurrence of an Ofsted visit has beneficial effects on the exam performance outcome of the school following the inspection. Indeed, the results show a small but well-determined negative direct effect on exam results*' (Rosenthal, 2004, p.143-144). A 2008 survey by the National Union of Teachers on teachers' perceptions of Ofsted inspections found that 39% of respondents disagreed the inspection had led to school improvements, whereas 27% thought that it had and 34% held mixed views (NUT, 2008). One interviewee argued for the importance of carefully designed accountability measures in improving preparation for university. Schools should feel a sense of responsibility for the higher education outcomes achieved by their students, for instance, in terms of the quality of the higher education institutions they attend.

In Finland in the early 1990s, systems for school inspections and national pre-inspection of school textbooks

were discontinued, in favour of self-evaluation by schools (Laukkanen, 2006). At the same time, schools and municipalities were granted more autonomy in administration, as well as in the setting of school curriculum. Darling-Hammond argues that the logic of the Finnish education system is that: *'investments in the capacity of local teachers and schools to meet the needs of all students, coupled with thoughtful guidance about goals, can unleash the benefits of local creativity in the cause of common, equitable outcomes'* (Darling-Hammond, 2010, p 4). In Slovakia, however, where inspections are a key part of school evaluations, concerns have been raised regarding the quality of available statistics and information on school compliance with education standards. The report finds that the impact of the State School Inspection (SSI) on education policy remains limited, as few authority officials are familiar with the SSI annual report (Shewbridge et al., 2014).

- While standardised testing can have positive bearing on student achievement, it is essential that the tests are accompanied by clear policy goals and standards for the school system.
- The extent to which standardised testing has a link to preparedness is unclear: the two top-ranking countries (Finland and Japan) employ opposite testing approaches.
- Some UK students felt that standardised testing had helped them to develop skills for working strategically and preparing for assessment regimes at university. Others, however, felt that the practice caused students to focus overly on examinations rather than skills development.
- There is conflicting evidence regarding the impact of school inspections on academic performance.

### 4.3.5 Teacher Quality

Our initial assessment of evidence related to this study suggests that teacher performance is key to the development of students' soft and academic skills, and therefore to preparedness for higher education. Barber and Mourshed (2007) argue that the quality of teachers is the main driver of variations in student learning. Various interviewees identified teaching quality as a highly important factor in preparation for university; it was described as a *'top priority'* and the factor which makes *'the most difference to students' achievements'*. Moreover, all students in our focus group with Queen Mary, University of London, said that they felt teacher quality, rather than subject choice, had been the most important factor in preparation for university. As one student put it *'the teachers make the subject'*. Some students at the focus groups had been able to serve on the interview panel for prospective teachers - a measure which they said had been helpful.

#### Qualifications

A study by Fuchs and Ludger (2004) found that students with teachers educated to a higher level performed significantly better in global PISA tests compared with those with teachers educated to a lower level. For example, the required teacher education in Finland consists of a three-year bachelor's degree, followed by a two-year master's degree (Lauriala, 2013); kindergarten teachers must have a bachelor's degree, but are not required to have a master's degree. Japanese teachers must gain a teaching qualification from a higher education institution for the type of school they wish to teach in, i.e. primary, lower or upper secondary. Teacher participation in higher education institutions is very high: approximately 96% of teachers hold a higher education qualification or the equivalent (OECD, 2014c); the same percentage of teachers in the UK hold qualifications at degree level or higher (Department for Education, 2014b).

According to the 2013 TALIS survey, 90% of teachers in Mexico have completed university or some other higher education. However, only 62% of teachers have completed a teacher education or training programme - the lowest figure for any country surveyed and significantly below the TALIS average of 90%. The proportion of teachers in Mexico with less than a tertiary education was also among the highest reported in the survey, at 9% (OECD, n.d.).

Teacher education in Finland is heavily research-based, and teachers are expected to be well acquainted with educational research and pedagogical theories (Laukkanen, 2006). Although qualification levels and the

number of credits gained are the same for both class and subject teachers, the main subjects studied as part of the teacher qualification varies. The main subject studied for class teachers is education, whereas the main subject studied for subject teachers is the subject to be taught in schools (Kansanen, 2003). All Japanese teacher novices must undergo a compulsory one-year induction programme (Tanabe, 2007). The regional board of education set content guidelines for aspects of the programme that takes place outside the school (25 days per year), such as lessons regarding class management, as well as teaching ethics and methodology. Moreover, each individual school decides on content for the programme that takes place inside the school (300 hours per year). The content varies between schools, but usually involves class management and subject lessons arranged by a mentor. The same is true in Slovakia, where novice teachers must complete a compulsory one-year induction programme that includes mentoring by an experienced teacher (Eurydice, 2013). The function of the mentoring programme is determined by national legislation.

## Supervised practice and licensing

In Finland, supervised teaching practice is an obligatory and integrated part of teacher education programmes both at bachelor's and master's degree levels. The Council for Educational Personnel Training in Japan oversees the curriculum for teacher education and teacher students typically receive three or four weeks of teaching practice as part of university course (Wang et al., 2003). In the UK, all courses leading to a teaching qualification include a minimum 24 weeks of practical teaching experience.

A key feature of the Japanese teacher education system is that the final qualification to teach is not received by the university where the prospective teacher studied, but by the regional board of education (Tanabe, 2007). The board conducts a teacher qualification exam once a year to test the applicant's teaching ability, skills, and attitudes. Completion of the exam is a requirement for employment. In the UK, all new teachers must acquire a licence - Qualified Teaching Status (QTS) - and pass a one year probation period in order to become fully qualified teachers for maintained primary, secondary and special schools in England and Wales. A similar licensing system exists in Scotland and Northern Ireland.

