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LEARNING SUPPORT STAFF: A LITERATURE REVIEW

by Francesc Masdeu Navarro

OECD Education Working Paper no.125

This paper was prepared by Francesc Masdeu Navarro during a secondment at the Early Childhood and Schools Division, Directorate for Education and Skills, OECD, with the sponsorship of the Jaume Bofill Foundation for the period November 2013 – November 2014. The paper is part of the work undertaken by the OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools (School Resources Review) and includes revisions in light of the discussion of an earlier version [EDU/EDPC/SR(2014)4] at the first meeting of the Group of National Experts on School Resources (14-15 May 2014). Francesc Masdeu Navarro is currently working as Junior Policy Analyst at UNESCO HQ, responsible for policy analysis, peer reviews and case studies in the area of Education Policy and Planning.
The purpose of the OECD School Resources Review is to analyse how resource inputs in school systems should best be distributed, utilised and managed to optimise school outputs, encourage successful teaching and learning and promote continuous improvement. The Review provides analysis and policy advice to help governments and schools achieve effectiveness and efficiency objectives in education. More information is available at: www.oecd.org/edu/school/schoolresourcesreview.htm.

This working paper has been authorised by Andreas Schleicher, Director of the Directorate for Education and Skills, OECD.

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LEARNING SUPPORT STAFF: A LITERATURE REVIEW

ABSTRACT

With learning support staff an increasing part of the school workforce that is assuming more and more teaching related responsibilities, attention has grown as to how their skills and practices can have the greatest impact on students. “Learning support staff” are defined as those school staff whose main function is to assist the work of teachers. This paper reviews country approaches to the roles and responsibilities of learning support staff. It discusses the different mechanisms through which learning support staff can have an impact on teachers’ work and student achievement and reviews the related empirical evidence. While the available research provides mixed evidence on the impact of learning support staff on student achievement, it suggests that learning support staff may improve teaching and learning as long as adequate strategies for their training, deployment and use are implemented. There are several ways through which learning support staff may have a positive impact on student attainment. Students receive more individualised help and attention from either the support staff or the teacher; and the learning environment can be made more flexible possibly leading to increased engagement and inclusion of children in classroom activities. Also, teachers receive specialist support and assistance with their administrative and planning tasks, granting them more time for their core responsibilities.

RÉSUMÉ

Avec l’importance croissante du personnel de soutien à l’apprentissage dans les équipes éducatives des établissements scolaires qui assume de plus en plus des responsabilités liées à l’enseignement, plus d’attention est dirigée aux façons dont leur compétences et leur pratiques peuvent avoir le plus grand impact sur l’apprentissage des élèves. « Personnel de soutien à l’apprentissage » est défini comme étant le personnel scolaire dont la fonction principale est de soutenir le travail des enseignants. Ce papier examine les approches des différents pays dans la définition des rôles et des responsabilités du personnel de soutien à l’apprentissage. Il élabore sur les différents mécanismes à travers lesquels le personnel de soutien à l’apprentissage peut avoir un impact sur le travail des enseignants et sur l’apprentissage des élèves et examine l’évidence empirique associée. Alors que la recherche disponible fournit des données contradictoires sur l'impact du personnel de soutien à l’apprentissage sur le rendement des élèves, elle suggère que le personnel de soutien peut améliorer l'enseignement et l'apprentissage des élèves si des stratégies adéquates pour leur formation, son affectation et son utilisation sont mises en œuvre. Le personnel de soutien à l’apprentissage peut avoir un effet positif sur le rendement des élèves à travers différent mécanismes. Les élèves reçoivent plus d’aide et d’attention individuelles soit de la part du personnel de soutien soit de la part de l’enseignant ; et l’espace pour l’apprentissage peut devenir plus souple de façon à augmenter le niveau d’engagement et d’inclusion des enfants dans les activités de la classe. En outre, les enseignants reçoivent du soutien spécialisé et de l’aide dans leur tâches administratives et de planification, leur assurant plus de temps pour leur responsabilités principales.

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1. INTRODUCTION

This paper reviews the research literature on the role and impact of school staff whose main function is to assist the work of teachers (learning support staff). Teaching staff are the most important within-school resource input influencing student learning outcomes, and constitute the greatest proportion of education expenditure. Hence, improving the efficiency of schooling depends to a large degree on the ability of the school system to effectively manage teaching resources. As part of school staff, learning support staff can have an important role in improving teaching effectiveness by supporting teachers and providing children with additional support.

In the last two decades, there has been increasing attention by researchers and policymakers to learning support staff and their potential contribution in driving up standards in schools. The perspective of the paper is twofold: to analyse learning support staff as a resource in itself; and to analyse how learning support staff affect teachers' use of time and impact on student achievement. The paper describes countries' current approaches to the use of learning support staff, including the way their role and responsibilities are defined.

The paper is structured as follows. In section 2, a definition of learning support staff is provided, and their major roles and tasks are discussed. This also includes a discussion of the main trade-offs involved in the use of the related school resources. Section 3 reviews the use of learning support staff across a number of countries and analyses potential advantages and disadvantages of given approaches. Section 4 provides an overview of the existing empirical evidence of the impact of learning support staff on student achievement. Finally, in section 5, the main conclusions of the use of learning support staff are discussed.

2. LEARNING SUPPORT STAFF: ROLES AND RESPONSIBILITIES

2.1. Definition

There are a variety of job titles associated with school staff whose main function is to assist the work of teachers. These include “learning support assistants”, “non-teaching assistants”, “classroom assistants”, “learning support staff”, “teaching assistants”, “teacher aides” and “classroom support staff”. This reflects the diversity of training, functions, working conditions, contracts and pay associated with this group of professionals. In many countries, these professionals have experienced an increase in their responsibilities and tasks, from helping teachers with routine and non-teaching tasks to engage in pedagogical activities with students (Groom, 2006).

This paper uses the term “learning support staff” (also referred to as simply “support staff”), to capture the real contribution that such staff make to both teaching and learning, providing support for teachers and students, but also to the overall learning-related activities of schools. Support staff who help the teacher in a range of teaching and non-teaching tasks and engage in the learning process through direct interactions with students will therefore be considered.

The scope of the paper does not include the use of staff who have the exclusive function of supporting the inclusion of students with disabilities in mainstream education (e.g. teachers for students with special education needs). However, to the extent that some learning support staff may have, among others, a role in supporting students with disabilities, this paper may make some references to special education needs.

2.2. The role and responsibilities of Learning Support Staff

Ambiguity exists regarding which roles and responsibilities should be carried out by teachers, and which by learning support staff. In their literature review, Blatchford et al. (2002) identify numerous studies that highlight difficulties in defining the boundaries between teaching and non-teaching roles. Mortimore et al. (1992, cited in Blatchford et al., 2004) have also addressed this issue in relation to when it is appropriate to consider support staff as ‘substituting’ (i.e. developing routine tasks delegated to her/him) or ‘augmenting’ the teachers’ role (i.e. being involved in activities that enable the teacher to provide an enhanced curriculum).

Recent studies identify an increasing blurring of these roles (e.g. Cajkler and Tennant, 2009; Cremin et al., 2005). Support staff are no longer undertaking only routine and administrative tasks that enable teachers to focus on their teaching tasks, but have a multifaceted role that engages them in instructional activities and allows them to support all the students they interact with, even if their role is to work with mainly one child. Moreover, they support children’s inclusion and act as a link and mediator between different stakeholders.

The needs of the students are the school leader’s main concern when allocating learning support staff, and classrooms can be organised in different ways according to such needs. In many schools, support staff are used to support children with learning difficulties in the same class, so that these students can stay integrated in the class rather than being separated by levels of attainment. In other schools, learning support staff may be used to allow the teacher to spend more time with children with greater needs.

2.3. Trade-offs involved in the use of learning support staff

A frequently debated teacher policy issue is the trade-off between the average size of classes and the average salary of teachers (assuming a given expenditure in salaries). Reduced class sizes potentially

improve in-class interaction and teachers' working conditions, but require a larger number of teachers to whom lower individual salaries may have to be offered. On the other hand, larger class sizes give room for higher teacher salaries, potentially attracting better individuals to schools, but at the potential cost of weakening the quality of classroom interaction. The use of learning support staff as a support for those teaching larger class sizes adds complexity to this trade-off.

Broadly speaking, further spending on schools can be used to either reduce student-teacher ratios (and thereby employ more teachers and reduce average class size), or increase teachers' average salaries, or some combination of the two. An alternative strategy would be to focus additional spending on increasing teachers' average salaries and employing more support staff in schools. This would decrease student–adult ratios in the classroom and thus form an alternative to reducing class sizes. This strategy would aim to both make teaching more attractive and, through the greater use of support staff, enable teachers to focus more on their specialist expertise. There could even be arguments for reconfiguring staffing in some schools so that fewer teachers are employed, but they are paid substantially more and provided with much more extensive support (OECD, 2005).

Different approaches to the use of learning support staff in the trade-off between the average size of classes and the average salary of teachers may have different effects on educational outcomes. For example, larger classes where teachers are paid more, have more preparation time and additional teaching support, may be more effective than smaller classes where teachers are paid less and have no learning support staff.

Furthermore, the use of learning support staff in this trade-off also relates to another variable: student learning time. The amount of instruction in schools, but also the extent to which instruction time is effectively used, determines the extent to which student learning objectives (or curriculum) can be covered. Similar levels of curriculum coverage can be reached through different instruction time allocations. If the use of learning support staff improves the effectiveness of instruction, policy makers can reduce the quantity of instruction without jeopardising the curriculum coverage through an increase in the number of learning support staff in schools. Likewise, a reduction in instruction time and increased learning support staff may enable teachers to dedicate more time to planning, preparing instruction and assessing students.

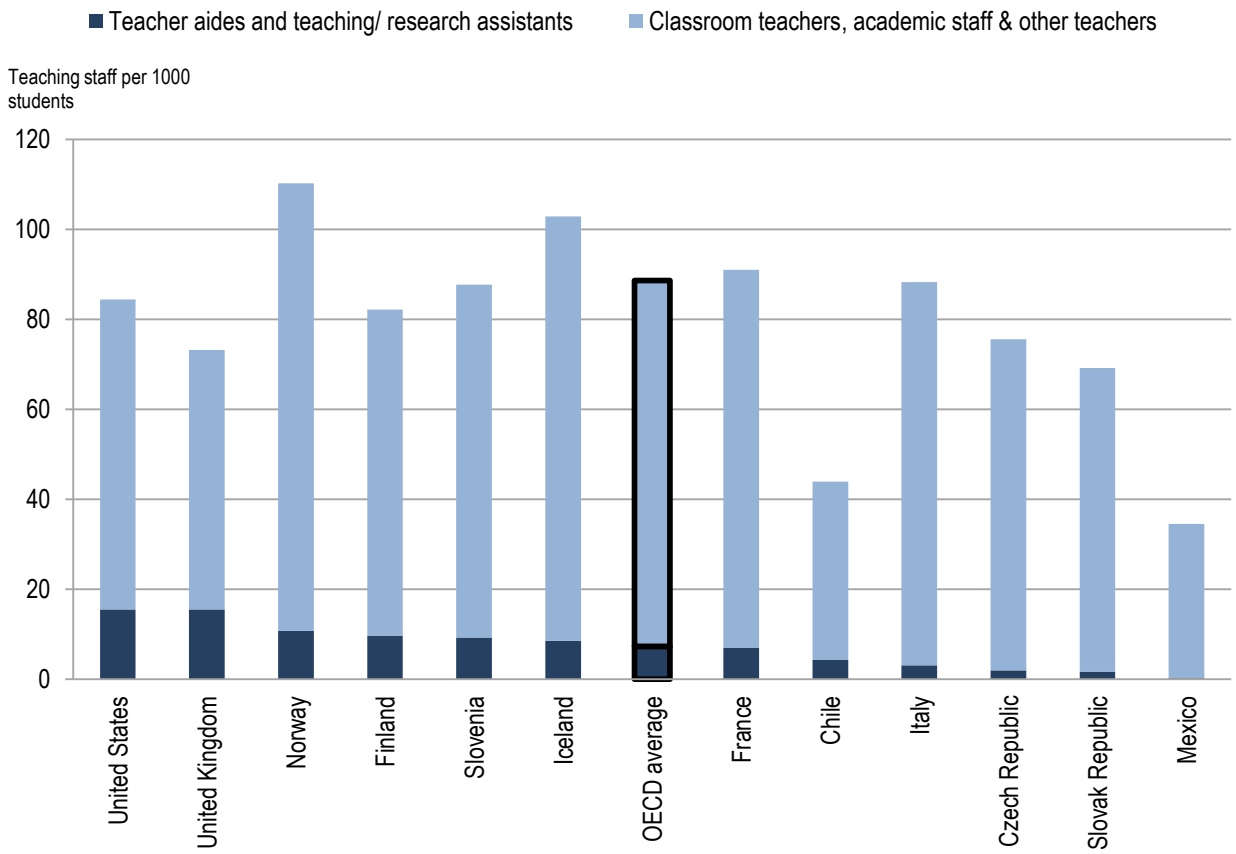
3. APPROACHES TO LEARNING SUPPORT STAFF IN OECD COUNTRIES

3.1. Use of learning support staff across OECD countries

In many countries, learning support staff have become a significant part of the education workforce. In 2010, in the 12 OECD countries for which data are available, there were on average 7.3 teacher aides and teaching/research assistants per 1000 students in primary, secondary and non-tertiary education (see Figure 3.1), compared to an average of 74.5 teachers and academic staff per 1 000 students (OECD, 2012). The United Kingdom and the United States have the highest average ratio of support staff, with 15.5 teacher aides and teaching/research assistants per 1 000 students. These two countries have experienced significant increases of learning support staff in recent years. The number of support staff in schools more than doubled in the United Kingdom in ten years, from 134 000 in 1997 to 346 000 in 2009, with teaching assistants representing 52% of this group (DfE, 2011). In the United States, the number of support staff increased at an average rate of 48% during the 1990s (French, 2003).

Figure 3.1 Teaching staff across OECD countries (2010)

Teaching staff employed in primary, secondary and post-secondary non-tertiary education, per 1 000 students



Source: OECD (2012), *Education at a Glance 2012: OECD Indicators*, http://dx.doi.org/10.1787/eag-2012-en.

