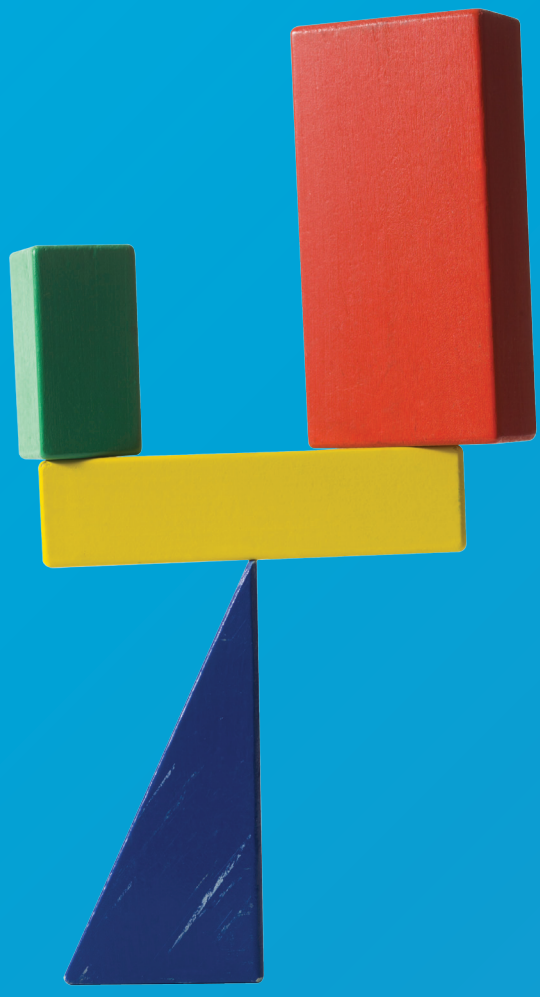
INTERNATIONAL

GUIDE TO

STUDENT ACHIEVEMENT



EDITED BY JOHN HATTIE
AND ERIC M. ANDERMAN

ROUTLEDGE

International Guide to Student Achievement

The *International Guide to Student Achievement* brings together and critically examines the major influences shaping student achievement today. There are many, often competing, claims about how to enhance student achievement, raising the questions of "What works?" and "What works best?" World-renowned bestselling authors, **John Hattie** and **Eric M. Anderman** have invited an international group of scholars to write brief, empirically-supported articles that examine predictors of academic achievement across a variety of topics and domains.

Rather than telling people what to do in their schools and classrooms, this guide simply provides the first-ever compendium of research that summarizes what is known about the major influences shaping students' academic achievement around the world. Readers can apply this knowledge base to their own school and classroom settings. The 150+ entries serve as intellectual building blocks to creatively mix into new or existing educational arrangements and aim for quick, easy reference. Chapter authors follow a common format that allows readers to more seamlessly compare and contrast information across entries, guiding readers to apply this knowledge to their own classrooms, their curriculums and teaching strategies, and their teacher training programs.

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Contents

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One of our first tasks was to select editors for each section, and this is one task where it became evident we had made great choices Each editor recommended entry titles, world-class scholars, attended to the details, and added so much value to the total corpus. Thanks to Mimi Bong, Andrew Martin, Catherine Bradshaw, Julianne Turner, Anita Woolfolk Hoy, Rayne Sperling, Christine Rubie-Davies, and Julian Elliott for their outstanding work. We also are deeply indebted to Ashley Marietta-Brown, who spent countless hours communicating with the editors and authors, and keeping us organized.

Close to 250 authors contributed to this guide, and every one of them responded to our sometimes many requests. Asking academics to write less than about 2,000 words on their passion and, in some cases, their life work requires remarkable discipline and sometimes good humor—these attributes were consistently evident in all interactions.

For both of us, the learning has been enormous—we have learned about the main ideas from the best in the world, we have found new friends and colleagues in our section editors, and we have enjoyed working together across continents in forming and creating this volume. We met (Skyped) Sunday nights, and once again the time for creating books comes out of family time, hence our gratitude to our families for supporting us—thanks to Janet, Joel, Kyle, Kieran, Bobbi and Jimmy (from John) and to Lynley, Sarah, and Jacob (from Eric).

Introduction

John Hattie and Eric M. Anderman

The purposes of schooling have been debated from the early days of Plato to the divergent prescriptions put forth by modern day political parties. Some want to foster the development of 21st century skills while others urge greater attention to basic literacy and numeracy. Given the ubiquitous presence of the Web, there are calls for schools to develop critical thinking and evaluation skills. Likewise there are expectations that schools will develop positive attitudes, physical fitness, belongingness, respect, citizenship, and the love of learning; that is, the attributes of character development. Perhaps the most common expectation, however, is the development of achievement, and that is the focus of this book.