## Professional development

Japanese teachers' professional development as been described as as '*multi-dimensional, continuous, and systematic [...] One major characteristic of teacher training in Japan is the frequency and variety of in-service teacher training programs*' (Fujita, 2007, p 43). A 2013 OECD survey found that Japanese teachers have above average participation rates for professional development in two areas: education conferences and observation visits (OECD, 2014c). However, the same survey found that Japanese teachers had spent fewer days on average engaging in professional development in the previous 12 months - five days compared with the OECD average of eight days (OECD, 2014c).

There is no probation time, national induction or mentoring programme for teachers in Finland (Niemi and Jakku-Sihvonen, 2011). Teachers are required to spend a minimum of three days each year on planning and professional development (Sahlberg, 2011a). The Ministry of Education provides public funding for the professional development of teachers (Niemi and Jakku-Sihvonen, 2011). However, because Finnish schools enjoy such high levels of autonomy with regards to budget allocations, the level of professional development that teachers' receive will vary across different schools and municipalities (Sahlberg, 2011a). Participation in training and professional development for Slovak teachers is the second lowest among countries participating in the OECD Teaching and Learning International Survey (OECD, 2012). Moreover, 25% of teachers did not participate in professional development during a period of 18 months from 2007 to 2008. The 2013 TALIS survey found that only 39% of Slovak teachers had participated in training courses or workshops in the previous 12 months compared to the OECD average of 71% (OECD, 2014c).

According to an OECD report, participation in CPD is very high in England: 92% of teachers involved in the TALIS 2013 survey reported undertaking professional development in the previous twelve months (OECD, 2014c). However, the number of days spent on CPD was significantly lower than that of other countries participating in the survey. Teachers in England spent an average of 10 days on CPD in the previous 12 months - the TALIS average was 22 days (OECD, 2014c). Teacher mentoring on Initial Teacher Education

courses is held to be an area of effective practice in the UK system. In the early 1990s, the UK government specified that two thirds of postgraduate teacher training time should be spent in schools, where trainee teachers would be mentored by practising teachers. The practice is held to support reflection among teachers and the development of new teaching styles and approaches, as well as increasing teacher confidence (Hobson et al., 2008).

Teachers in Mexico report higher participation rates for various professional development activities in comparison to other countries. For example, Mexican teachers spent an average of 19 days on training courses and workshops in the past year compared with the average of eight days for all countries involved in the 2013 TALIS survey (OECD, n.d.). Despite high overall participation rates, Mexico had the highest percentage of teachers reporting that the training received did not satisfy their demand (ibid). Moreover, the 2009 TALIS survey found that Mexican teachers with a least a master's degree received almost twice as much professional development as teachers with less than a bachelor's degree (OECD, 2009). Furthermore, 'thousands of teachers' are yet to be trained in the recently introduced new curriculum, according to one expert.

## Status

Teacher education is one of the most desired degree programmes for Finnish students, and only 10-15% of applicants are successful each year (Niemi and Jakku-Sihvonen, 2011). The number of places available for teaching education programmes each year is determined by a quota system that is negotiated with the Ministry of Education and dependent upon prognosis for teacher need. Aspiring teachers must go through a rigorous selection process in order to gain entry to a course in teaching. Over 50% of teachers in Finland report feeling valued by society - a number that is significantly above the OECD average of 31% (Warrell, 2014). Moreover, in a 2007 poll, 26% of upper secondary school graduates rated teaching as the most desirable profession (Sahlberg, 2007). There are a number of reasons that help explain the high status of teachers in Finland: *'Finns regard teaching as a noble, prestigious profession - akin to medicine, law or economics - and one driven by moral purpose rather than material interests [...] A critical condition for attracting the most able young people is that teaching is an independent and respected profession rather than just a technical implementation of externally mandated standards and tests.'* (Sahlberg, 2011a, p 13-20.)

Teaching has also been seen historically as a high-status profession in Japan. Yasuyuki (2006) points out that the popular Japanese word for teacher is 'sensei', meaning a person that was born earlier. In this sense, Japanese teachers are respected not only because of their teaching abilities, but due to their age and maturity level as well. However, a 2013 OECD survey found that only 28.1% of Japanese teachers reported feeling valued by society - a finding that is below the OECD average of 30.9% and significantly below the average of other high-performing Asian countries such as Singapore (67.6%), Malaysia (83.8%) and Korea (66.5%) (OECD, 2014c). Nearly 70% of Japanese teachers either disagreed or strongly disagreed that teachers were valued by society (OECD, 2014c). A survey from 11 major Japanese cities found that nearly 30% of Japanese teachers considered leaving the profession, primarily due to feeling 'chronically tired' (Fujita, 2007).

35% of teachers in England said they felt valued in a 2014 survey, just above the OECD average of 31% (Warrell, 2014). Moreover, analysis by the Institute of Education argues that the UK is in an unusual position compared to other OECD countries because younger teachers hold a more positive view regarding the profession than to their older peers (Warell, 2014). A survey by the Varkey Gems Foundation found that the UK had the highest respect for head teachers out of all the countries surveyed (Dolton and Marcenaro-Gutierrez, 2013). The 2013 TALIS survey, however, saw 65% of teachers in England disagreeing or strongly disagreeing with the statement *'I think that the teaching profession is valued in society'* (Micklewright, 2014).