Evidence from Australia, Finland, New Zealand, the United Kingdom and the United States, shows that the growth in the use of support staff in these countries has been partly due to policies of inclusive education (Takala, 2007; Bourke, 2009; Burton and Goodman, 2011; Ward, 2011). In these countries, the deployment of support staff has been seen as the best strategy to create supportive and inclusive learning environments, to ensure that all students, no matter what their needs are, receive adequate support that is adapted to their difficulties and individual paces.

United Kingdom

In the United Kingdom, there are a wide variety of support staff roles, responsibilities and job titles. Learning support staff receive the title of 'teaching assistant' (TA), which also includes the 'higher level teaching assistant' (HLTA) role. Excluding special education support staff, other support staff titles include 'minority ethnic pupil support staff' (also referred to as 'bilingual support staff'), 'student support staff' (includes learning mentors, education welfare officer, career advisors) and 'technicians' (includes resource teachers, music specialists, art technicians).

There are four grades of teaching assistant, from level one, for candidates without previous experience as a TA, to HLTA. Once TAs are in post, they need to follow training and development (vocational qualification, or equivalent) in order to progress up to HLTA. What is required of TAs at each level varies between schools and local authorities, but as TAs progress up the scale their autonomy and responsibility increase. Their tasks include getting the classroom ready for lessons, helping children who need extra support to complete tasks, helping teachers to plan learning activities and complete records, supporting teachers in managing class behaviour and supervising group activities, among others. Many schools employ teaching assistants with particular specialisms, including literacy, numeracy, or bilingual TAs, among others (UK Government, 2012). Qualification and experience requirements to become a TA are determined by the Local Education Authority (LEA) and the individual school taking into account the characteristics of the TA position that is offered.

Three requirements typically exist for candidates to be considered for a selection process: good reading, writing and numeracy skills; to have taken, or be willing to take, the local authority-run induction programme; and to have some experience of working with children of the relevant age. The induction programmes for TAs, run by the LEA, are designed to inform them of the context in which they will be working and the way they will be supporting teaching and learning. They seek to help TAs understand their role and give them plenty of ideas about how to fulfil it effectively. Induction programmes include training in areas such as literacy, mathematics, behaviour management, inclusion or ICT in teaching, among others (UNISON, 2014). In terms of wages, full-time TAs' earnings range from GBP 12 000 to over GBP 17 000 a year, and for full-time HLTAs range between GBP 16 000 and GBP 21 000 a year, depending on the LEA and the responsibilities of individual jobs (UK Government, 2012).

Prior to 2010, the UK government identified inclusion into mainstream school as the key to educating students with behavioural, emotional and social difficulties and other educational needs. Consequently, a number of policy changes were implemented to increase the rights for children with different attainment levels to receive education in a mainstream school. The National Agreement for England and Wales on 'Raising Standards and Tackling Workload' was introduced in 2003, leading to an increase in the number of learning support staff in England and Wales. The National Agreement addressed teachers' workload issues and established the basis to reform the training, qualifications and career opportunities for support staff in England and Wales.

The Higher Level Teaching Assistants (HLTA) policy was introduced in 2007 to identify and recognise support staff who meet the teaching assistant standards, with one aim being to provide smoother progression for support staff wishing to become fully qualified teachers (OECD, 2014b). In order to get

this status, learning support staff undergo a specific training and assessment programme. The HLTA's roles consist of supporting teachers in class, acting as specialist assistants in specific subjects, supervising other support staff and participating in lesson planning and learning material development (DfE, 2011). HLTAs usually undertake more complex tasks and tend to work more independently than TAs, for example they can lead a lesson in the absence of the teacher. There are four steps to reach HLTA status: (i) if TAs have the support of their head teacher and line manager to access the training programme, they can apply for LEA funding; (ii) once accepted, TAs start a training programme, which involves developing the skills, knowledge and experience to the level required by the HLTA professional standards, tailored to the candidates' specific needs; (iii) after the training, candidates receive preparation for assessment, to ensure full comprehension of the HLTA professional standards and the assessment tasks; and (iv) an assessor visits the candidates' school to verify whether they have met the standards (UNISON, 2014).

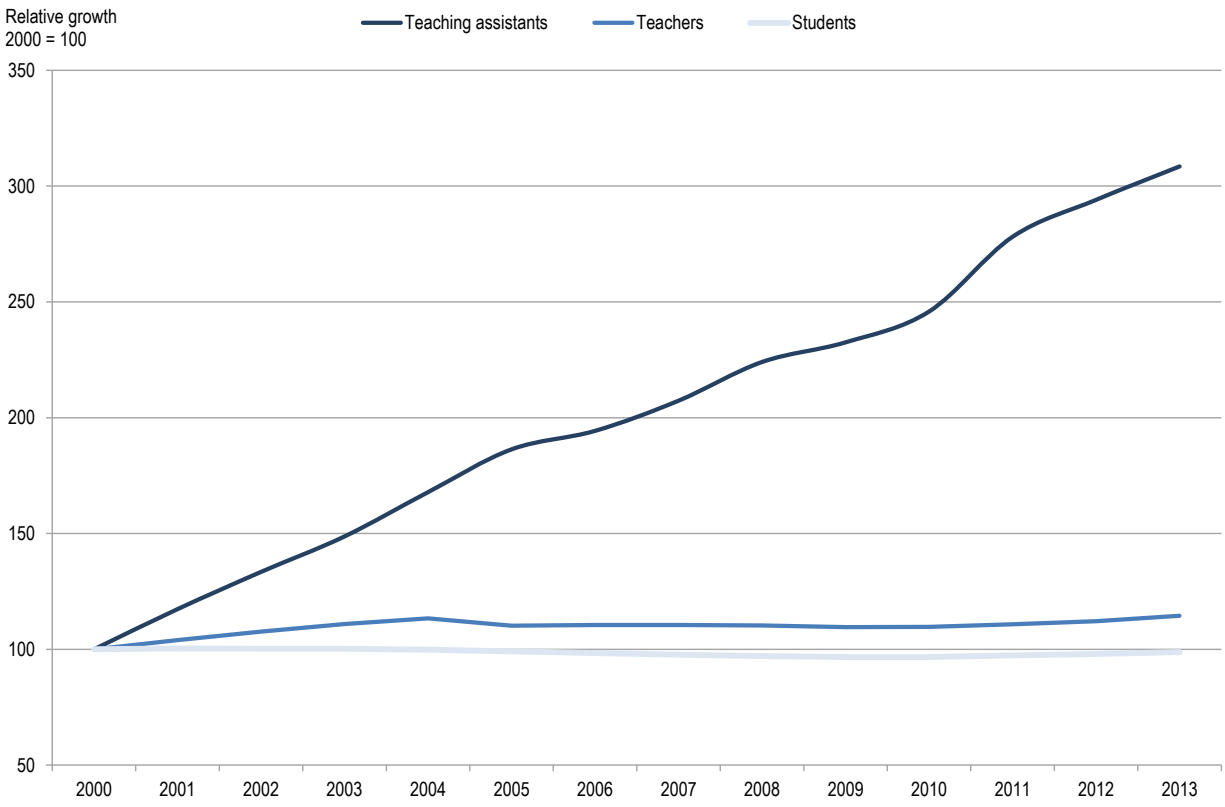
As noted previously, the number of support staff in schools has significantly increased in the United Kingdom in the last fifteen years. Of all support staff, around 50% work in primary schools (with 70% being teaching assistants), and 30% in secondary schools. The student-teaching assistant ratio is 33.5 in primary schools, and 80.1 in secondary schools. The same trend can be observed in spending on learning support staff, which has doubled within a decade. In the course of 2008/9, schools spent on average GBP 4.1 billion on learning support staff, and the amount was higher in schools with higher proportions of disadvantaged students (DfE, 2011). As the number of TAs has increased, the role of these professionals has experienced an important transformation, from that of classroom helpers assisting the teacher in non-teaching tasks, to one directed to the whole teaching and learning process (Groom, 2006).

Figure 3.2 shows the relative growth in England of the number of teachers, teaching assistants and students between 2000 and 2013. As it can be observed, despite the slight decrease in the number of students during this period, the number of teaching assistants tripled (from 79 000 to 240 000, of which about 14 000 were HLTAs), compared to an increase of 14% in the number of teachers (from 405 000 to 465 000) (Statistics UK, 2013). Consequently, the overall student-teaching staff ratio has fallen dramatically. The change in the school workforce has resulted in increased school spending on teaching assistants, which represented a cost of GBP 2.2 billion in 2010, within a total spending in schools of GPB 35 billion, and compared to the GBP 19 billion spent on teachers (Audit Commission, 2011).

Since the introduction of the Classroom Assistants Initiative in 1998 in Scotland, classroom assistants (as learning support staff are called in Scotland) have been highly valued by schools, teachers and parents. The Classroom Assistant Initiative was launched by the Scottish Executive as a pilot programme in 1998 and aimed to raise standards of attainment in Scottish schools. Over 4 000 classroom assistants were put in place with the aim to reduce student-teacher ratios. In 2013 there were about 5 000 classroom assistants in schools, almost 4 000 of them working in primary schools, and the student-adult ratio decreased to 15 in primary schools and 17 in secondary schools (Scottish Government, 2013).

Wales has recently introduced the Improving Schools Plan (2012) and the Action Plan to Promote the Role and Development of School Support Staff in Wales (2013), which advance the recognition of the contribution of support staff in the Welsh school system and at the same time improve their preparation, effectiveness and professional development (OECD, 2014b). The Action Plan seeks to: (i) introduce minimum qualifications for support staff; (ii) provide professional development opportunities for support staff; and (iii) include support staff in the performance management of schools. In Wales, support staff make up 44% of school staff, and undertake roles within schools that vary depending on the school leader and teachers, such as serving as a classroom assistant, teaching assistant, language assistant and administrative staff (OECD, 2014b).

Figure 3.2 Changes in the school workforce and student numbers between 2000 and 2013 in England



Note: Teachers, teaching assistants and other support staff represent the number of full-time equivalents.

Source: Data taken from Department for Education (2008, 2009 and 2010 editions), *School Workforce in England*, https://data.gov.uk/dataset/school_workforce_in_england; Department for Education (2010), *Schools, Pupils and their Characteristics*, http://webarchive.nationalarchives.gov.uk/20120504203418/http://education.gov.uk/rsgateway/DB/SFR/s000925/index.shtml; and Department for Education and Skills (2005), *Schools and Pupils in England*, http://webarchive.nationalarchives.gov.uk/20120504203418/http://education.gov.uk/rsgateway/DB/SFR/s000606/index.shtml.

Australia

The use of support staff has been strengthened in Australian schools, especially that of support personnel dedicated to students with learning difficulties or disabilities. In Australia, the states and territories have the major responsibility for education, and there is no specific federal legislation that mandates for the type of support that should be provided to students with special needs. Therefore, each state and territory defines its own strategy regarding dedicated support for students with special needs. In Australia, the latter include students with disabilities, learning difficulties, students who are gifted or talented, as well as students who are socially disadvantaged or whose first language is not English (Forlin, 2001, 2006).

In Australia, during the 1980s and 1990s, many special schools closed and the majority of students with learning difficulties or learning disabilities were integrated into mainstream schools and received additional support. A withdrawal model was the dominant approach during these years, and students with learning difficulties or disabilities were withdrawn to a resource or remedial room for part of the school day (Forlin, 2001). However, in the 1990s, this model was seen to have limitations, and concerns rose over the appropriateness of the type of intervention provided. As a result, progress was made towards a more

inclusive approach based on a range of support options, where in addition to the withdrawing practice, support teachers were required to collaborate with regular class teachers, and support was provided to students with difficulties in the same class (Carroll et al., 2003; Forlin, 2006).

In Australia, differentiated support is provided by different personnel depending on children's needs. Support in schools can be categorised into two main approaches: (i) support that is provided for students with specific disabilities (e.g. intellectual, physical, autistic spectrum disorder, vision, hearing or speech/language); and (ii) support that is available for students who have learning difficulties. Regarding the latter, the different roles that exist in Australian schools are: Aboriginal and islander education officers (AIEO), who assist and support teachers and Aboriginal students and act as a liaison between communities and schools; education assistants, who support the teaching and learning of students (either with or without specific learning requirements) by helping teachers to deliver education programmes and by encouraging supportive and inclusive learning environments in primary schools; and ethnic assistants, who support the specific English language needs of bilingual students (Australian Government, 2013).

In Queensland, support teachers are employed in all government schools to assist students with learning difficulties, which is an umbrella concept that includes those students whose access to the curriculum is limited due to any problem in one or more areas of literacy, numeracy and learning how to learn (Education Queensland, 1997, 2013). These professionals receive the title of 'support teacher (learning difficulties)' (ST(LD)) and they are required to team-teach with the classroom teacher. ST(LD)s undertake responsibilities such as: identifying the needs of students and collecting, monitoring and reporting these data; coordinating support provision and writing educational plans for students with special needs; assessing and teaching students with learning difficulties; and collaborative planning with classroom teachers and other specialists (Bourke, 2010).

Furthermore, in Queensland, a whole-school approach is designed to cater for the learning needs of all students, including: those in need of learning support; those who have educational support needs arising from a disability; those who are gifted and talented; and those learning English as a second or additional language or dialect (EAL/D); or a combination of these. This approach to supporting student learning directs support to different levels of need in response to student achievement data. There are three layers that represent a continuum of support for student learning, based on needs identified through ongoing monitoring and assessment data. These are: differentiation, focused teaching, and intensive teaching (Education Queensland, 2013).

New Zealand

Between 1995 and 2000, the Ministry of Education of New Zealand developed the Special Education 2000 initiative, with a focus on inclusiveness. As part of this initiative, the Resource Teacher: Learning and Behaviour (RTLB) service was established in 1998/9, to provide a more consistent approach to catering for students with additional learning and behavioural needs. The service was divided into clusters of schools based on designated geographical areas to provide a shared service to the schools within given areas (New Zealand Government, 2009). As a result, 500 special education teachers were reformed into RTLBs, and another 250 positions were created to ensure a ratio of one RTLB to 750 students. A postgraduate professional development program was created to prepare RTLBs (Thomson et al., 2003).