For as long as schools have existed, enhanced student achievement has been the most important outcome of schooling at any level. While there are many definitional contests about what "achievement" means (see Guskey, entry 1), there are also many, often competing, claims about how to enhance student achievement. Often it seems that the various claims are talking across each other, that there is evidence to defend almost any method (short of unethical ones). Every teacher seems to have a recipe for enhancement, and the variability among these recipes is enormous. This has led to an "everything goes" attitude toward interventions where permissive policies allow each teacher to introduce his or her own methods and interventions.

Likewise, school leaders will sometimes introduce some innovation or "new idea" to enhance achievement knowing that these methods have not worked elsewhere. The proverbial argument is that "it is different here" and just needs some local adaptation. To quote Thomas (1979, p. 159) "virtually anything that could be thought up for treatment was tried out at one time or another and, once tried, lasted decades or even centuries before being given up. It was, in retrospect, the most frivolous and irresponsible kind of human experimentation, based on nothing but trial and error, and usually resulting in precisely that sequence." Thomas was referring to the study of medicine and noted how evidence-based medicine was the mechanism for driving out dogma, as dogma does not destroy itself.

One of us (Hattie, 2009, 2012) has documented the effects from over 900 meta-analyses related to achievement. The evidence shows that if the bar is set at the standard of, "Can we enhance student achievement?" then 95%+ of all interventions are successful! The question thus is not "What works?" but "What works best?" Fortunately, there is a massive amount of evidence with which to address this question. The 165 entries in this book provide a reasonable sample of this evidence. Later editions will provide even more.

Given the many influences that can have positive effects on student achievement, the constant question every system, school, and teacher should ask is *how much* each influence impacts on achievement growth. The impact can then be compared to typical effects and can be used as a benchmark to seek even greater impact. Furthermore, there may be critical moderators to the claims about what are the best influences on achievement. For example, is there a need for different programs for boys and girls, for gifted and nongifted, for minority and majority, for low and high socioeconomic status? Despite the hunt for moderators, the evidence for their presence is often difficult to document, particularly in a replicable manner. There is no doubt, however, that the search for these moderators is critical. The entries in this book note some moderators, but they are not as prevalent as many believe. There is little evidence, generally, for local adaptations, that is, for modifications based on "we are different here." While the search for moderators is legitimate and should not cease, the search for evidence is the key, not a belief in moderators. Thus the mission of this book is to assemble and to critically examine the many possible influences shaping student achievement, to seek evidence where there are moderators, and to consider the implications for school and classroom practice.

This book is termed a *guide* and a major reason is to distinguish it from the many handbooks that are available. Handbooks typically have denser, 20+ page chapters whereas this Guide aims more for quick, easy reference. It aims to provide guidance based on the best available evidence in this Guide, and to this end we have invited an international group of scholars to write brief, empirically supported articles that examine predictors of academic achievement across a variety of topics and domains. As readers will see, achievement is operationalized somewhat differently across domains. Thus achievement in literacy may not be measured in the same way as achievement in physical education. Chapter authors represent an array of prominent scholars who provide up-to-date empirical examinations of variables that are related to academic achievement.

In all but the first and last sections, authors follow a common format that allows readers to more easily compare and contrast information across entries. Each chapter begins with a brief "Introduction" to the topic. This is followed by the main "Research Evidence" section that summarizes empirical research related to achievement in that particular domain. The final section concludes with a "Summary and Recommendations" section that summarizes the main takeaway messages from the chapter and offers recommendations for practice, policy, and possible future research.

A brief overview of the book's nine sections follows.

Section 1: Understanding Achievement: Edited by Eric M. Anderman (Ohio State University) and John Hattie (University of Melbourne)

Achievement is not a straightforward concept. As Guskey notes in the first entry, student achievement is the basis of nearly every aspect of education, but there is no shared understanding of what it is. The current debates about "curricula" indicate this contestation. Achievement can differ across subjects, in complexity (e.g., from surface to deep understanding), in forms of evidence (e.g., essays, performances, constructions), can be seen from an attainment versus improvement perspective, can relate to what we know, do, and care about, and can change in meaning as students progress from early childhood to elementary, high school, higher education, and into adulthood. It is also the case that achievement does not exist in isolation. Attitudes can affect achievement just as achievement affects attitudes. The search for causes, influences, and effects of achievement are voluminous, as the entries in this book illustrate.