## Recruitment, Retention and Salary

### Recruitment

In Europe, the majority of countries use some measures for monitoring the balance in teacher supply and demand, such as forward planning (i.e. identification of the most likely future scenario), and labour market

monitoring (i.e. general workforce trends) (Eurydice, 2013). The top-performing countries in global PISA tests tend to set high academic bars for teachers. For example, teachers are recruited from the top 5% of the graduate cohort in South Korea, and the top 10% in Finland (Barber and Mourshed, 2007). 26% of upper secondary graduates in Finland rated teaching as their most desirable profession (Sahlberg, 2007). There are approximately seven applications for every teaching position in Japan (OECD, 2011) and teaching is the second most popular academic discipline in Poland with more than three applications per course place (Zdybel, Bogucki and Głodzik, 2011).

In 2008, the Mexican Government introduced plans to open up for competitive examination of all vacant teaching positions in public schools in Mexico (Estrada, 2013). Hiring is based on standardised exams designed to measure candidates' cognitive skills, subject knowledge and teaching methods. Test-hired teachers have been found to reduce exam cheating and, in schools where exam cheating was rare, students with a new test-hired teacher scored significantly higher in both maths and language in comparison with students that received a new traditionally hired teacher. The World Bank notes that these *'effects are huge, and demonstrate that even in a relatively short period, better qualified teachers can dramatically impact students' opportunity to learn'* (De Gregorio et al., p. 30). While the introduction of competitive recruitment examinations among teachers in Mexico is clearly a step in the right direction, estimates suggest that up to 82% of all teachers in Mexico are still hired through traditional or discretionary recruitment (Estrada, 2013).

A survey by EFEE/ETUCE (2012) found that the majority of respondents believed recruitment process of teachers to be adequate in the UK. In the 1990s, teaching had a negative status in the UK, and was not seen as a desirable profession by many graduates - teaching was the 92nd career choice for young people (Stewart, 2011). In order to attract the next generation of teachers, and to raise the status of the profession, a series of recruitment campaigns were introduced from the late 1990s onwards. The Teaching Agency, previously The Training and Development Agency for Schools (TDA), was awarded a budget of £150 million to support a new recruitment strategy (OECD, 2010). The recruitment strategy involved two key components:

- A national advertising campaign utilising market research on motivations and barriers to becoming a teacher and award winning marketing strategies.
- Financial support for teacher trainees, including a £6,000 training bursary and a bonus of up to £4,000 to be paid upon entering employment (OECD, 2010).

A report by McKinsey and Company argues that England has *'led the way in using marketing and recruitment techniques taken from business to increase the supply of quality applicants'* (Barber and Mourshed, 2007, p. 17). The first recruitment campaign was launched in 1997 under the slogan *'no one forgets a good teacher'*. The budget for the campaign was £10 million, and it was featured prominently with television and cinema adverts (Mansell, Dean and Thornton, 2000). The campaign is noteworthy because it was the first widespread teacher recruitment campaign, and it helped pave the way for similar campaigns in the future. Moreover, the campaign helped convince the public that it was necessary to actively promote teaching in a positive way in order to recruit more high-quality teachers. Teacher workforce expert Professor John Howson, in an evidence session at the House of Commons, says that before the campaign, *'we had been talking teaching down; now there is much more understanding about the need to talk teaching up'* (House of Commons Education Committee, 2012b, p. 30).

## Retention

Studies of teacher turnover have shown that high quality teachers are more likely to leave the profession than low quality teachers (Podgursky, Monroe and Watson, 2004). The study finds no evidence that teachers are leaving the profession in order to obtain higher salaries. Moreover, Guarino, Santibañez and Daley (2006) note that science and maths teachers were more likely than others to leave the profession. These findings suggests the importance of increased emphasis on teacher recruitment and hiring practices to reduce turnover.

There is a significant shortage of studies exploring trends in teacher turnover and retention in Finland. One possible reason for this is that teacher turnover tends to be very low - only 10% to 15% of teachers leave

the profession during the course of their career (Sahlberg, 2011a). Most Finnish teachers tend to stay at the same school for the whole of their career. Similarly, the majority of Japanese teachers remain in the profession throughout the duration of their careers and only leave at retirement age. It is possible that the high entry requirements for teacher education is a positive factor contributing to low turnover rates - trainee teachers are likely to be more motivated and committed as a result of the rigorous and highly selective selection process.

A survey by Durham University of 246 teachers in England and Wales found that the most common reasons for teachers considering leaving the profession were excessive workloads, having a family, stress and pupil behaviour (Barmby, 2006). The three most commonly cited suggestions for improving the retention of teachers were support on pupil discipline, reduced teacher workload and improved salary (ibid).

### Salary

Some studies suggest that higher teacher salaries can have a positive effect on student performance. In an analysis of 16 studies on teacher salary and student performance, Greenwald, Hedges, and Laine (1996) found that there was a significant positive relationship between salaries and performance in 19% of studies and an insignificant positive relationship in 56% of studies. Hanushek (1997) argues that there is weak evidence supporting the argument that increased teacher salaries leads to increased student performance. However, it is noted that teacher salaries may have an impact upon teacher turnover rates (Hanushek, Kain and Rivkin, 2004).

Teacher salaries in Mexico are a contentious issue; certain stakeholders feel that they are insufficient (expert interviews, 2015). However, when viewed from the perspective of the local economy, they appear relatively high. Teachers in Mexico can earn between 20% and 30% more than comparable professional and technical workers (De Gregoria, 2015); and of all OECD countries, only Portugal spends more of the education budget on teacher salaries (Puryear, Santibañez and Solano, 2012).