In 2004, an Education Review Office (ERO) report highlighted a need for more consistency in the delivery of the RTLB service across New Zealand. This report found many positive examples of RTLB practice, with 62.5% of the clusters able to provide evidence of the improvements the service had made to student achievement. However, ERO expressed concern that 37.5% of the clusters could provide little or no evidence the service had made a difference, and that only 20% of the clusters could provide evidence of improvements in Māori student achievement. This report made some recommendations for improvement to

the service and an RTLB Project Team was formed to develop the Resource Teacher: Learning and Behaviour (RTLB) Policy and Toolkit (2007). This document provided schools with guidelines for the management and accountability of the RTLB (New Zealand Government, 2009, 2012, 2014a).

In 2009, ERO reviewed the RTLB service again and found that over half of the clusters were not well managed, with needs and priorities not identified or RTLBs not employed appropriately, not properly supported or ineffectively monitored. In addition, ERO found some inconsistencies due to the large number of clusters (approximately 200 by 2009). The ERO report recommended a review of the cluster model to ensure a more effective delivery, management and allocation of resources (New Zealand Government, 2009). As a result, a new RTLB cluster system started at the beginning of 2012, and clusters were restructured and reduced from 200 to 40. Each of these 40 clusters was attached to a lead school responsible for the governance and operation of the RTLB service for that cluster, and for appointing the cluster manager and practice leader. The cluster managers have overall responsibility for the daily management and coordination of the service across the cluster, and practice leaders are RTLBs with additional responsibilities for professional supervision, performance reviews, and leading teams that focus on specialist areas. Each cluster is now required to conduct a needs analysis to inform the cluster's future practice and decision-making. Moreover, the cluster manager is responsible for annual reviews and professional development of RTLBs. This professional development should be based on identified needs, planned, led by credible facilitators, responsive to the cluster strategic plan and funded at cluster level (New Zealand Government, 2014b).

In 2013, there were 900 RTLBs working with children experiencing learning or behaviour difficulties, providing classroom teachers with special teaching strategies, introducing class or school-wide programmes, or working directly with individual children or small groups of children. RTLBs work closely with classroom teachers, the Ministry of Education, specialists and support staff, and are employed by and based in schools. If a cluster of schools wants to establish an RTLB, the schools in the cluster must identify which one will have the dedicated office/interview room, taking into account which one is the most centrally located in the cluster, the largest and the one housing similar services. RTLBs work in primary, intermediate, as well as secondary schools, and have a salary that can range from NZD 35 000 to NZD 73 000 depending on the years of experience and qualifications (New Zealand Government, 2014b). Some of the RTLB positions are dedicated to focus on the learning needs of Māori students. In these cases, a Māori RTLB may work entirely with Māori immersion schools. Some are employed within a cluster and others work across more than one cluster. Māori RTLBs' allocation to clusters depends on the cluster committee. This initiative recognises the high number of Māori students experiencing learning and behaviour difficulties in regular schools (New Zealand Government, 2012, 2014a, 2014b).

For a teacher to become an RTLB, she/he must be a trained teacher with the full New Zealand teacher registration and a current practising certificate. They must also; have either attained (or be in process of attaining) the Postgraduate Diploma in Specialist Teaching (Learning and Behaviour), or attained this qualification within the three years of starting work as an RTLB; have the academic prerequisites to enter the mentioned Postgraduate Diploma; and have previous experience working with students with learning and behaviour needs (New Zealand Government, 2014a).

All clusters are provided operational funding to run their cluster. This funding is calculated depending on the cluster needs identified during the RTLB data gathering process, and is provided for: educational support (e.g. assistance to students needing individual support); to release time for classroom teachers to meet with RTLB; and for professional development for departments, syndicates or schools to enhance skills in behaviour management or curriculum development (New Zealand Government, 2014b).

The Nordic Approach

The Nordic countries (Denmark, Finland, Norway and Sweden) have developed a similar approach for the use of learning support staff, based on the inclusion of diversity in comprehensive schools and the right of all children, regardless of their needs, to individualised support. In Denmark, Finland and Norway, support staff are not responsible for planning, undertaking or evaluating the actual teaching, and are used as flexible, practical assistants for teachers, enabling them to focus on teaching. In these countries, learning support staff also support children in a range of activities and tasks, and are used as a link in schools between different stakeholders with the aim of improving personal relations between students, between students and teachers, and between families and schools.

In Finland, the use of support staff (known as teaching assistants) has been increasing since the introduction of this role in the 1980s. Previously, and since 1967, technical assistants were used in schools (Takala, 2007). After the introduction of the Basic Education Act in 1998, every child has the right to receive the support of qualified professionals in mainstream education schools. The support received by comprehensive school students is classified into three approaches: general, intensified, and special support, depending on the duration and extent of the support (Finnish National Board of Education, 2010). Every child is entitled to general support. If general support is not enough, intensified support is provided, and if intensified support is not sufficient, special support is given. Intensified support is provided to students with special learning needs, and includes remedial teaching, part-time special education (for children with speech disorders, reading or writing difficulties, learning difficulties in mathematics or foreign languages, etc.), school assistant or interpretation services. The number of students receiving intensified support amounted to 35 000 in 2013 (6.5% of all comprehensive school students), a 95% increase from 2011 (Official Statistics of Finland, 2013).

Teaching assistants can work with the same class, or with different teachers and different classes, and their main goal is to help children during the learning process by teaching individual students, small groups or the whole class in substitution of the teacher. Moreover, these professionals can monitor the progress of more disadvantaged children and provide them with more individualised attention. Their tasks also include assisting the teacher; managing children's behaviour; and planning and organising activities. Bilingual assistants are also available for newly arrived immigrant students (Andersen, 2010; Takala and Uusitalo-Malmivaara, 2012). The education requirements for a Teaching Assistant position in Finland consist of a one-year Teaching Assistant vocational course.

In Denmark, learning support staff (also known as teaching assistants, TAs) have been introduced recently, with influence from the Finnish approach. In 2009, the Danish Ministry of Education launched "The School Development Project". As a part of this project, between 2009 and 2012, approximately 125 Danish primary schools (in 30 municipalities) were involved in pilot programmes using TAs in comprehensive schools (from pre-school up to Year 10) with the aim of improving students' learning and social outcomes. The evaluation of the programme (Rambøll, 2011) showed a positive impact of the use of TAs in primary schools, especially for disadvantaged students (the conclusions of the report are explored in section 4.1.). The nationwide use of TAs in Denmark has, however, since been discontinued. But smaller, locally financed programmes continue in a number of municipalities.

In Norway, learning support staff (known as assistants) are employed, among other things, to support teachers with their instruction. According to the municipalities, an increase in student numbers and a desire to give more individual attention to students are the main reasons for employing classroom assistants. In 2013-2014, there were 8 200 assistants (in full-time equivalents [FTE]) in primary and lower secondary education, representing almost 13% of all FTE teachers and assistants. The number of assistants in Norwegian schools has increased 25% since 2006/07 compared to a 6% increase in teacher numbers during the same period. In pre-primary schools, the use of assistants is even more widespread and has been

increasing steadily. In 2012, there were 37 719 assistants working in kindergartens (a 7% increase since 2008), while the number of teachers has decreased 4% during the same period (Norwegian Directorate for Education and Training, 2011, 2012, 2013, 2014).

Assistants in Norway don't usually possess formal teacher qualifications. A questionnaire (based on responses from 96 school administrators and 174 assistants) about the assistants' background and the tasks they perform shows that the assistants' highest completed education is usually upper secondary school, and many have a qualification in "health care, childhood and youth" (Rambøll, 2010). Data from Statistics Norway show that almost 20% of assistants in primary and lower secondary education, and 23.4% of assistants in pre-primary education, have a trade certificate in Child Care and Youth Work (Norwegian Directorate for Education and Training, 2013). The Rambøll survey shows that an assistant's main tasks are to support teachers; assist students with practical, social, personal and educational support; and occasionally take responsibility for instruction. According to the survey, 52% of assistants in primary and lower secondary education stated that they help the teachers daily by supporting students with difficulties in smaller groups, and 17% stated that they provide daily instruction in class without guidance from a teacher.

In the Swedish education system, diversity is highlighted as an asset for teaching. According to the Education Act, individualised extra support is provided to students at risk of not meeting attainment standards. The National Curriculum for compulsory education establishes that this should be organised in a way that individual solutions are possible for all students, so that students with difficulties of any type can receive various forms of support (Swedish Government, 2011; OECD, 2011b). Yet, there are no clear guidelines on how the support should be designed. As a result, municipalities and schools have a great deal of freedom to design their own approach for supporting students with difficulties (Lindqvist, 2010).

Data on assistant numbers in Sweden is only available for pre-school education. However, information exists regarding the number of students who received additional support. Around 40% of students receive additional support at some point during their compulsory education (Emanuelsson and Persson, 2003; Giota and Lundborg, 2007). One of the various forms of support available, to assist with the growing immigrant population in Swedish schools, is language support. In the last decade, the number of children with a mother tongue other than Swedish in pre-school has more than doubled from 40 000 in 2001 to 92 900 in 2011 (Swedish Government, 2013). As a result, 20% of children in pre-school have a mother tongue other than Swedish. These students can receive instruction in their mother tongue in schools by a teacher or an assistant if they cannot sufficiently follow the teaching in Swedish (Swedish Government, 2011). In 2005, 14.5% of six-year-olds who attended the pre-school class had a first language other than Swedish and, of these, 46.6% received a first language support (OECD, 2010).

3.2. Potential benefits of the use of learning support staff

A range of studies show a positive perception from different stakeholders regarding the work of learning support staff. Parents, teachers and principals tend to value support staff's contribution in terms of teaching effectiveness, classroom management, students' learning outcomes and children's inclusion.

3.2.1. Benefits to student learning

Learning support staff's work can have a positive impact on student attainment through a range of channels such as individual attention, behaviour management and children's inclusion. This section presents an overview of the potential benefits learning support staff can bring to children's learning.

Improved learning experience

Using learning support staff decreases student–adult ratios in the classroom and increases individualised attention so that students receive more individual help and attention from either the support staff or the teacher. This improves the learning experience for children, meaning that students' learning needs are more likely to be met, which is likely to lead to better achievement. This idea is supported by Blatchford et al. (2002, 2004), who report positive teachers' views about the contribution of support staff to student achievement. Most teachers noted that support staff's work provides children with greater opportunities for individualised attention, learning support and feedback. Learning support staff are skilled professionals that spend a greater amount of one-to-one time with children, which enables them to adapt their support and attention to children's real needs.

The use of support staff to enable smaller group sizes that are monitored by both the teacher and the support staff allows children to be more engaged in classroom activities. In addition, groups can be structured using different criteria, depending on the objective that is sought, i.e. students with learning or behaviour difficulties can be grouped together in order to receive additional and specialised support from a prepared professional, or can be separated and assigned to different groups with their peers, who can adopt a teaching role with them, and contribute to their inclusion.

Classroom environment and behaviour management

Classroom climate is an important contributor to student achievement: the better the classroom disciplinary climate, the more time spent on actual teaching and learning (Mortimore et al., 1988; Muijs and Reynolds, 1999). In addition, evidence shows that a positive classroom climate is associated with both cognitive and motivational outcomes, including improved academic performance, motivation, engagement, school satisfaction, self-esteem and fewer disruptive behaviours (Baker, 1999; Patrick et al., 2011; Reyes et al., 2012). The idea that a better classroom climate is associated with more time spent on teaching and learning is supported by teachers' perceptions as provided in the OECD Teaching and Learning International Survey (TALIS) (OECD, 2009, 2014a), showing that classroom disciplinary climate[1] and time spent on teaching and learning are positively related, with an average correlation of 0.5 among the participating countries – ranging from 0.21 in Japan to 0.65 in Australia. In addition, TALIS separates the variance for the index of classroom disciplinary climate in three components: teacher, school and country, with the aim of understanding to what extent the variation in responses to this variable is accounted for at each level. The variance accounted for at the school and at the country levels are minimal (7% and 8% respectively), while the majority of the variance (84%) in classroom disciplinary climate responses lies with the individual teacher (OECD, 2014a). In other words, the disciplinary climate depends mostly on the practices put in place in the classroom itself, and to a lesser extent on the socialisation of the school or the country within which a teacher resides. With this in mind, the work of learning support staff can contribute to more productive, focused and relaxed environments, and more time on tasks due to assistance with behaviour management and individual support. Cajkler and Tennant (2009) support this idea and point to the fact that a more active interaction between the students and the teacher or support staff helps children to better understand the task, which reduces the scope for children to cause behavioural problems, given that they are more motivated and engaged with it. By contributing to increased time on task, defined as the percentage of time spent on teaching and learning, learning support staff's work in the classroom provides all students with a greater opportunity to learn.

[1] To assess classroom disciplinary climate, TALIS asked teachers to indicate how strongly they agreed – on a four-point scale ranging from "strongly disagree" to "strongly agree" – with the following statements about the target class: (1) "When the lesson begins, I have to wait quite a long time for students to quiet down"; (2) "Students in this class take care to create a pleasant learning atmosphere"; (3) "I lose quite a lot of time because of students interrupting the lesson"; and (4) "There is much disruptive noise in this classroom."

Cover for teacher absences

Schools lose significant productive time due to teacher absenteeism. An analysis made by the Audit Commission for England (Audit Commission, 2011) found that teachers in English primary and secondary schools were absent on average for 5.7 days annually, with an estimated cost of GBP 500 million yearly. In the United States, 5.3% of teachers are absent on a given day, which represents a total cost of USD 4 billion annually due to substitute teachers and associated administrative expenses (Miller, 2012). In addition to this cost, the absence of a teacher has negative effects in terms of the quality and the continuity of teaching, which may render difficult the coverage of the full curriculum and result in a poorer learning experience for students. Research on teacher absenteeism (Varlas, 2001; Miller et al., 2008; Clotfelter et al., 2007) shows that it reduces instructional intensity and creates discontinuities and disruptions to the learning process. Moreover, schools usually hire low qualified substitutes who lack knowledge of students' levels and rhythms, which overall results in reduced student achievement that is even more noticeable for disadvantaged students. Miller et al. (2008) estimate that each 10 days of teacher absences reduce students' mathematics achievement by 3.3% of a standard deviation: the equivalent to the difference between "having a novice teacher and an experienced one".