Guskey opens with a discussion of the many, hotly contested meanings of achievement and shows how the lack of a shared definition often defaults to some standardized test. He then focuses our discussion of achievement on what takes place in established instructional environments, specifically in classrooms and schools. Of the many dimensions of achievement the most commonly used demarcations are between cognitive, affective, and psychomotor. These, however, are also multifaceted. For example, cognitive can relate to subject matter knowledge and understanding (e.g., history, science), to understanding critical or civics thinking, to knowing about one's culture, society, and social mobility, to participating in learning events (e.g., raising rabbits, watching falling stars), and to the development of key competencies (e.g., managing self and collaborating with others). And hovering above everything are debates related to the uses of achievement (e.g., in developing character) and their use in examinations which can open or close future opportunities for the student.

There are also important distinctions between attainment and improvement or between proficiency and progress. Currently, there is pressure throughout the world to demonstrate that all or most students reach prescribed levels of attainment. In any large cohort of students (especially at the national level), it is common to find that achievement in school subjects is normally distributed; that is, as many above as below the cohort mean. Expecting most or all students below the mean to subsequently perform above the mean is unrealistic because standards tend to be set above the average. Schools that do not have all their students above the mean are often identified as problematic and in need of intervention. Further, it is not uncommon for these schools to include a heavy population of students from lower socioeconomic areas thus making it more difficult to achieve a common high standard. Conversely, if improvement or growth is featured, then schools with a heavy population of students from lower socioeconomic backgrounds may be much more successful. It may also be the case that schools with a heavy population of students from higher socioeconomic backgrounds may have many above the the mean but show few who make adequate progress.

Each of the subsequent sections contains entries on the major influences on achievement. The term *major* refers here to the most often discussed or used influences and does not imply greater impact. Entry writers were advised not to overuse meta-analyses and effect sizes, but to be inclusive in their review of studies across many methodologies (including qualitative studies). Being unable to include every possible influence, we have focused on those that seem to have a significant impact on achievement.

Section 2: Influences from the Student: Edited by Mimi Bong (Korea University)

This section focuses on what the learner brings to the achievement situation; that is, their phases of development, their health, gender, personality, and attitudes. Not only are their goals, levels of concentration, and persistence important in terms of how, when, and how often they engage in learning, but these elements can also be significantly modified by schools. Some students have greater opportunities to learn based on the success of their prior learning experiences, their cultural aspirations and influences, and their physical and developmental differences. Entries in this section focus on students' developmental characteristics, their motivation (e.g., self-efficacy, attributions, and social motivation), and on students with special needs.

Section 3: Influences from the Home: Edited by Andrew Martin (University of Sydney)

There is much debate about the influence of the home, and the entries in Section 3 outline many of the most important ones. Whereas these factors may be critical to many students' academic success, it is noted that their effects are variable. Further, once students arrive at school, schools are asked to make improvements in attainment and growth notwithstanding home differences. When schools were made compulsory, the argument was that experts (educators)

could enhance learning in what societies considered valuable ways, as expressed in the curriculum. Now, however, there is recognition of the need for home–school partnership and parents are being asked to take more responsibility for the success of their child's learning. Questions are often asked, for example, about the effects of different family compositions (e.g., single, two parent, resident or nonresident fathers), the influence of resources in the home (e.g., socioeconomic influences, home environment, maternal employment, television), and the various ways parents can interact with the school. The entries in this section address those issues and should be of interest to all stakeholders in education, including concerned parents.

Section 4: Influences from the School: Edited by Catherine Bradshaw (Johns Hopkins University)

The influence of variability among schools can be quite different across countries. For example, the variance between schools in New Zealand and Australia is among the lowest in the world, while the variance between schools in Germany and South Africa is much higher. Given two students of similar abilities, it matters very little what schools they might attend should they move between New Zealand and Australia, whereas school differences can be quite critical when moving between Germany and South Africa. In some countries (e.g., the United States), variability in students' school performance is used as a marketing tool by realtors to lure families into neighborhoods known for having high achieving schools.

Within all countries there are major policy debates about the nature of schools, especially about initiatives concerning their mission, direction, and use of finances. School leaders and policy makers tend to show special interest in the *visible* arrangements of their schools such as their physical configuration, class sizes, within or between ability groupings, single sex vs. co-ed enrollments, the extent of summer classes, the climate of a school, the presence of para-professionals, extracurricular and service learning programs, and grade retention or promotion standards. National and district debates also center around alternative forms of schooling such as those found in charter schools, private schools, inclusive schooling, and faith based schooling. The entries in this section offer rich information for school leaders to work through as they seek to maximize student achievement and teacher development.