- Interviewees and all focus group respondents from the UK felt that teacher quality was the single most important factor in preparation for university.
- Higher levels of teacher qualifications correspond to higher results in global PISA tests.
- Clarity of pathways to teacher qualifications, and higher proportions of pedagogical content in qualifications, is evident in countries with higher levels of student preparation for tertiary education.
- Supervised practice for novice teachers is associated with higher levels of student preparedness.
- In Japan, annual testing of skills is a requirement for continuation in the teaching profession; licensing is also common practice in the UK.
- Lower levels of professional development are associated with countries more likely to produce students prepared for tertiary education; these countries are also those with higher requirements at entry level, suggesting that countries with high professional development requirements are compensating for lower quality requirements for new teachers.
- Countries hiring teachers based on high academic criteria tend to perform near the top of global PISA tests.
- Recently introduced competitive examinations for teacher recruitment in Mexico is yielding highly significant, positive results on student performance.
- Positive recruitment campaigns can raise the profile and status of the teaching profession.
- High entry requirements for teachers may lead to lower turnover rates; trainees are more likely to be motivated after being subjected to a rigorous selection process.
- Teacher salaries in Mexico are relatively high in comparison to other professionals and as a proportion of the education budget; of the other OECD countries, only Portugal spends more.

### 4.3.6 The Learning Environment

Other factors concerning schools may be important in supporting preparation for university. Class size and school schedules are reviewed in this section, because they are often held to be related to school performance. Gullatt and Jan (2003) identify 11 components that are seen as crucial for successful pre-university academic development programmes in order to raise levels of higher education preparedness:

- High standards for programme students and staff
- Personalised attention for students
- Programme integration with schools
- Adult role models
- Strategically timed interventions
- School/society bridge for students
- Scholarship assistance
- Peer support
- Evaluation designs that contribute results to interventions
- Family support in education (this is thought to be the most significant for younger participants of such programmes)

#### Class Size

There is a considerable debate on the effects of class size on student achievement and learning. Classroom congestion or overpopulation, characterised by having a student-teacher ratio of 1:30 or more, is thought to contribute negatively to student achievement by leading to poor teacher supervision and oversight (Biddle and Berliner, 2002). Smaller class sizes can increase teachers' ability to monitor student learning, as well as enable them to give more immediate and individually tailored approaches to meet students' needs. However, the positive effects of smaller classes are more widespread for young students, particularly primary school children. Evidence from the UK using the Class Size and Pupil Adult Ratio (CSPAR) longitudinal study found significant effects between smaller class sizes and student achievements in literacy and maths. Low-ability students gained the most from smaller classes in terms of literacy skills - for maths, the effects were similar across all ability groups.

Class sizes in Finland are smaller than the OECD average - usually between 15 and 25 students per class (Malaty, 2006). The Ministry of Education determines regulatory standards regarding class sizes in Finnish schools. There are a number of further restrictions regarding class sizes for students with special educational needs (Ministry of Education and Culture, 2015). Malaty (2006) argues that the smaller classes are key to ensure a level of intimacy and to enable teachers to take care of the special needs of individual students. Conversely, Japan has prioritised teacher salary and training above that of class sizes. According to the report by the Central Council for Education (2005), municipal boards of education and individual schools have authority with regards to class composition in order to ensure that class sizes are appropriate for the particular area and school. Japanese class sizes are significantly above the OECD average of 21 students for primary education and 24 students for lower secondary education. The average class size for Japanese students is 28 for primary education, and 33 for lower secondary education (OECD, 2014b). This is only slightly less than in Mexico, where the average class size for public lower secondary schools is 29.1 students per class.

#### School Day Scheduling and Length

The amount of instructional time that a student receives is thought to have a bearing on their level of achievement and performance. Many developing countries are characterised by having very short school days, often lasting only three or four hours and consisting of two shifts for separate groups of students (Orkin, 2013). In a two double-shift system, one group of students attend a morning session, whilst another group attend a mid-day or afternoon session.

Studies have suggested that lengthening the school day can have positive effects on students' performance in

countries with previously low levels of compulsory instruction time. A study from Chile found that lengthening the school day by 27% for ninth and tenth grade students led to significant positive achievements in maths and language, particularly for students in rural or municipal schools (Bellei, 2009). The advantages of lengthening the school day has to be weighed against overall cost effectiveness considerations, however; one report finds that lengthening the school day is considerably costly and can in many cases be an inefficient use of limited resources (Bray, 2008). In Chile, for example, lengthening the school day increased costs by 25% (Bellei, 2009).

Mexican students receive significantly higher levels of instruction time than do students in most other countries in the OECD. The average number of compulsory hours per year for students aged 15 in Mexico is 1,058; the average for OECD countries is 902 (OECD, 2014). However, higher levels of instruction time do not necessarily imply higher levels of teaching time, or even time spent learning. Despite efforts to increase the length of schooling in Mexico, students' cognitive skills have increased by very little (Gutiérrez and Rodrigo, 2014). A World Bank report notes that teachers in Mexico spend, on average, 50% of total teaching time on instruction and only 20% of total teaching time on instruction with the entire class engaged (De Gregorio, 2015). The report notes that the benchmark for 'good practice' is approximately 85% of total class time used on instruction. This means that large proportions of teaching time - the equivalent of more than one day per week - is wasted on classroom management activities (taking attendance, grading papers, and so forth) and teacher 'off-task' time (ibid).