In this context, learning support staff can provide classroom cover in the absence of the main class teacher, and contribute to a saving for the school in terms of covering expenses of hiring a substitute teacher. Learning support staff are trained and qualified professionals who have a good knowledge of students' levels and the procedures and routines of the classroom, which enables them to provide an effective instruction whenever the teacher is absent, ensuring the full provision of content and continuity of teaching.

Children's inclusion

Learning support staff can contribute to children's inclusion and ensure that all children, regardless of their situation (e.g. disability, language, family income, cultural background, gender or ethnic origin), can participate and engage in the social and academic experience of schooling with equal opportunities (Cajkler and Tennant, 2009; Ebersold, 2003; Thomas, 1997). According to Cremin et al. (2005), the use of certain approaches to the deployment of these staff has appeared "to systematise the allocation of teacher and assistant time and attention to all children" and to prevent children from experiencing both lack of attention or oversaturation.

Countries such as Australia, Finland and the United Kingdom use bilingual assistants (also referred to as "minority ethnic pupil support staff" or "ethnic assistants") to support the specific language needs of bilingual students and students whose first language is not the language of instruction, as a way of including migrant students and those from ethnic minorities. In addition, these professionals can act as a liaison between the school and migrant and ethnic minority communities, and enhance families' participation in school activities.

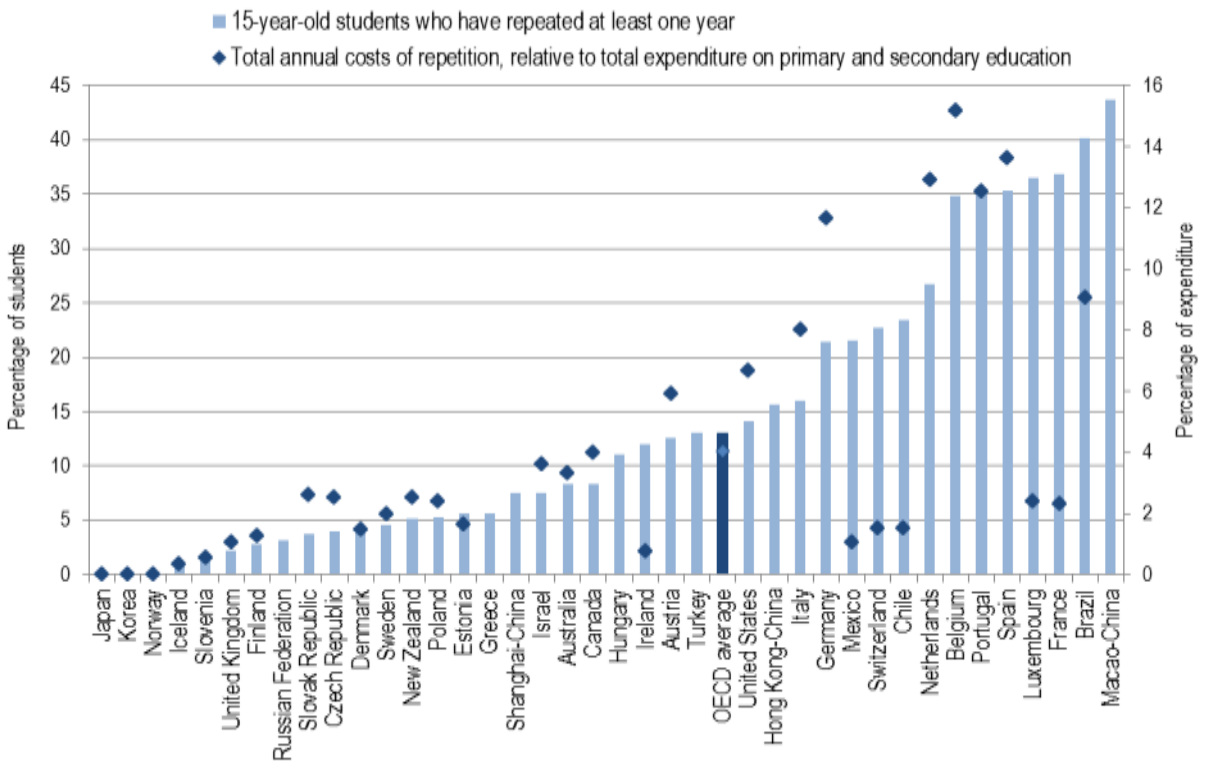
A good example of this is a project launched in 2012 in Prague called "Foreigners as Teaching Assistants" (META, 2013) which aimed to support the employment of foreigner long-term residents in Prague with former pedagogical education as "Teaching Assistants for Migrant Pupils". The programme involved requalification courses, including pedagogical and Czech language courses, the creation of teaching assistant positions and the creation of a job club to provide individual employment counselling to the participants. As a result of the project, 29 immigrants were re-qualified as teaching assistants and 22 were employed in primary schools.

An alternative to grade repetition

In some countries, grade repetition is typically used as a strategy to respond to individual low performance. Data from PISA shows that across OECD countries, an average of 12% of 15-year-olds reported that they had repeated a grade at least once. In Japan and Norway, virtually no 15-year-old student had repeated a grade, while in Belgium, France, Luxembourg, Portugal and Spain over 30% reported to have repeated at least one grade either in primary or secondary school (see Figure 3.3).

Evidence shows that grade repetition is costly and ineffective in improving students' performance: the academic benefits are minimal and short-lasting, and there is an increased likelihood of not earning a qualification or of only earning a lower secondary qualification. Requiring that students repeat grades implies not only the direct expense of providing an additional year of education, but also an opportunity cost for the individual and the society related to the delay of these students' entry into the labour market. The direct costs of grade repetition can amount to 10% or more of the annual national expenditure on primary and secondary education in countries like Belgium and the Netherlands (see Figure 3.3) (Schleicher, 2014). In addition to this, grade repetition increases the likelihood of school failure and dropout, and affects significantly more disadvantaged students, which widens the achievement gap and increases inequalities (OECD, 2011a, 2013).

Figure 3.3 Use of grade repetition and direct costs across OECD countries (2012)



Source: OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, http://dx.doi.org/10.1787/9789264201156-en.

The use of learning support staff to provide additional and continuous support to struggling students has been shown to be a valid alternative to grade repetition in helping those students match their peers'

level of attainment. Supportive learning environments, consisting of monitoring learning progress and detecting problems during the school year, can help students, especially those who are disadvantaged, to improve their achievement, and prevent them from repeating a grade (Schleicher, 2014). Evidence shows that for children receiving additional support, their progress is more marked when they are supported on specific aspects of learning in particular subjects (Alborz et al., 2009). This supports the idea of well-trained learning support staff pairing with teachers to support students, either individually or in groups. Countries such as Denmark, Finland, Norway, Sweden and the United Kingdom, apply automatic progression across the whole period of compulsory schooling and, rather than requiring students to repeat a grade, continuous support is offered to students with learning difficulties. Box 3.1 provides details on the Finnish approach.

Box 3.1 Individualised Support in Finland

In Finland, in 1970, a policy of automatic student promotion combined with early intervention was adopted, and individualised learning and differential instruction have become the basic principles. Learning environments are tailored in a way that all students can achieve their potential, and they are neither tracked nor streamed by ability. Every child in Finland has the right to individualised support by trained professionals as part of mainstream schooling and all teachers are trained in diagnosing students with learning difficulties and in adapting their teaching to their students' varying learning needs and styles. As a result, grade repetition is almost inexistent – less than 2% of students who leave compulsory education at the age of 16 have repeated a grade. In fact, grade repetition is only an option after the nine-year comprehensive school, when students are allowed to opt for an additional year to consolidate their knowledge or make up their minds about future steps.

In upper secondary school there is no grade repetition because modules are used instead of grades, and students build their own learning schedules from a menu of courses offered at their school. Therefore, the programme is flexible and the courses selected can be completed at a different pace, depending on students' abilities and personal situations. Rather than repeating an entire grade, a student may repeat only those courses that he or she did not pass. As a result, only 4% of students drop out during general upper secondary school, half of whom move to vocational educational institutions.

Evidence suggests that the success of Finnish PISA results is partly due to the relative better score of the lowest scoring students. The excellent relative performance in PISA results of the low-performer Finnish students in all domains could be seen to support the Finnish policy of supportive education. In other words, this suggests that Finnish schools are better at including disadvantaged students in the learning process. In Finland, Learning Support Staff (called teaching assistants) assist the teacher and support students and, when a teacher is absent, can also do substitute teaching. In addition, teaching assistants in Finland can follow the students with more difficulties during their years in school, which allow them to acquire an in depth knowledge of these children and to support them adequately. Finally, the 2007-2012 government plan for education and research underlined the importance of taking the presence of immigrant students in schools into account and introducing measures that enable these students both to succeed in the national educational system and to receive lessons in their mother tongue, e.g. the employment of immigrant staff schools to support immigrant students in their own language.

Sources: Andersen, F.Ø. and G. Højfeldt (2011), "Undervisningsassistent: Hvorfor? Hvornår? Hvem? Hvordan?" [Teaching Assistant: Why? When? Who? How?]; Eurydice (2009), *Integrating Immigrant Children into Schools in Europe*, Education, Audiovisual and Culture Executive Agency (EACEA), Eurydice, European Commission; Kupiainen S., J. Hautamäki, T. Karjalainen (2009), *The Finnish Education and PISA*, Ministry of Education, Finland; Välijärvi, J. and P. Sahlberg (2008), "Should 'failing' students repeat a grade? A retrospective response from Finland", *Journal of Educational Change*, 9(4), pp. 385-389.

3.2.2. Benefits to teachers' effectiveness

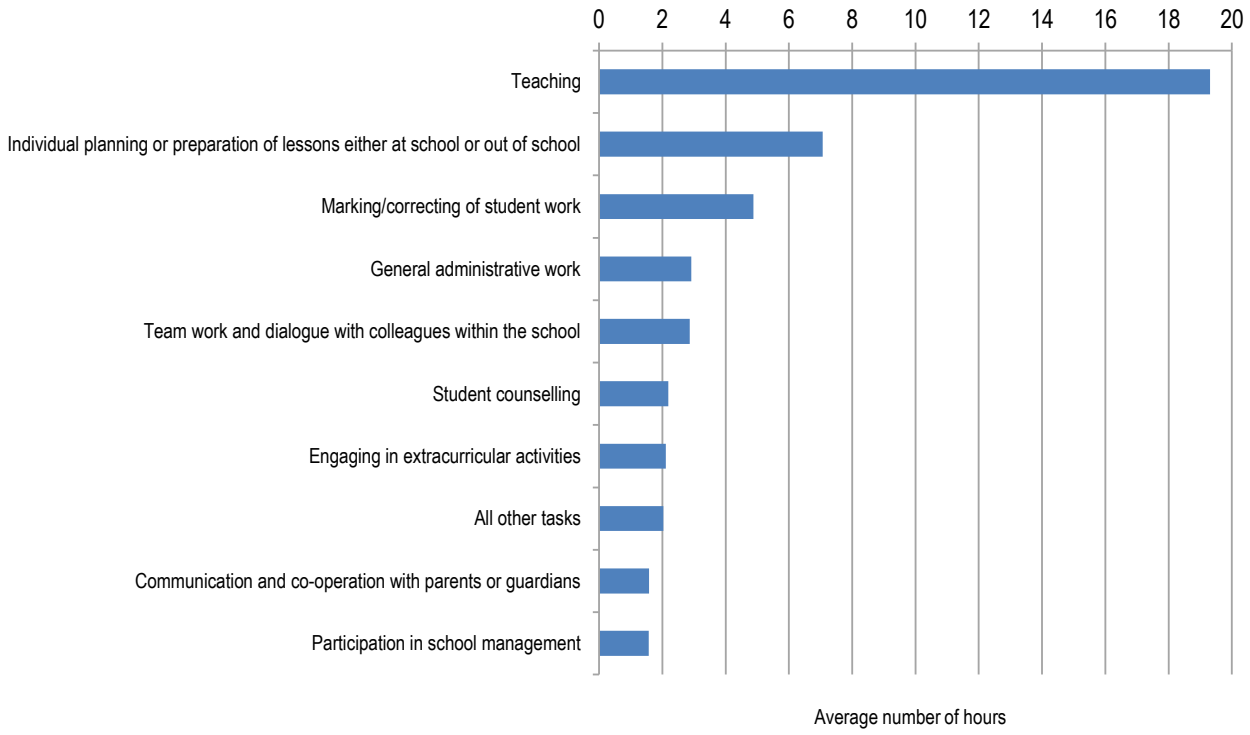
Different studies show that teachers value the contribution learning support staff make to effective teaching. Support staff complement the teaching process, and can also substitute for teachers in a set of non-teaching and routine tasks. This section presents the potential benefit of support staff to teachers' use of time and teaching effectiveness.

Workload reduction

Teachers are responsible for a range of tasks in addition to teaching, such as lesson preparation, student assessment, in-service training and staff meetings, which are vital to ensure quality teaching. According to TALIS, lower secondary teachers report spending the majority of their time teaching (OECD, 2014a). As can be seen in Figure 3.4, lower secondary teachers report spending on average 19 hours teaching per week (ranging from 15 hours in Norway to 27 hours in Chile). The other more common activities of teachers are planning or preparing lessons (with 7 hours on average, ranging from 5 hours in Finland, Israel, Italy, the Netherlands and Poland to 10 hours in Croatia); and marking students' work (average of 5 hours). Other activities such as participation in school management, communication with parents and extracurricular activities take an average of two hours or less per week each.

Figure 3.4 Distribution of teachers' working hours across activities

Average number of 60-minute classes lower secondary education teachers report having spent on the following activities during the most recent complete calendar week[1]



1. A "complete" calendar week is one that was not shortened by breaks, public holidays, sick leave, etc. Also includes tasks that took place during weekends, evenings or other off-classroom hours.

Source: OECD (2014a), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en.

Teachers' working hours vary among countries, as well as the allocation of these hours between tasks. In some countries, a large proportion of statutory working time is reported to be spent on teaching, and less time is devoted to other tasks (for example in Chile, where teachers report spending 27 hours out of 29 teaching). In some other countries, teachers report spending a large amount of hours teaching but also dedicate significant time to other tasks, which results in a comparatively larger amount of working hours than their counterparts in other OECD countries (for example, the United States, where teachers report spending 26.8 hours teaching while working 44.8 hours per week). Finally, in countries such as Japan or

Singapore, teachers report spending substantially more time on other tasks related to their job (40.2 and 38.0 hours per week, respectively) than they spend teaching (17.7 and 17.1 hours per week, respectively).