Section 5: Influences from the Classroom: Edited by Julianne Turner (University of Notre Dame)

Perhaps the greatest concern of educators is how to organize their classrooms to ensure effective instruction for all students. Thomas Good and Jere Brophy noted in their classic text that classrooms are one of the most important entities to consider when thinking about students' education (Good & Brophy, 1987). There are many configurations when setting up classrooms, such as tracking and acceleration, and within each, the management of classrooms is critical—maintaining control and a high sense of fairness are necessary but often not sufficient conditions for learning to occur. When students are grouped in classrooms, this leads to important questions as to the peer effects on learning, and the ways teachers can develop collaboration as well as maximize students' motivation to maximize learning among peers. In addition, the instructional practices that are selected for any particular group of students and implemented at the classroom level have powerful effects on student achievement.

Section 6: Influences from the Teacher: Edited by Anita Woolfolk Hoy (Ohio State University)

After accounting for the variance among students, the next most powerful influence on student achievement is the teacher. This means that there is considerable variation in the effects that teachers have on students' academic achievement. Every student is aware of these differences, but school policy often assumes that teacher variance is not sufficient to be incorporated into policies. This leads to policies in which all teachers are grouped together as if they were all similar in their effects.

Research relating to the training of teachers and their subsequent impact on students' learning is an underresearched topic. Levine (2006, p. 109) described teacher education as the "the Dodge City of the education world. Like the fabled Wild West town, it is unruly and disordered." There are many claims about the importance of teacher content knowledge, intelligence, professional identities, beliefs about achievement and teaching, motivation, enthusiasm, efficacy, and expectations. Certainly the relationship between teachers and students lies at the heart of the learning experience in most situations. This section examines how these factors relate to the quality of teaching and also looks at some of the methods for studying teacher effectiveness, including the National Board for Professional Teaching Standards.

Section 7: Influences from the Curriculum: Edited by Rayne Sperling (Pennsylvania State University)

The stated curriculum is important but, as noted in the introductory section, there are many other outcomes of schooling not included in most curricula. Although reading and numeracy are central in most countries' stated curricula, there are well debated and contentious issues as to what is to be included within these domains. Other curricula include writing, languages (native and bilingual), social skills, values, social studies, drama and the arts, health, and various extracurricula domains. Debates also include how best to implement major curricula, such as activity learning, individualized instruction, and creativity methods.

Section 8: Influences from Teaching Strategies: Edited by Christine Rubie-Davies (University of Auckland)

Most teachers develop a method of teaching that seems to work for them and then continue to refine this method over their careers. This does not stop those responsible for faculty development programs from introducing alternative methods, and in some cases, requiring the use of a single school-wide method. Some of these methods relate to specific teaching programs such as mastery learning, problem-based learning, reciprocal teaching, direct instruction, simulations, cooperative learning, programmed instruction, inquiry based teaching, or co- or team teaching. Other less programmatic methods include concept mapping, peer tutoring, multimedia learning, problem solving, individual instruction, computer-based learning, and adjunct aids.

Another set of teacher influences includes specific actions such as questioning, use of worked examples, metacognitive strategies, use of feedback, cognitive task analysis, and matching methods or styles of learning to specific groups of students. And finally, teacher influences include teaching students how to learn on their own via study skills, time on task, frequent testing, goal setting, spaced vs. massed practice, self-verbalization, and self-questioning. This lengthy section examines the most prevalent of these methods knowing that the list will only grow longer as the learning sciences continue to broaden.

Section 9: Student Achievement at the National and International Level: Edited by Julian G. Elliot (Durham University)

Among the major influences on achievement, not only in terms of how it is conceived and measured, are the international methods of evaluating achievement impact across countries. There are many systems for such cross-country comparison and their importance in making policy directives is increasing. Because it is not possible to cover achievement in all countries, this section includes a carefully selected sample based on countries with highly variable systems: South Africa, Finland, Singapore, the Russian Federation, Nepal, Taiwan, Canada, South Korea, Ghana, Nigeria, Israel, and South America.

Audience and Presentation

The audience for this book is enormous. It includes anyone who is a serious stakeholder in education: politicians, superintendents, regional officers, school board members, school principals, teachers, professional support staff, academic researchers and their graduate students, and involved parents. In order to be accessible to such a large and divergent audience, entries have been kept as nontechnical as possible and follow a common structure: (a) a brief introduction, (b) major research findings, and (c) implications for practice. The sections have been organized according to their point of origin: student, home, school, classroom, teacher, curriculum, and teaching approach.