In the UK, individual schools enjoy high levels of autonomy in setting the length of lessons, school days, and the school year. However, some regulatory standards do exist. For example, schools are required to have two sessions every day divided by a break (Department for Education, 2014c). Moreover, schools must hold a minimum of 380 sessions over 190 school days (38 weeks) every academic year. The annual average compulsory instruction time for students at primary schools in England is significantly above the OECD average - 861 hours compared to the OECD average of 794 hours (OECD, 2014b). Similarly, students at lower secondary schools receive 912 annual average hours of instruction time compared to the OECD average of 905 hours.

In 2002, Japan reduced the public school week from six to five days (Tanabe, 2007). It is up to each school to decide on the length of single class units, as well as the appropriate school hours per year (Nagasaki et al., 2004). Japanese students receive longer school days and spend more time on homework than students in most countries. For example, Japanese students receive an average of 200 instruction days per year at primary and lower secondary education - the average for OECD countries is 185 and 183 days respectively (OECD, 2014b). The combined effect of this is that Japanese students receive the equivalent of several more years of schooling by the time they finish upper secondary education than do students in other countries (OECD, 2011).

## Teaching Styles

The didactic styles of teachers is likely to have a significant effect on the skills that students possess when transitioning to tertiary education; this is especially relevant in the case of developing independent learning skills. Darling-Hammond (2010) notes that it is uncommon to witness a Finnish teacher lecturing students for 50 minutes. Instead, students engage in small workshops with other students or work at their own pace to achieve weekly targets set with the teacher. Similarly, one UK interviewee said skills such as independent learning may be best supported by teachers giving less, rather than more, support to students

Teaching practice in Mexico, on the other hand, remains heavily centred towards traditional methods of learning, such as the blackboard (De Gregorio et al., 2015). Teaching styles in Mexico tend to be highly traditional and teacher-centred, which leaves relatively little space for students to practise speaking. Impacts of a passive learning environment include lack of motivation among students and a lack of engagement in their own learning. Engagement with learning among Mexican students, according to one expert interviewed, is '*one of the most important skills we have to build*', as it enables students to be autonomous and self-responsive in their later experiences of learning. The World Bank notes that '*poor student learning results*

can be directly linked to the failure of teachers to keep students engaged in learning' (De Gregorio, 2015, p. 17).

- While there is some contradiction in the evidence relating to the effects of class size on student achievement, the majority conclusion seems to be that smaller class sizes lead to better outcomes.
- While lengthening the school day can have positive effects on student performance, it can also considerably increase school costs.
- Although students in Mexico receive higher amounts of instruction time per year than most students in the OECD, the time is not spent efficiently and large proportions of teaching time are wasted.
- Longer school days and more homework in Japan mean that by the end of upper secondary, students have the equivalent of several more years of schooling than students from other OECD countries.
- Instructional styles focusing on developing independent learning and discussion skills may lead to better levels of preparedness for students aiming to enter tertiary education.

## 4.4 Interventions, Incentives and Extracurricular Activities

A number of interventions and incentives have been tested in different countries in order to increase enrolment at higher education, reduce dropout rates, and develop key cognitive and non-cognitive skills that better prepare students

### 4.4.1 Interventions

#### Socio-Emotional and Academic Interventions

Socio-emotional interventions are introduced to assist disadvantaged children or adolescents, and to improve achievements and outcomes later in life. Studies show that children from disadvantaged homes are more likely to drop out of secondary education, and have diminished cognitive and non-cognitive skills. Interventions, either preventative or remedial, can go some way in rectifying this. Socio-emotional intervention programmes targeting infants or young children aim to provide socio-emotional stimulation to children through, for example, instructing young mothers or providing centre-based care to specific populations (Kautz et al., 2014).

Kautz and Zanoni (2014) note that intervention programmes are most effective when implemented at a stage of prevention, such as in early childhood, compared to at a stage of remediation, such as in adolescence. This finding was supported by our expert interviews; one UK interviewee argued for interventions at an early age to bridge the achievement gap between poorer and richer students; skills gaps between poorer and wealthier students are observable even before students begin school at age three to five (expert interviews, 2015).

Comprehensive Intervention Programmes are thought to have positive effects on university preparedness by enhancing students' social and cultural capital, such as behaviours, beliefs, goals and competencies that are necessary for high achievement and aspirations (Cabrera et al., 2006). In 1998, the United States Department of Education launched the Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) in order to increase middle school students' awareness and preparation for university. Targeting nearly one million low-income students, the programme funded partnerships of schools, universities, community organisations and businesses to work with entire grade-levels of students, beginning in the sixth grade and continuing throughout high school and the first year of higher education. The programme included support for activities such as academic tutoring, mentoring and counselling activities. As a result of the programme, the percentage of students that spoke to school officials about university entrance requirements increased from 65% to 66% in one year. Moreover, the percentage of students performing at or above the expected grade level in English and maths rose from 36 percent to 49% and 32%

to 44% in one year respectively (U.S. Department of Education, n.d.).

## Early Assessment Programmes and Other Academic Interventions

Early assessment programmes are used to identify students that may be at risk of retention or dropout from secondary education, and to better prepare students for higher education. Tierney and Garcia (2008) argue that early assessment programmes are useful because they attempt to remedy the higher education underpreparedness of secondary students before they have submitted university applications. Early assessment programmes identifying students that may be at risk of retention or dropout have been found to be an effective method to prepare students better for higher education because they aim to address problems when students are still in secondary school.