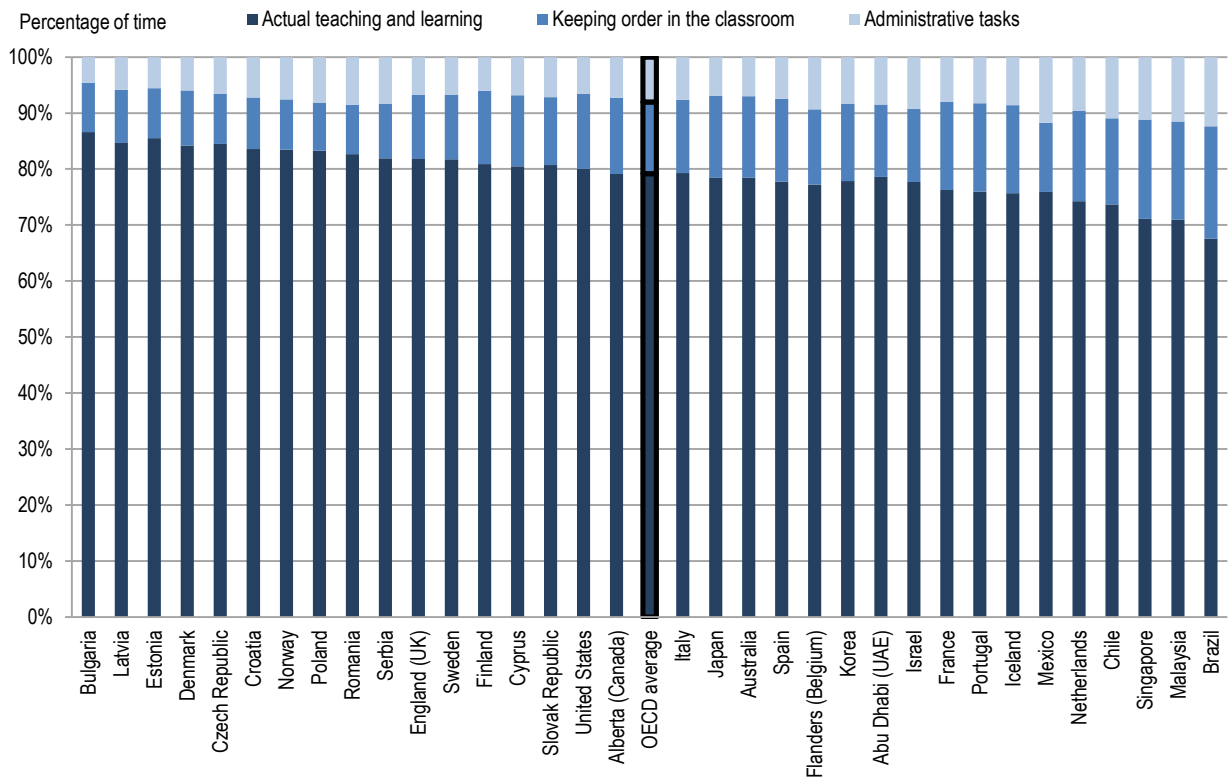
Learning support staff can be used in schools to reduce teachers' workload, thus freeing time for teachers to focus upon teaching tasks. By undertaking some routine duties and supporting teaching-related tasks (e.g. prepare lessons and materials, monitor students' progress, administrative tasks) as well as teaching tasks (e.g. instruction to children in one-to-one, small-group or whole-class contexts), learning support staff's work can enable teachers to concentrate on the tasks they are more skilled for or specialists in, which contributes to a more effective use of human resources in schools, and to a reduction in the amount of time dedicated to non-teaching tasks. In addition, teachers' total working hours can be reduced without affecting teaching effectiveness, preparation of lessons or students' assessment.

More effective use of time

The presence of support staff can help teachers cope with disruptive student behaviour, which creates a more productive atmosphere and allows the teacher to focus more on his or her teaching. The need for a more effective use of time has been previously expressed by the OECD (2009) as a mechanism to ensure that all students have an equivalent and maximum amount of learning opportunities.

TALIS 2013 results show that across countries with available data, in lower secondary education, between 67% to almost 90% of time is spent on actual teaching and learning; between 5 and 12% of time is spent on administrative tasks; and 9 to 20% of time is spent on keeping order in the classroom (OECD, 2014a). Figure 3.5 shows that country averages for time on task are below 80% in Abu Dhabi (United Arab Emirates), Alberta (Canada), Australia, Brazil, Chile, Flanders (Belgium), France, Iceland, Israel, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, Portugal, Singapore, Spain, and the United States. Teachers in these countries also spend more time than the TALIS country average (12.7%) on maintaining order in class (the exception is Abu Dhabi, with a percentage of 12.6%). In Chile, France, Iceland, Portugal, the Netherlands, Malaysia, Singapore and Brazil, maintenance of order in class accounts for more than 15% of lesson time, resulting in less time spent on teaching and learning. In these countries, having two adults in the same class monitoring students' behaviour could reduce time spent on interruptions, which in turn would enable them (the teacher and the support staff) to be more effective in their lesson delivery. Likewise, learning support staff can help teachers to cope with administrative tasks in the classroom, which can account for a large proportion of time. Teachers in Brazil, Chile, Malaysia, Mexico and Singapore spend on average more than 10% of lesson time on this kind of tasks, compared to an average of 8% in TALIS participating countries.

Figure 3.5 Teachers' time spent on actual teaching and learning, administrative tasks, and keeping order in the classroom in the average lesson (2013)



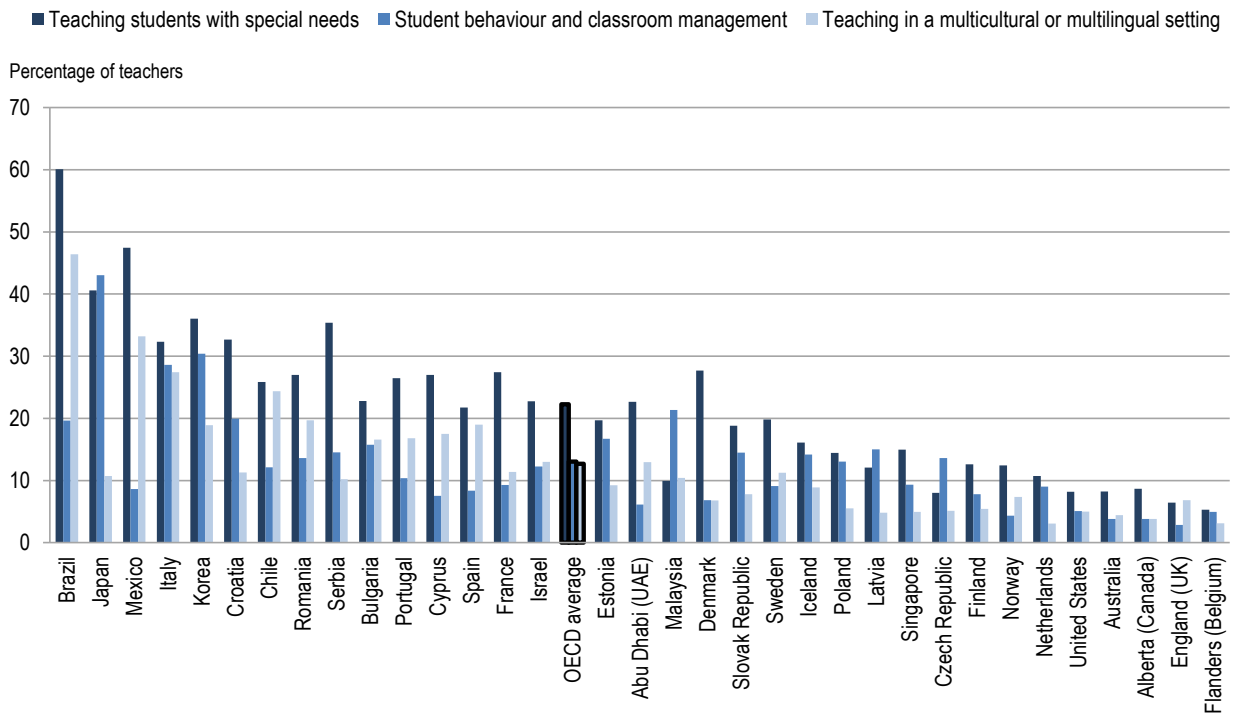
Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under effective control of the Government of the Republic of Cyprus.

Source: OECD (2014a), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en.

Another important message from the TALIS 2013 data is that teachers do not feel fully prepared to cope with some given teaching challenges. In the survey, teachers were asked to rate on a four-point scale, ranging from "low level of need" to "high level of need", their development needs for various aspects of their work. In Figure 3.6 it can be observed that across the 35 participating economies, 22.3% of teachers rated their development need in "Teaching students with special needs" as high, 13.1% of teachers reported a high level of need for "Student behaviour and classroom management", and 12.7% rated as high their level of need for "Teaching in a multicultural or multilingual setting". In systems such as Australia, England or Finland, where learning support staff deployment has been strengthened in recent years, fewer teachers indicated having high levels of need in these areas.

Figure 3.6 Teachers' high professional development needs



Note: See Figure 3.5 for Note by Turkey and Note by all the European Union Member States of the OECD and the European Union.

Source: OECD (2014a), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en.

3.3. Approaches to the use of learning support staff in the classroom

Cremin et al. (2005) developed and tested three models for deployment of support staff in British schools, namely: (i) ***Room management***, in which staff working in the classroom undertake different roles, depending on the needs of the class and the number of staff available, including the *Individual helper*, who works with an individual or a group on a teaching activity for 5-15 minutes, the *Activity manager*, who concentrates on the rest of the class, normally separated in small groups of 4-8 students, and the *Mover* (where applicable), who move equipment and deal with interruptions in order to free the other group from distraction; (ii) ***Zoning***, a model that allocates teachers' and support staff's roles according to the classroom "geography" and assigns groups of students to each professional; and (iii) ***Reflective teamwork***, in which teachers and support staff discuss in depth their collaboration as a team, and develop it accordingly. The three models were assessed focusing on two kinds of outcomes: (i) student engagement; and (ii) teachers' and support staff's perceptions of their own effectiveness when using the models.

According to the authors, room management was reported to encourage independence in all the children and benefited those with additional learning needs, who weren't seen as the only ones receiving additional support. Moreover, greater communication and collaboration in the planning enabled teachers and support staff to complement each other. Overall, this model appeared to have the most significant effect on increasing student engagement. However, it implies a large amount of time devoted to preparation, and it is not clear that this would be available under normal circumstances.

Secondly, zoning was considered to empower support staff who felt that the model enabled their support to be more effective. Teachers also felt that zoning was a natural way to organise the classroom as

it facilitated the monitoring of students' work and behaviour. Moreover, the model was perceived to be good for inclusion, as students with greater needs weren't separated into a different group. As a result, students were more engaged, especially those with the lowest baseline engagement, and behaviour improved. The use of these two models appeared to systematise the allocation of teacher and assistant time and attention to all children, and to prevent them from receiving too little attention or from becoming saturated with and dependent on support.

Finally, the reflective teamwork model, that forces support staff and teachers to give each other quality communication time, resulted in an improvement in their effectiveness and relationship. The authors concluded that a combination of the most effective elements of these three models could be used in training teachers and support staff for a better use of teaching resources.

An alternative approach to these three models is co-teaching: a model that emphasises collaboration and communication among all members of a team (usually a general teacher and a specialist/assistant) with the purpose of jointly delivering instruction in a way that meets the needs of all students (Dieker, 2001; Friend, 2008). This approach has its roots in special education, but is now used in all subjects and throughout all levels of general education. It involves the collaboration between a main teacher and an assistant specialised in a particular field (e.g. mathematics, science, reading, language, cultural mediator). It is, for example, being used to support students who have English as a Second Language (ESL) in the United States, and in English for Foreign Learners (EFL) environments, and has been considered beneficial in terms of motivation, students' participation and cross cultural understanding (Tajino, 2002; Zehr, 2006; Haynes, 2007; Honigsfeld and Dove, 2008; Rahmanian and Haqshenas, 2012).

A possible categorisation of co-teaching is as follows: (i) ***One teach, one assist***, in which one teacher leads instruction while the other circulates and assists individual students; (ii) ***Station teaching***, in which students are divided in three groups and rotate from station to station, being taught by the teachers at two stations and working independently at the third; (iii) ***Parallel teaching***, in which each teacher instructs the same content to half the class group with one aim being to foster instructional differentiation and increase student participation; (iv) ***Alternative teaching***, in which one teacher works with a large group and the other works with a small group for remediation, enrichment, or assessment, among others; (v) ***Team teaching*** (or ***Teaming***), in which both teachers share the responsibility of teaching to the whole class; and (vi) ***One teach, one observe***, in which one teacher leads instruction while the other gathers data on specific students or the whole class (Cook and Friend, 1995; Friend et al., 2010).

Other researchers have suggested different versions of co-teaching models which apply different terminology to similar concepts. Haynes (2007) suggested six models of co-teaching between a general education teacher and an ESL teacher. These models include (i) ***Teach and write***, where one teacher teaches while the other records the important points on a board; (ii) ***Station teaching*** (same as suggested above); (iii) ***Parallel teaching***; (iv) ***Alternative teaching***; (v) ***Team teaching*** and (vi) ***Lead and support*** (equivalent to ***One teach, one assist*** approach suggested above). Thus, variations can be introduced to this approach, although co-planning, co-instructing and co-assessing are required for it to be considered co-teaching.

A number of benefits of co-teaching have been suggested in the literature, including: an increased understanding of all students' needs, a more effective teaching and learning environment, a greater exchange of knowledge and strategies between professionals, and decreased burnout for professionals (Dieker, 2001; Dieker and Murawski, 2003). Murphy et al. (2004) analysed the effects of co-teaching in primary school science classes by science specialist student teachers and main primary teachers on children's attitudes, and found positive effects on students' enjoyment in science classes, as well as fewer age or gender differences in their attitudes to science than children who had not participated in the project. Other studies have tried to address the effectiveness of co-teaching on students' achievement, though many

lack quantitative data. Murawski and Swanson (2001) conducted a meta-analysis of co-teaching research. Out of 89 studies reviewed, they only identified 6 that provided sufficient quantitative information, all of which were co-teaching experiments in the field of special education. While co-teaching was observed to have positive effects, their analysis doesn't show a significant difference between co-teaching and regular controlled classes. Some researchers state that this is because although co-teaching has big potential as a strategy for improving students' achievement, it is not easy to implement (Friend 2008), and the right model has to be used (Abdallah, 2009). Many studies have tried to address the challenges facing the successful implementation of co-teaching, including arranging instruction and planning time, introducing creativity in instruction, building positive working relationships, clarifying roles, responsibilities and philosophy of teaching, conducting evaluations, and ensuring administrative support (Dieker, 2001; Honigsfeld and Dove, 2008; Friend, 2008).

In a recent study, Takala and Uusitalo-Malmivaara (2012) followed the development of co-teaching in four schools in Helsinki during the TUPA (*bonus for results*) project. The TUPA project offered funding for training courses for comprehensive schools in Helsinki to promote co-teaching: rewarding schools if at least 5% of their lessons in general education were co-teaching lessons in the school year 2010-2011. The results showed low levels of co-teaching (two-five lessons per week), which didn't change during the follow-up study one year later. This suggests that monetary incentives are not enough to encourage co-teaching. Lack of planning was the main reason for not undertaking this approach, or not doing so more often. In addition, confusion existed regarding roles, possibly due to the lack of training to co-teach. However, co-teaching was viewed positively by the practitioners, who identified issues such as professional development, sharing with other professionals, higher well-being, more time for students from teachers, and better quality of teaching or improved inclusion of diversity.

3.4. Implementation aspects

The extent to which the use of learning support staff in schools contributes to an improvement of teaching and learning partly depends on the tasks and roles they undertake, as well as on the way they are trained and deployed. This section presents implementation factors for the effective use of learning support staff.

Deployment within schools and classrooms

The way learning support staff are deployed in schools can have a great impact on the effectiveness of their work. In most cases, these professionals give in–class support to small groups of children who are low performers or are having learning or behaviour difficulties. This leads to potential concerns as to the level of preparation of support staff, i.e. if support staff are not adequately prepared, some students (those working with support staff) may receive low quality attention and some others (those working with the teacher) may receive high quality support. In some cases, though, teachers and learning support staff share the responsibility of instruction, and allocate their roles according to students' needs and their own areas of expertise, for example, learning support staff can teach the whole class, while the teacher provides support to students with learning difficulties. Thus, learning support staff deployment needs to ensure an effective support for all students, whatever their needs are, in a range of different types of interaction (one-to-one, small group or whole class attention).

Learning support staff usually work with various teachers, classes and groups, which can lead to fragmented and inconsistent support, and may represent a challenge in terms of communication between teachers and learning support staff. If learning support staff have to work with different teachers, less time will be available for them to work as a team, and plan the class together, or engage in a reflection after the session. Different studies (e.g. Moyles and Suschitzky, 1997; Cremin et al., 2005; Alborz et al., 2009; Webster et al., 2013) signal this as a big obstacle for support staff to provide effective attention and

teaching for students. Accordingly, the successful contribution of learning support staff in schools will depend to a great extent on the quality of the partnership formed with teachers, and to ensure this, they should have enough time allocated to work together before and after lessons.

Training

In order to provide support staff with the knowledge and preparation they need to face the different challenges of their work, high quality specific training should be provided to them. Some studies (e.g. Blatchford et al., 2004; Cajkler and Tennant, 2009) consider training beneficial for learning support staff's skills and job satisfaction, as well as in raising knowledge and confidence, which can be expected to have a positive impact on the quality of support that students receive. In addition, they indicate that in order to prepare future support staff appropriately, training should be integrated into classroom practice (e.g. through induction programmes) and should be based in team working approaches from early stages (e.g. via shared training and induction for teachers and support staff).

As previously mentioned, in the United Kingdom, there are no nationally specified requirements for becoming a teaching assistant (TA), and each local authority and school outlines their own specific requirements. However, local authorities offer the opportunity for training and development once teaching assistants are in post. There are two levels at which TAs can be awarded the National Vocational Qualification (NVQ) for teaching assistants: Level 2 is designed to be suitable for teaching assistants who may be new to the profession, and Level 3 is designed to be suitable for experienced teaching assistants. To achieve level 2, TAs need to show that they meet seven units of competence, four of which are mandatory, namely: (i) help with classroom resources and records; (ii) help with the care and support of students; (iii) provide support for learning activities; and *iv)* provide effective support for colleagues. The remaining three can be chosen from a list of five options including: support literacy and numeracy activities in the classroom; contribute to the management of student behaviour; and support the use of ICT in the classroom. To achieve level 3, TAs must show that they meet ten units of competence, four of which are mandatory, namely: (i) contribute to the management of student behaviour; (ii) establish and maintain relationships with individual students and groups; (iii) support students during learning activities; and (iv) review and develop one-self professional practice. The remaining six are chosen from nineteen further options, including: observe and report on student performance; promote students' social and emotional development; and liaise effectively with parents (TES, 2013).

In Norway, teaching assistants do not need a diploma. However, almost 20% of TAs in primary and lower secondary education and 23.4% of TAs in pre-primary education have a trade certificate in Child Care and Youth Work. Child care and youth work consists of three main subject areas, including (i) health-promoting work, which is concerned with the relationship between physical and mental health and activities for children and adolescents; (ii) communication and interaction, which deals with the development of children and adolescents' self-esteem and confidence; and (iii) practice of vocation, which is concerned with the different types of educational activities for children and adolescents. In addition, all apprentices must be competent in basic skills, meaning that they have to be able to express themselves orally and in writing; be able to read and understand specialist literature and plans; be able to calculate, use numbers and counting in educational activities; and be able to use digital tools for documentation and presentations and to instruct children in the use of these tools (Norwegian Directorate for Education and Training, 2008).

The education of assistants in Finland currently consists of 40 study weeks, one study week being equivalent to 40 hours of work. Different vocational institutes offer this education, which usually lasts one year. Other qualifications, such as practical nursing, are also considered acceptable as sufficient educational background for an assistant. The core aims in the study programmes of all institutions offering this education are: (i) to gain knowledge about the work environment of the assistant, including relevant

laws and service systems in the society; (ii) to support human growth; (iii) to support functional ability; iv) to guide learning. The education is linked to working life and students have a total of 12 weeks of practice in the field, with the final examination being a skills test. This profession is regulated by the National Board of Education (The Social and Health Institute in Helsinki, 2006; Finnish National Board of Education, 2006).

Roles and responsibilities

It is typically the responsibility of the school management to ensure that the division of tasks and functions between teachers and learning support staff is clear. A weak school management, unable to get involved in clearly delineating staff's roles can lead to inconsistencies and variations in the way learning support staff are used, as well as to task overlaps or mismatches. A clear definition of what are the responsibilities of support staff and teachers in their work with students is key to improve teaching effectiveness (Webster et al., 2013). The inclusion of these professionals in the staff team would enable them to participate in whole school decision-making, as well as clarifying teachers and learning support staff's roles.

Practices

Learning support staff may not always have the desired positive effect if care is not taken with the practices used. According to research (Alborz et al., 2009; Blatchford et al., 2012; Webster et al., 2013), an excessive use of practices such as withdrawing individual students from the class, working exclusively on a one-to-one basis, or clustering the low-performing students in order to support their learning, may actually create a barrier between those students that receive support and the rest of the class, and can have a negative impact on their confidence and progress, as well as their ability to work independently.

In order to ensure the participation and engagement of all children in the class experience, learning support staff should combine the support given to individual students with whole class work. Moreover, these professionals should emphasise learning and understanding rather than task completion. With the main objective being to promote students' independence, learning support staff should avoid practices consisting in providing answers and correcting mistakes, and instead give more time to students for reflection and the enhancement of their participation in class.

4. EMPIRICAL EVIDENCE ON THE IMPACT OF LEARNING SUPPORT STAFF

4.1. Learning support staff, student achievement and teachers' work

There is not a great deal of empirical evidence on the impact of learning support staff on student learning. This section explores the results from available studies: ranging from those indicating that the use of learning support staff can negatively affect children's progress, to those presenting evidence that these professionals can improve student learning.

A large-scale study (Gerber et al., 2001) examined data from Tennessee's Project STAR, a longitudinal state-wide project in Tennessee (United States) designed to look at the effects of smaller class sizes and the use of learning support staff from kindergarten to grade 3 of primary school. In Project STAR, students entering kindergarten in autumn 1985, as well as teachers and teacher aides,[2] were randomly assigned to one of three experimental interventions, namely: (i) a small class (13-17 students); (ii) a regular class (22-26 students); and (iii) a regular class with a full-time teacher aide. Most students remained in the same class throughout the four years, but teachers and teacher aides changed every year (Gibbons and McNally, 2013, provide a good summary of the project). The full sample used by Gerber et al. included more than 6 300 students in 79 schools across the state. Due to complexities with the sample resulting from attrition problems (i.e. some students leaving the schools) and later accession to experimental school programs (i.e. students moving to the treatment schools), which resulted in students attending teacher aide classes (or small classes) for different lengths of time, the authors focused solely on those students with particular patterns of participation (e.g. those who attended the same class throughout the duration of the project) and used statistical controls to adjust for differential selectivity of students who were more mobile. In addition, they controlled for gender, ethnicity, free meal eligibility and urbanity.

Overall, the results indicated that no significant differences in student achievement were found between regular-size classes with or without teacher aides on any test in any grade. However, comparisons between students in regular-size classes with teacher aides for between one and four years and those in regular-size classes without teacher aides, or small classes, showed that students who had been in a regular-size class with a teacher aide for 2 or 3 years scored higher in reading tests than their counterparts in regular-size classes without support. On the other hand, students in regular-size classes with teacher aides performed worse than those in small classes in all grades and on all tests. The authors suggested that the lack of overall positive effects of teacher aides on student achievement could be solved through better training and clearer roles for these staff, and stated that while the use of this kind of support may not have an overall positive impact on learning, the deployment of these professionals to support specific students might lead to higher achievement for those particular students, a question that their data did not allow to investigate.

This question was later analysed by Muijs and Reynolds (2003), who studied the effect of using trained learning support assistants to help students who were underachieving in mathematics, by using the Numeracy Support Assistants (NSA) programme as a quasi-experimental design. The programme was implemented as part of the Gatsby Mathematics Enhancement Programme Primary[3] project, and had the

[2] Learning support staff in the United States are referred to as Teacher Aides. They may also receive the title of Teaching Assistant or Classroom Assistant (National Education Association website, www.nea.org/home/20783.htm (accessed 7 August 2014)).

[3] The Gatsby Mathematics Enhancement Programme is a project initiated in 1995 with the initial purpose to promote the use of whole-class interactive teaching methods in mathematics classes and to provide teachers with the training, materials and support needed to implement them. Later, with the primary aim being to help low

primary objective to use more extensively trained learning support staff to support low achieving students during and after mathematics lessons. It was conducted in 18 schools from two selected local education authorities in the north east of England, starting in the summer term 2000. Students who were to be targeted for support by the NSA were chosen by schools on the basis of test results and teacher judgement. During the first phase of the project, NSAs were employed at key stage 1 (the first two years of primary school in England, which comprises students between ages five and seven) to aid selected students during mathematics lessons, by working with them both during the whole-class teaching segments and the individual practice parts of lessons. NSAs had previously taken part in a variety of training activities as part of the programme and were proposed roles such as: to observe and assess the group, providing feedback for the teacher; to interact alongside the teacher; to take small groups in order to practise and reinforce skills; to provide practical support; and to assess the children's progress. From the observation of 208 lessons, NSAs were identified to: (i) support students by encouraging them, reinforcing or practising skills and helping them with the content of the activity in the beginning of the class (in some cases this was made in a separate class); (ii) help a group of low achievers during the main delivery part of the lesson to understand the content provided, as well as to provide the teacher with practical support by preparing or distributing materials; and (iii) to support one group during group activities, by showing them how to solve problems, or questioning and encouraging the group, while the teacher would be moving to support the other groups.

The authors used a quasi-experimental design to examine the extent to which the use of NSAs was effective in improving the achievement of low achievers at key stage 1. Low achieving children who had received support were compared to those who had not, based on their score on a standardised mathematics test[4] and controlling for a range of characteristics such as gender, social disadvantage (using free meal eligibility as a proxy), special educational needs status and ethnicity. At the end of the school year, students were re-tested using the same mathematics test. In addition, measures of whether or not the student had received support from the NSA and the exact amount of time she/he had spent supporting the student[5] were also collected. Finally, a multilevel modelling[6] was used to analyse the impact of the support received, and teacher and school effectiveness were controlled for.

The results of the study do not provide much support for the use of learning support staff to improve the achievement of low-performing students. Overall, no effect of being supported by a numeracy support assistant was found. Likewise, adding the amount of time spent with the NSA did not have any significant effect on progress in mathematics. However, there were some shortcomings to the study, for example: in the comparison group, both students from ethnic minorities and with English as a second language were over-represented, and although training and support were provided to NSAs during the programmes, these might had not addressed their needs adequately, and no information about training quality was provided. Furthermore, using eligibility for free meals as a proxy to measure social disadvantage can be argued to be insufficient in measuring students' socioeconomic status. Therefore, the two groups could possibly differ in terms of social backgrounds in ways that could not be captured by the existing measures.

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achievers in mathematics, the programme attempted to provide both training and an enhanced role for learning support staff.

[4] The test used was originally designed by the University of Leeds and contained an oral ('mental maths') and a written part. The written part consisted of open-ended questions, and students were required to show their workings (which were marked).

[5] NSA were required to fill in a form after every maths lesson with the names of the students they had worked with, what subjects had been covered and how long they had worked with them.

[6] Multilevel modelling is a technique used when the sample is clustered (in this case, in classrooms). It also allows to look at how much of the differences in achievement between students can be explained by their individual characteristics as opposed to classroom characteristics.