The Early Assessment Program (EAP) by the Californian Department of Education (CDE) has combined the effects of interventions and remedial courses. (CDE, 2015). The programme measures the university readiness of students in the 11th grade by testing their maths, English language and analytical skills. Students that are found to be in the need of additional preparation for university-level work are offered reading and writing courses in 12th grade in order to improve their academic skills. The number of students that were deemed university-ready increased from 21% in 2010 to 23% in 2011 as a result of the programme (CDE, 2015).

An intervention programme for low-performance students at 33 upper secondary schools in Mexico City found that students undertaking remedial courses in mathematics observed an increase in grades for this subject.

## Interventions at Higher Education Levels

Initiatives to reduce university non-completion rates have been adopted primarily at the higher education level, characterised by an effort to retain students that are recruited, as opposed to recruiting students that can be retained. Many universities have special facilities in place in order to support the transition from secondary education to university; study skills courses, induction courses, workshops, mentoring and advice services. A common practice in the US for a number of years has been to offer remedial courses in reading, writing and mathematics for underprepared students. 98% of public two-year college institutions in the US offered at least one remedial course in 2000 (Tierney and Garcia, 2008). One study found that students enrolled in remedial courses were more likely to persist in HE compared to students with similar test scores and backgrounds that did not take such courses (Bettinger and Long, 2006).

In the UK, initiatives to reduce university non-completion rates have been adopted primarily at the higher education level. Cook writes that *'there has been an emphasis on institutions retaining the students they have recruited rather than recruiting students they can retain'* (Cook, 2009, p. 4). Many universities have support facilities in place in order to support the transition from secondary education to university. Such facilities may include study skills courses, induction courses, workshops, mentoring and advice services. University College London (UCL) offers a transition programme where first-year students are assigned a mentor and meet in groups on a weekly basis to discuss relevant academic and personal issues (UCL, 2015). The University of Strathclyde Glasgow has designed a Student Transition Framework in order to support university transition and reduce non-completion rates (University of Strathclyde Glasgow, 2015). The framework is an integrated approach to transition and initiatives include curricular and content studies, teaching strategies, and induction activities. Moreover, the University of Newcastle run a series of *'transition events'* aimed at introducing prospective students to the university life. Events are tailored for different age groups, such as summer schools for year 13 students, student shadowing for year 12 students, master classes for year 11 students, and apprentice student on campus events for years 5 and 6 students (Briggs, Clark and Hall, 2012). Participation in transition events leads to lower entry requirements. Another interviewee suggested that a *'resident expert'* on higher education within secondary schools or externally could be a useful point of contact for students to discuss the skills they need for higher education. The advisor could help students to identify skills gaps and generate a plan to resolve these gaps, focusing on

individual needs and the resources to address these.

- Interventions - whether socio-emotional or academic - can be a useful way of ensuring that the most vulnerable young people have the skills necessary to benefit from school-level education, and later from higher education.
- The most effective interventions are implemented at prevention stage (early childhood) rather than at remedial stage (adolescence).
- Many UK universities have retention programmes in place to assist students' transition; services include: skills courses, induction courses, workshops and mentoring.
- A resident 'higher education expert' in secondary schools could help students to identify potential issues that may exist for their transition to higher education and to identify skills gaps.

#### 4.4.2 Incentives

Financial incentives or cash transfer programmes use insights from behavioural economics and psychology to raise education participation and performance. Findings from behavioural economics suggest that people work harder, more persistently and more effectively, if offered financial rewards for improved performance (Camerer and Hogarth, 1999). Successful cash transfer programmes have been in place in Mexico, Nicaragua, Colombia, Honduras, Jamaica and Turkey for a number of years (Rawlings and Rubio, 2005). These programmes offer financial rewards to families for sending children to school rather than work. The programmes target poor households on the basis of an unmet basic needs index and school attendance, thus contributing positively to poverty reduction as well as education attendance.

The use of financial incentives, such as bonuses or scholarships, can boost students' academic performance at secondary or higher education. The type and timeframe of rewards, as well as recipients' age and gender, are likely to impact on the effectiveness of the incentives. Financial incentives, when combined with a mentoring programme, were found to increase college enrolment and persistence when provided to high school students in their senior year (Carrell and Sacerdote, 2013). Crucially, however, cash incentives were only found to be among female students, and only when combined with mentoring; the type and timeframe of rewards, as well as recipients' age and gender, are likely to have an impact on the effectiveness of the incentives.

Cash transfer programmes have also been introduced in Mexico to support those students from low socio-economic backgrounds studying at the upper secondary and tertiary level. These include the *Programa de Becas de Media Superior* (Secondary Education Scholarship Programme) and the *Programa Nacional de Becas y Financiamiento* (National Scholarship Programme) introduced between 2008 and 2012 (OECD 2013). One intervention programme initiated by the Mexican Government and the Inter-American Development Bank across 88 upper secondary schools found that the use of financial incentives for students, teachers and school administrators led to significant positive effects on students' mathematics scores.

- Successful cash transfer programmes, in which families are rewarded financially for sending their child to school rather than to work, have been in existence in Mexico, Nicaragua, Colombia, Honduras, Jamaica and Turkey for a number of years.
- Financial incentives such as bonuses or scholarships can improve students' academic performance at secondary and higher education.
- The type and timeframe of rewards, as well as recipients' age and gender, are likely to have an impact on the effectiveness of the incentives.

### 4.4.3 Extracurricular Skills Development

The two principal benefits of extracurricular activities cited in our qualitative research were the development of teamwork and communication skills. Other benefits included a sense of confidence or resilience that was useful when applied to academic work; and the development of leadership, social and time management skills. Extracurricular activities were highlighted as an area for improvement in Mexico by one expert interviewed for this study. The expert stressed the importance of these activities, as they provide opportunities for students to develop soft skills, yet they are not always seen as a priority by schools in Mexico; we also saw a lower incidence of participation in extracurricular activities in Mexican focus group participants than we did in British ones.