Table 4.1 Deployment and Impact of Support Staff project data collection methods and responses

Surveys	Responses from 6 079 schools, 4 091 teachers and 7 667 support staff
Timelogs	1 670 responses from individual support staff
Structured observations	27 Teaching Assistants (TAs) across 18 schools. 1 502 observations of teachers, TAs and students in 140 lessons
Systematic observations	686 students across 49 schools. 34 400+ observations of TA-to-student interactions
Case studies	65 schools. 591 interviews with school leaders, teachers, support staff and students
Adult-to-student interaction	32 lesson-length transcripts of teacher-to-student and TA-to-student conversation (recorded simultaneously)
Main student support survey	8 200 students, in 7 year groups, across 153 schools. English, maths and science scores

Source: Blatchford, P. et al. (2012), *The DISS Project: Background, Aims and Methodology*, Institute of Education, University of London.

Table 4.2 Support staff roles in the United Kingdom and Deployment and Impact of Support Staff clusters

TA equivalent	Student welfare	Technicians	Other student support
Teaching assistant	Learning mentor	ICT manager	Bilingual support
Higher level teaching assistant	Education welfare officer	ICT technician	Cover supervisor
Classroom assistant	Welfare assistant	Librarian	Escort
Learning support assistant (LSA)	Connexions advisor	Technology technician	Midday supervisor
LSA for Special Education Needs	Nurse	Science technician	Midday assistant
Nursery nurse	Home-liaison		Language assistant
Therapist			Exam invigilator
Administration staff		**Facilities staff**	**Site staff**
Administrator	Secretary	Cleaner	Caretaker
Office manager	PA to Head	Cook	Premises manager
Finance officer	Data manager	Other catering	
Bursar	Exam officer		
Attendance officer			

Source: Blatchford, P. et al. (2012), The DISS Project: Background, Aims and Methodology, Institute of Education, University of London.

The largest study of learning support staff so far conducted in the United Kingdom is the Deployment and Impact of Support Staff (DISS) project (Blatchford et al., 2012), which aimed to provide an accurate, systematic and representative description of the types of support staff and their characteristics and deployment in schools, and how these changed over time, and analysed the impact of support staff on teachers, teaching and student learning, behaviour and academic progress (see Table 4.1). The project was implemented between 2003 and 2009 and was divided into two strands: strand 1, which included three biennial large scale national questionnaire surveys of schools, teachers and support staff; and strand 2,

which involved detailed analysis of the deployment and impact of support staff and qualitative analysis of processes in schools connected to the deployment and impact of support staff. Given the large variety of support staff roles in the United Kingdom (see Table 4.2), the DISS project developed a new classification of support staff through the grouping of titles based on similarities in activities. Thus, a category was created for TA equivalent titles, which includes Teaching Assistant, Higher Level Teaching Assistant, Classroom Assistant, Learning Support Assistant (LSA), LSA for students with special educational needs (SEN), Nursery nurse and Therapist. Nonetheless, Teaching Assistants make up nearly half of total school support staff workforce (DfE, 2010).

The study found that TAs spent over half of their working hours directly supporting and interacting with students. TAs' interactions with students were predominantly at group level in primary education and at individual level in secondary education, while teachers were mainly dedicated to lead the whole class and move around the classroom. In terms of TA practice, they found that TAs were more focused on completing tasks (e.g. encouraging students to complete written tasks, supplying answers and correcting errors), while teachers were more focused on learning and understanding (e.g. explaining concepts, encouraging students to think and checking understanding).

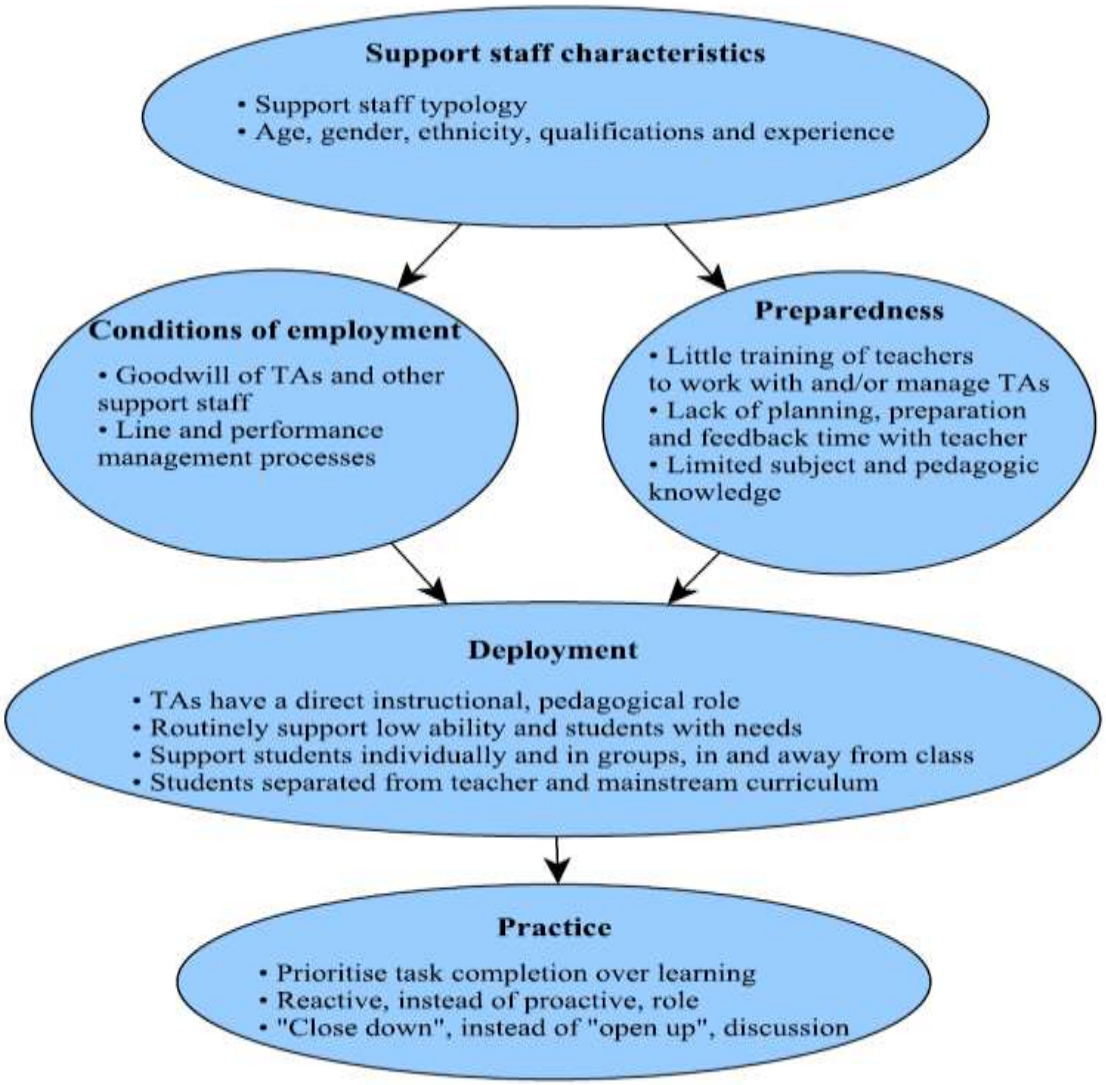
To analyse the impact of TAs' work on teachers, teaching and student learning, the DISS project used a teacher survey (4 091 responses from individual teachers), and systematic observations of students across 49 schools (more than 34 400 observations). To analyse the TA impact on student achievement, the main student support survey was used, which measured the effects of TA support over a school year on students' Positive Approaches to Learning (PAL) (e.g. motivation, confidence) and academic progress. PAL outcomes were based on teachers' ratings on whether a student's PAL had improved, remained unchanged or decreased. Academic progress outcomes were based on academic attainment at the start and at the end of school year.

Overall, researchers found that TAs' work had a positive impact on teachers and teaching. The use of TAs was perceived by teachers to reduce stress and workload and improve their job satisfaction. Teacher surveys showed that TAs had a positive impact in terms of increased teaching and curriculum coverage, through bringing specialist help and removing administrative tasks, and increased time for planning classes. Furthermore, systematic observations showed that TAs contributed to a better classroom disciplinary climate, more individualised attention in primary education and more overall teaching in secondary education, although it reduced student-teacher interactions. Teacher surveys and systematic observations also showed that TAs had a positive impact on students' learning and behaviour, particularly in terms of improving students' attitudes, behaviour and social skills, allowing individualisation and differentiation of tasks, and increasing classroom engagement and interaction with adults. However, the project didn't find positive effects of TAs' work on students' PAL and academic progress. Little evidence was found that TA support improved student approaches to learning such as motivation, confidence, independence or concentration. On the other hand, TA support was found to have a significant negative effect on students' academic progress across all year groups in the three core subjects (English, mathematics and science).

The DISS study concluded that the impact of TAs on students is largely dependent on the decisions made regarding how they are deployed and prepared, and their conditions of employment, and less due to the individual characteristics of TAs and students. To support this, the authors developed the Wider Pedagogical Role (WPR) model (see Figure 4.1), which conceptualises the key features and effects of TAs and their work, and the relationships between them. They argue that there exists a complex network of relationships between the different components of the WPR model, which ultimately explains a TA's impact. For instance, regarding the conditions of employment component, the authors found that the lack of planning and preparation time for teachers and TAs to plan and reflect is largely due to the TAs' statutory working hours, and the fact that some TAs are not paid to meet with teachers after school. This

lack of time for teacher-TA communication is also part of the preparedness component and results in an inadequate collaboration between teachers and TAs, with TAs often dedicating extra unpaid hours to plan and reflect with teachers, or going into lessons unaware of the tasks that they will have to do. According to the authors, "TAs' practice and the effects of the support they provide need to be seen in terms of the decisions made about their deployment and preparedness, made by school leaders and teachers, which are outside the control of TAs" (Webster et al., 2011).

Figure 4.1 The deployment and impact of support staff wider pedagogical role model



Source: Blatchford, P. et al. (2012), The DISS Project: Background, Aims and Methodology, Institute of Education, University of London.

In contrast to the research above, recent studies have found that learning support staff can be effective at improving attainment when used to support specific students in small groups or through structured interventions. Two recent randomised controlled trials conducted in England by the Education Endowment

Foundation (EEF, 2014a, 2014b) found significant improvements in learning in literacy and numeracy due to intervention programmes based on the use of learning support staff. The first trial was based on a 10-week programme (*Switch-on Reading*) for Year 7 students struggling in literacy (first year of secondary school). This randomised controlled experiment consisted of 20-minute one-to-one reading sessions with a TA and involved 308 students across 19 schools from one local authority in England. The results indicate that the programme made a noticeable positive impact, on average, between three and five additional months' progress. The study suggests that the intervention can be an effective strategy for struggling and disadvantaged readers, with an estimated cost of GBP 627 per student.[7]

The second study evaluated *Catch Up Numeracy*, a programme of one-to-one maths support for students aged 6 to 11 (Years 2-6 of primary school), consisting of two sessions per week with TAs.[8] The randomised controlled experiment involved 324 students in 54 schools from England and Wales, and three groups were compared: one which continued with normal lessons, one which participated in the programme and another one in which one-to-one support, without *Catch Up Numeracy*, was provided. The study suggests that both *Catch Up Numeracy* and one-to-one intervention were found to significantly increase learning. The effect size suggests that, on average, students struggling with numeracy and receiving one-to-one support would make four additional months of progress over the year compared to students who did not receive any support. However, there was little evidence that the *Catch Up Numeracy* approach (with an effect size of three months' additional progress) provided additional gains above those from one-to-one intervention.

Also, several randomised controlled trials conducted in Denmark indicate that learning support staff made a positive impact on student learning. As mentioned in Section 3.1, during the period 2009-2012, as part of the "School Development" project of the Ministry of Education, approximately 125 Danish schools, from 38 different municipalities, were involved in 44 pilot programmes using learning support staff (referred to as teaching assistants, TAs) – in comprehensive schools with the primary aim of improving the academic achievement of low performers and disadvantaged students. The evaluation of the two-year Danish trials (Rambøll, 2011) was based on quantitative as well as qualitative data. Questionnaires were distributed to school principals, teachers and TAs at the schools involved in the trials and time-series studies with rating scales were carried out at the same schools to measure well-being as well as levels of learning among the students. The Child Outcome Rating Scale[9] (CORS) was used to measure well-being and learning among children. This measurement was combined with two derived instruments to form the Learning Rating Scale[10] (LRS). The time-series studies were carried out in the form of a test at the schools

[7] Estimates are based on a school delivering the programme to 24 students and training four teaching assistants.

[8] It consists of two 15-minute sessions per week, delivered by TAs. The intervention separates numeracy into ten elements, including counting verbally, counting objects, word problems and estimation. Students are assessed on each component and instruction is targeted at those areas in which they require more need.

[9] The Child Outcome Rating Scale (CORS) assesses four dimensions of children functioning considered to be valid indicators of successful outcomes, transformed into a four-item visual analogue instrument. The four dimensions are: (1) personal or symptom distress (measuring individual well-being); (2) interpersonal well-being (measuring how well the children are getting along in relationships); (3) social role (measuring satisfaction with school); and (4) overall well-being (Duncan et al., 2003).

[10] The Learning Rating Scale (LRS) was developed specifically for the purpose of evaluating the Danish national two year TA trials, in order to measure the connections between the psychological factors that promote learning. The LRS measures four dimensions using a four-item visual analogue instrument. The four scales are: (1) a learning gain scale (which measures the extent to which children feel they are learning); (2) a social scale (that rates how well the children are getting along in school); (3) a method match scale (measuring satisfaction with the way teachers teach); and (4) an expectation scale (which gauges how much children experience is expected of them in school) (Nissen et al., 2014).

in the first year of the pilot programme, and three successive tests during the second year. Finally, qualitative case studies with interviews and observations of TA practice were also conducted during the two-year trial period in eight municipalities.

The randomised experiments provided the participating schools with minimum requirements regarding the recruitment and deployment of the teaching assistants. As a result, TAs used in schools varied a great deal in their level of competencies (ranging from unskilled workers to trained social educators and student teachers) and the way they were used. Regarding the TAs' tasks, two main roles were identified: (i) assist teachers in routine and practical tasks, thus enabling them to focus on teaching; and (ii) improve interactions and relationships in school between students, students and teachers, and families and schools (e.g. handling conflicts between students), in order to create the best possible environment for learning.

The evaluation of the trials indicates a positive contribution of support staff to students' well-being, especially among the most disadvantaged students. The results suggest that disadvantaged students, who tended to experience low levels of well-being in schools, were the ones who benefited the most from the TAs' work, with approximately 60% of the most disadvantaged students experiencing good levels of well-being in the last measurement, compared to 1% in the first measurement. According to the evaluators, this can be attributed to the fact that disadvantaged students were receiving the support they needed from professionals that were working with them in different contexts and activities. On the other hand, and probably due to some spill-over effects, in classrooms where well-being improved for disadvantaged students, an improvement was registered in the learning environment for everyone in the classroom, including the teacher. The TA's impact on students' learning was not found to be strong, though. Moreover, no evidence was found regarding the importance of the formal education of TAs. Practical experience, personality and commitment seemed to be far more important. Finally, teachers' responses to the surveys suggested a positive impact of TAs' work on teachers' job satisfaction and overall teachers' work, primarily due to the fact that, thanks to the TAs' support, they were able to focus more on teaching.

Another recent study (Andersen et al., 2014) presents the results of a large-scale randomised controlled trial conducted in Denmark, and provides evidence of the positive impact learning support staff can have on student achievement. The study analyses the effects on Year 6[11] students' achievement of three different approaches to the use of learning support staff in Denmark: (i) a co-teaching approach, where an additional teacher peers with the classroom teacher in the whole teaching process; (ii) the use of learning support staff (called resource teacher or teaching assistant), deployed to help the teacher and support the weaker students; and (iii) the use of a professional tutor, or counsellor, who advises different teachers in different schools. Of 68 municipalities (577 schools) that enrolled in the experiment, 18 were selected on the basis of geographical spread, size of municipality, school sizes, etc. and were divided into two groups. Twelve municipalities were selected to be treated with the co-teaching and the teaching assistant approach; and the other six were selected to be treated with the counsellor approach. In a second stage, the schools within each selected municipality were stratified according to the average national test scores in Year 6 in 2012/13, and then randomly drawn to be selected for treatment. Those schools that were not drawn in the lottery were used as control group. The selection resulted in 35 schools allocated to the co-teaching approach, 35 schools to the teaching assistant approach, and 39 schools to the counsellor approach. Of a total of 10 198 students selected, 4 923 were in the treatment group, and 5 275 were in the control group.

For each approach, requirements were established. The co-teaching approach required schools to deploy additional teachers for all Year 6 classes for at least 10.5 lessons of 45 minutes per week. In addition, teachers were required to attend preparation courses. The schools received the equivalent of

[11] In Denmark, Year 6 is the last year of primary education.

approximately USD 26 000 per class. In the teaching assistant approach, schools were required to deploy teaching assistants for all Year 6 classes for at least 14.5 lessons of 45 minutes per week. Teaching assistants were also required to attend preparation courses, and the schools received also the equivalent to USD 26 600 per class. Finally, municipalities receiving the counsellor treatment were required to employ a counsellor for a half-time position to work with all the Year 6 classes of the schools in the municipality, attending each class for 2.5 hours per week, on average. The municipalities received the equivalent of USD 3 700 per Grade 6 class. In addition, there was a requirement for participating schools and municipalities to dedicate the additional staff to the following focus areas: Danish language, mathematics, and students' well-being and inclusion. However, it was left to schools and municipalities to decide how these staff should be managed and deployed to best meet the purpose of the project.

For the analysis, an extensive data base was used, including results in annual national tests, surveys (pre- and post-treatment) among practitioners (school principals, teachers and support staff) and municipalities, implementation and monitoring questionnaires, case studies and existing data from Statistics Denmark, which includes information regarding socio-economic status, training, years of experience, etc. for all the students, parents and staff involved in the study, and therefore enables a link to be made with the information gathered by the study.

The data show that some of the additional staff were recruited from within the same school, but most were hired from outside the school. Table 4.3 shows that most of the teachers and counsellors had a teaching degree (83% and 69%, respectively), and only 29% of teaching assistants had a degree in education. Teaching assistants were a heterogeneous group, with 16% being university graduates, 9% studying a teaching degree and 46% with other backgrounds including artisan, teaching assistant, social worker or high school graduate. Nonetheless, most teaching assistants were either trained/experienced educators or student teachers. As can be seen in Table 4.3, counsellors were the most experienced staff, with an average of 14 years of teaching experience prior to their then current job. They were followed by teachers, with 6.5 years of experience on average. Finally, teaching assistants were the least experienced staff, with only three years of teaching experience on average. 100% of counsellors had previous experience as a teacher, while 86% of teachers and 46% of teaching assistants had teaching experience prior to their then current job.

Table 4.3 Support staff characteristics in Danish selected schools

Type of staff	Background (%)				Teaching Experience (years)	Percentage of staff with teaching experience
	Teacher	University degree	Teacher Student	Others		
Teacher	83			17*	6.5	86
Counsellor	69			31*	13.8	100
Teaching Assistant	29**	16	9	46***	3.4	46

(*): Extension to teacher education (e.g. master degree); (**): Educator; (***): Includes background as teaching assistants or social workers.

Source: Andersen, S. C. et al. (2014), *2L Rapport: Undersøgelse af Effekten aft Tolærerordninger [2L Report: Study of the Effect of Two-teacher Systems]*, TrygFondens Børneforskningscenter, Aarhus University, Denmark.

The data indicate that in the co-teaching approach, the additional teacher was deployed to peer with the main teacher, and primarily contributed by teaching the whole class or smaller groups. In some cases,

they worked with one or more students outside the class, and they also contributed to the classroom climate by controlling students' behaviour and helping to solve conflicts. Teaching assistants' were used as a support for teachers to cope with academically weaker students, or those with additional difficulties, and their main task consisted in working with individual students or groups either inside or outside the main class. They also undertook tasks such as classroom management and observation of students. To a lesser extent, teaching assistants developed instructional tasks (e.g. instruction during teacher absence). Finally, counsellors primarily developed an advising role in areas such as technical issues, interaction and relationship aspects, and special education issues. The data show that most additional teachers and teaching assistants participated in mathematics and/or Danish language lessons; with slightly more in Danish (three hours per week, on average) than in maths (almost two hours). However, 17% of additional teachers and 32% of teaching assistants reported that they had participated in neither mathematics nor Danish lessons. This suggests that additional teachers were devoted to fewer subjects, while teaching assistants participated in several subjects, depending on students' needs. Finally, data from surveys and case studies indicate that teachers were satisfied with the support received in all three approaches.

Overall, the results indicate that all three approaches (co-teaching, teaching assistants and counsellors) had positive effects on student reading achievement, measured as their progression in annual national test results in the Danish language. However, the three approaches affected student achievement in different ways. The co-teaching approach and the teaching assistant approach had an average positive effect on reading achievement of 6% and 10% of a standard deviation, respectively, yet the difference between the two approaches was not significant. No significant effect of the counsellor on student reading achievement was found. For mathematics achievement, no significant effect was found from any of the approaches. When examining different groups of students, teaching assistants and additional teachers were found to positively affect girls' reading achievement, whereas only teaching assistants were found to have a positive effect on boys' reading achievement. Furthermore, the teaching assistant approach was found to have the greatest positive impact on reading achievement among those children with less educated parents (both parents with, at most, ten years of schooling[12]). In this case, teaching assistants enhanced student achievement by 23% of a standard deviation, thus offsetting about half of the achievement difference observed between students whose parents have no more than ten years of schooling and those children of parents with more than lower secondary education. This may be explained by the fact that teaching assistants were mainly dedicated to supporting low-performing students. Finally, the use of support staff had a positive impact on achievement in classes with students with special needs.

4.2. Expenditure on learning support staff and student achievement

Recent research from England (Brown and Harris, 2010) assessed the relationship between increases in expenditure on learning support staff (teaching assistants, TAs)[13] and changes in student attainment. Data were collected from 83 public secondary schools in England[14], including: school expenditure on staff between 2005-2006 and 2008-2009; Full-time Equivalent[15] (FTE) numbers of staff and changes in them

[12] In Denmark, compulsory education lasts 10 years.

[13] Data was collected on teachers, teaching assistants, cover supervisors, librarians, technicians (e.g. ICT, Science, Art, Music) and pastoral support staff (e.g. assistant house, behaviour support workers).

[14] It should be noted that the average attainment of the selected schools was substantially above the national average.

[15] Calculated as the total number of hours provided by staff divided by the standard number of hours required in a full time contract (25 hours).

between the same periods; and changes in student attainment[16] at Key Stage 4 (ages 14-16) over the same period. No data were collected on the actual deployment of the staff.

Using regression analysis, the authors found a statistically significant relationship between increases in expenditure on TAs between 2005 and 2008, and improved student attainment. For a 100% increase in the expenditure on TAs, students attainment increased by 19%, explaining 3% of the variation between schools (Rsq = .034). No significant relationship was found between increased expenditure on staff other than TAs (including teachers) and improvements in student attainment. Moreover, the results indicated a stronger and more reliable relationship between increases in the absolute number of TAs (FTE) between 2005 and 2008, and student attainment, with an increase in attainment of 37% for a 100% increase in the absolute number of TAs. Finally, the results showed a significant relationship between the total number of TAs in the school in 2005 and in 2008 with improvements in attainment. In addition, the relationship was stronger in 2008 than in 2005, which can be due to the increased density and proportion of TAs in schools, and a more effective deployment of these staff. This suggests that the larger the number of TAs in a school, the stronger the relationship with increased attainment. The authors also assessed the impact of higher level teaching assistants (HLTAs) on attainment, comparing the number of registered HLTAs and the number achieving HLTA status between 2005 and 2008 in each school, to increases in attainment over this period. However, no significant relationship was found.

Overall, the authors suggest that increasing the absolute number of TAs in schools is more effective than increasing the expenditure on any other staff. However, due to the lack of information on TAs' deployment, the mechanism through which TA numbers improve student attainment is unclear.

[16] Calculated as the proportion of students who achieved the national standard threshold of 5 or more on the General Certificate of Secondary Education (GCSE) in English and Maths.

5. CONCLUSION

In the last two decades, learning support staff have become an essential part of the education workforce in many countries, and countries like the United Kingdom and the United States have almost doubled the average ratio of support staff to achieve a ratio of 15.5 teacher aides and teaching/research assistants per 1000 students.

The existing literature shows that teachers generally value the contribution that learning support staff make to teaching and learning. Learning support staff have a complementary role in regard to the teaching process, but also substitute teachers in a set of non-teaching and routine tasks, such as taking on routine teaching-related tasks (e.g. lesson preparation) to reduce teachers' workload and allow them to focus on teaching. The literature also indicates that the work of these staff can reduce pressure on the teacher in relation to classroom management by helping the teacher cope with student misbehaviour, thus creating a more productive classroom atmosphere. Furthermore, learning support staff can pair with teachers during class in a complementary way, potentially providing the most effective teaching in every different context.

There are several ways through which learning support staff can have a positive impact on student attainment. With an additional professional in class, students receive more individual help and attention from either the support staff or the teacher. Therefore, students' learning needs are more likely to be met, which is likely to lead to greater achievement. In addition, the use of learning support staff enables a more flexible learning environment, and groups of different size and characteristics can be created to better respond to students' needs and grant increased engagement and inclusion of children in classroom activities. The use of learning support staff in schools can also contribute to a greater inclusion of immigrant students and parents. Furthermore, learning support staff can cover teachers in their absence, taking responsibility for classroom instruction, and thus maintain a high intensity of instruction and avoid interruptions. Finally, the use of learning support staff can be an effective strategy to reduce grade repetition, which is a costly and ineffective approach to address learning difficulties.

Research provides mixed evidence of the effect of learning support staff on student learning. No significant differences in student achievement were found by a large-scale study examining data from Tennessee's Project STAR between classes with or without learning support staff. Similarly, an English study analysing the effect of trained learning support staff to help students underachieving in mathematics using a quasi-experimental design didn't provide support for the use of learning support staff to improve the achievement of low-performing students. The Deployment and Impact of Support Staff (DISS) project, conducted in the United Kingdom, which analysed the impact of learning support staff on teachers, teaching and student learning, behaviour and academic progress, also found very little evidence that learning support staff contribute to improving student approaches to learning, such as motivation, confidence, independence or concentration, and also found that these staff could have a negative effect on student academic progress.

However, there is also evidence that, depending on the approach, learning support staff's work can have a positive impact on student learning. Their support is perceived by teachers to reduce stress and workload and improve their job satisfaction. Teachers also report that learning support staff positively contribute in terms of increased teaching and curriculum coverage, through providing specialist help and reducing administrative tasks, and granting the teacher more time for planning classes. Also, recent research suggests that when used to support specific students and/or through structured interventions, learning support staff can be effective at improving student attainment. Approaches such as one-to-one interventions directed towards struggling students in the United Kingdom have been shown to positively affect student learning. Similarly, randomised controlled trials conducted in Denmark suggests that the use

of additional staff in classes, either in co-teaching settings or as support staff, benefits student learning and well-being, especially for those students who have low levels of performance. Finally, a recent study from the United Kingdom indicates that an increase in the absolute number of learning support staff in schools improves student attainment, particularly among disadvantaged students, who tend to experience low levels of well-being in schools and lower levels of attainment. Overall, these studies agree that learning support staff can contribute to student learning and well-being through, among others, a better classroom climate, individualised attention and increased overall teaching.

This literature review also noted the importance of implementation for the effective use of learning support staff in schools. Learning support staff are often the professionals who support students with difficulties and low levels of performance, and they are increasingly undertaking more and more pedagogical responsibilities. In this context, training should provide these professionals with the adequate skills and competences to be able to face these challenges effectively. In addition, the literature suggests that this training should be based in team work approaches and integrated into classroom practice from an early stage. If not managed effectively, the way learning support staff are used in schools can lead to fragmented and inconsistent support. The school management should ensure a clear definition of teachers/learning support staff's respective roles, and provide enough time for them to plan and prepare classes and engage in reflection. The inclusion of learning support staff in the school's decision-making, as well as in the delineation of teachers' and learning support staff's roles, could be an effective strategy to achieve this. In addition, learning support staff may not always have the desired positive effect if care is not taken with the practices used, and their work can negatively affect their participation and engagement in the class experience. Learning support should ensure the inclusion of all children in classroom practice, combining a diversity of approaches and practices.

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