In the UK, participants of extracurricular programmes such as Young Enterprise, the Duke of Edinburgh's Award, and the National Citizens Service report developing useful skills, such as teamwork, communication, problem solving, self-management, resilience, and employment skills (Gladstone, 2005; DofE, 2014; and NCS, 2015). 90% of participants in the National Citizens Service reported developing useful skills (Ipsos MORI, 2014). A small number of students in the focus groups said that they had worked prior to university, either by taking a part-time job during school, or by working full-time prior to taking up their degree. These students felt that work had been valuable, typically because it had developed time-management or communication skills. Work was typically perceived to be useful regardless of the kind of job taken, although one student highlighted that the focus on public speaking in his job had been particularly useful: *'I did it quite a lot. Doing it and seeing it's not as bad as everyone thinks - that helps a lot'*.

In Japan, high levels of competition to enter the top universities has led to widespread practice of private tutoring to prepare students better for university entrance exams. Half of all lower secondary school students receive academic instruction at private institutions known as 'juku'. In addition to this, 17% of lower secondary school students participate in distance learning, and nearly 5% receive private tutoring at home (Jones, 2011). Although participation in juku has been suggested as a positive factor contributing to Japanese students' academic performance, these institutions have been criticised for placing heavy financial burdens on families and for perpetuating inequality in education (ibid).

- Extracurricular activities can have benefits in terms of developing teamwork and communication skills, as well as confidence and resilience.
- A lower incidence of extracurricular participation was observed in the Mexico focus groups, as opposed to those held with UK students.
- Sample programmes in the UK include Young Enterprise, the Duke of Edinburgh's Award, and the National Citizens Service.
- While private tutoring in Japan is widespread and leads to positive academic achievements, it can place heavy financial burdens on families.

## 5. Recommendations

The recommendations in this section have been developed from the key findings which are drawn out throughout the report. General cross-country recommendations are provided, along with recommendations specific to Mexico and a summary of findings from the UK.

### 5.1 General Recommendations

#### 5.1.1 Skills for Higher Education

- It is important that secondary students have the opportunity to develop non-cognitive, as well as cognitive, skills in preparation for university.
- Independent learning skills and traits such as self-esteem, resilience and critical thinking should be encouraged by teachers at secondary level. Instructional styles focusing on developing independent learning and discussion skills may also lead to better levels of preparedness for students aiming to enter tertiary education.
- Closer linkages between teachers at secondary and tertiary institutions could foster better understanding of the skills students need in order to be prepared.

#### 5.1.2 Policy Influences

- Stability in policymaking and coherent reforms are essential to achieving long term educational improvements; this includes communication and co-operation between government departments.
- Engaging teaching unions in Mexico is a key way in which barriers to educational reform may be mitigated.
- Investing more in earlier years of education is likely to have a positive impact on students' preparedness for higher education.

#### 5.1.3 School Influences

- Further academic research is needed on the relationship between curriculum structure and subject mix on the one hand, and educational outcomes and university preparedness on the other.
- Encouraging students to take physical health subjects, or to engage with physical activity, is associated with better student outcomes and therefore higher levels of preparedness for university.
- Working with students at secondary level to identify their preferred route at tertiary level can ensure that relevant subjects are studied early, leading to improved preparedness.
- While streaming can improve outcomes for high-ability students, it should be considered that it can entrench socio-economic differences and increase the gap between high and low performing students.
- Qualitative grading of students by teachers, found to be less stressful for students, can be an alternative to comparative and numerical grading.
- While standardised testing can have positive bearing on student achievement, it is essential that the tests are accompanied by clear policy goals and standards for the school system.

### Teacher Quality

- Teacher quality is a critical aspect of students' preparedness for higher education, and should form a central part of education policy.
- Countries wishing to improve global PISA scores and student performance should consider implementing higher admission and qualification criteria for teachers (this must be accompanied by a recruitment drive, perhaps linked to boosting the esteem of the profession, so that applicant numbers do not fall in the sort

term). High entry requirements for teachers may also lead to lower turnover rates; trainees are more likely to be motivated after being subjected to a rigorous selection process.

- Clarity of pathways to teacher qualifications, and higher proportions of pedagogical content in qualifications, is evident in countries with higher levels of student preparation for tertiary education.
- Competitive examinations for teacher vacancies can lead to improvements in student performance.
- Positive recruitment campaigns can raise the profile and status of the teaching profession.

## 5.1.4 Interventions, Incentives and Extracurricular Activities

- Interventions - whether socio-emotional or academic - can be a useful way of ensuring that the most vulnerable young people have the skills necessary to benefit from school-level education, and later from higher education.
- Effective interventions should be implemented at prevention stage (early childhood) rather than at remedial stage (adolescence).
- Universities can introduce retention programmes in place to assist students' transition; services include: skills courses, induction courses, workshops and mentoring.
- A resident 'higher education expert' in secondary schools could help students to identify potential issues that may exist for their transition to higher education and to identify skills gaps.
- Financial incentives such as bonuses or scholarships can improve students' academic performance at secondary and higher education.
- Extracurricular activities can have benefits in terms of developing teamwork and communication skills, as well as confidence and resilience.

## 5.2 Recommendations for Mexico

### 5.2.1 Policy Recommendations

- Priorities for policy makers include improving the quality of early school education and, at an upper secondary level, building on the recent reforms to increase the level of basic academic skills in students. Upper secondary enrolment rates should also be addressed through support, mentoring and early intervention programmes.
- We recommend that the incidence of intervention programmes in Mexico is increased, in order to reduce some of the huge disparities in skills gaps between rich and poor students; and also that they are run at a much earlier age - possibly before joining the formal education system - in order to maximise impact.
- A particular focus in CPD should be given to pedagogy, focusing on ways of teaching generic competencies through existing subjects in order to raise performance. Attention must also be given to targeting training in the recent REIMS reforms at teachers who have not already participated in such training; and at CPD for (a) those lacking teacher-specific training and (b) those lacking a higher education qualification. Professional teacher development should also be supported through local clusters of teachers and/or directors and sharing of best practice.
- Per pupil spending at elementary and secondary levels (lower and upper) should be increased as soon as budgets allow. Allocations of any increased budgets will need to be carefully considered, but within the context of this research and raising student preparedness, increased allocations would be useful in teacher CPD, particularly around pedagogy; training and hiring more teachers in order to reduce class sizes; interventions and cash transfer programmes to reduce upper secondary dropout rates, including early intervention programmes for very young children; financial support for networks of teachers to collaborate and share best practice; and funding greater administrative support for teachers (perhaps in the form of teaching assistants) in order to allow them to spend more time teaching.

## 5.2.2 Other Recommendations

- Greater provision of extracurricular provision in Mexican schools would be hugely beneficial in helping students to develop the skills and abilities needed for higher education. In particular, it would help to fill a key gap highlighted in Mexico: students' confidence and resilience.
- Gaining support of unions for the implementation of reforms to policy and teaching practice is likely to be essential.
- We recommend widening the use of test-hired teachers and extending the use of contingent pay bargaining, focusing on teachers' upgrading of pedagogical skills.
- It would be useful to run a full external process and impact evaluation of the Servicio Profesional Docente, with provisions updated accordingly. In general, countries will benefit from ongoing monitoring and evaluation of large-scale changes to teaching regulations.

## 5.2.3 Areas for Further Consideration

- The effects of tightening admission standards at a higher education level to reduce drop out rates (and increase preparedness among the student profile) merits further research and exploration by Mexican policy makers, but this must be balanced against equity considerations in terms of raising further barriers among the most vulnerable students.
- Standardised testing is worth considering for Mexico in order to drive up standards; the vast number of structures and significant regional variation in both educational systems and attainment may make it difficult to implement, however. Again, caution should also be exercised over the potential for inequities in terms of university access for students in regions where poverty is rife and school attainment is low.

## 5.3 Findings from the UK

- **Low drop-out rates:** Students at both the Roehampton and Bristol focus groups said that they had found standardised testing useful in terms of university preparation; revision periods helped students to develop skills for working strategically and managing time and regular testing allowed them to feel more comfortable with assessment practices at university. This approach must be balanced, however, by ensuring that schools and students do not adopt an overly heavy focus on exams and exam techniques, to the detriment of the content of studies and actual skills development.
- **Standardised testing approaches:** The recruitment of school teachers in the UK - teacher quality being an area we identified as central to young people's preparedness for higher education - is frequently highlighted as an area of particular success. As a result of teaching campaigns introduced in the early 2000s, teaching went from being the 92nd career choice for young people to the top career choice in just five years. With ongoing changes to education policy, initiatives to maintain the prestige of teaching are necessary to promote retention and workforce morale.
- **Teacher retention focus:** Initiatives to support the transition from secondary school to university and to reduce dropout are seen as being particularly effective in the UK. Many universities have special facilities in place in order to support the transition from secondary education to university; study skills courses, induction courses, workshops, mentoring and advice services. The details of these services, and further studies on their effectiveness, would prove useful to a global audience wishing to implement them.
- **Extracurricular activities:** Nearly all students participating in the UK focus groups had engaged in some kind of extracurricular activity, with teamwork and communication skills as the most frequently discussed benefits. Students also commented that extracurricular activities, regardless of type, provided a sense of confidence or resilience that was useful when applied to academic work. Programmes such as Young Enterprise, the Duke of Edinburgh's Award and the National Citizens Service can lead to development of useful skills, and should be promoted widely as a method of raising preparedness.

- **Student streaming:** The education system in the UK is characterised by higher levels of grouping according to academic ability compared to many other countries. While ability grouping has been defended on the basis that it allows for teaching to be tailored to the individual needs of students, it can also increase the gap between high and low achieving pupils and tends to deepen socio-economic differences. Policy makers should maintain a focus tackling the adverse effects of streaming, and on addressing the achievement gap between students.
- **Focus on narrow outcomes:** School inspections and accountability policies have come at a cost of a focus on narrow outcomes. For example, schools have had an incentive to focus resources on students on the border line between achieving a C or a D grade, since schools are measured by the number of students achieving A\* to C grades. Such incentive structures have meant that curriculum areas not directly related to examinations, but nevertheless important for students' long-term development, are often squeezed out. Policy makers should ensure that accountability measures are sufficiently broad, and allow space for the long-term development of students.
- **High levels of subject specialisation:** Upper secondary education in the UK is characterised by higher levels of specialisation in key subjects in comparison to many other countries, with the majority of upper secondary school students completing only three to four subjects. Although the narrow curriculum may allow for a greater depth of study, it has been identified as a potential cause of gaps in preparedness. Increasing levels of exposure to extended essays and independent projects would be beneficial for addressing these gaps in preparedness.

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