This book does not attempt to tell people what to do in their schools and classrooms. It simply provides them with the first ever compendium of research that summarizes what is known about the major influences shaping students' academic achievement across the world. Readers can then creatively apply this knowledge base to their own school and classroom organizational patterns, their curricula and teaching strategies, and their teacher training programs. The entries can, therefore, be viewed as intellectual building blocks to be creatively mixed into new or existing educational arrangements.

We appreciate that it is not inclusive of everything we know about influencing achievement. There are many handbooks that delve far more deeply into the topics presented here. A large number of these can be found on the Routledge website: www.routledge/education.

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4.21

Social and Emotional Learning and Academic Achievement

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Introduction

Student social and emotional development is considered by many to be intrinsically linked with academic learning and achievement (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Social skills are critical building blocks because learning is directed, motivated, and facilitated by positive relationships with teachers, peers, and parents. A student's ability to recognize and regulate emotions is also essential, as unmanaged emotional stress can detract from engagement in learning opportunities and hinder academic progress over time (Elias et al., 1997). Waters and Sroufe (1983) highlighted the significance of social and emotional competence with regard to students' ability to "generate and coordinate flexible, adaptive responses to demands and generate and capitalize on opportunities in the environment" (p. 80); these factors in turn are linked with academic achievement.

Schools' emphasis on teaching social and emotional skills can be traced back to the 1960s. At the time, much of the programming focused on civic responsibility and moral character development. Over the last two decades the promotion of social and emotional learning (SEL) through school-based universal preventive interventions has emerged as an approach to fostering academic success (CASEL, 2005). The SEL framework incorporates competence-promotion and positive youth development perspectives, and focuses on strengthening protective mechanisms and mitigating risk factors (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002; Guerra & Bradshaw, 2008).

The broader SEL framework features both individual and school-level strategies. At the individual level, SEL programming provides instruction in mastering five interconnected, core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2005; Elias et al., 1997). SEL programs provide the opportunity and structure for students to learn to "recognize and manage emotions, care about others, make good decisions, behave ethically and responsibly, develop positive relationships, and avoid negative behaviors" (Zins, Bloodworth, Weissberg, & Walberg, 2007, p. 192). At the level of the school, the SEL framework can be used to promote social and emotional conditions as necessary for learning and academic achievement (Osher et al., 2007), including physical and emotional safety, school connectedness, social emotional learning, and a climate of high expectations for achievement and behavior. Implementation of SEL programming at the individual and school level is expected to provide a foundation for improved test scores and grades, as well as reductions in behavior problems (Greenberg, 2006).

Research Evidence

Several studies have been conducted over the last 15 years to examine the effects of universal SEL programs on various academic, behavioral, and attitudinal outcomes. A series of meta-analyses and reviews have concluded that universal school-based interventions are generally effective across a diverse range of outcomes, including academic performance (see CASEL, 2005; Catalano et al., 2002; Wilson, Gottfredson, & Najaka, 2001; Zins et al., 2007; cf. Social and Character Development Consortium, 2010). For example, the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2005) reviewed outcomes on 80 SEL programs, with the goal of providing guidance to educators in selecting appropriate SEL programs. Roughly a third of the programs reviewed included components which integrated SEL with academic curricula. All the programs examined produced positive academic outcomes, and 83% resulted in academic gains (Zins et al., 2007). In a meta-analysis of 165 published outcome studies of school-based prevention programs, Wilson and colleagues (2001) found that SEL-oriented programs resulted in reduced drop-out and

improved attendance. In another review of 25 school-based prevention programs, Catalano and colleagues (2002) found that 19 (76%) resulted in statistically significant improvements in academic achievement. The U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA; 2002) report on model prevention programs supporting academic achievement has also documented increased grade point averages, improvements in standardized test scores, and improved reading, writing, and math skills resulting from school-based prevention programs including SEL components.

More recently, a large-scale meta-analysis was conducted of 213 universal, school-based SEL programs serving approximately 270,000 kindergarten through high school students (Durlak et al., 2011). The meta-analysis investigated the effects of interventions to promote social and emotional development on multiple outcomes, including academic achievement. Academic performance measures included grade point averages and standardized reading or math achievement tests. The results demonstrated a significant, 11 percentile-point gain in academic achievement ($p \leq .05$) in comparison to controls. A secondary goal of the meta-analysis was to determine whether existing school personnel could successfully implement SEL interventions; the authors found that SEL programs delivered by teachers were effective across all outcome categories, including academic achievement. While programs delivered by other school staff (e.g., counselors) were effective across fewer outcome categories, those delivered by nonschool staff were least effective and did not significantly improve academic performance.

Although the findings regarding the impacts of SEL programming on academic outcomes have generally been favorable, a recent multisite randomized trial of seven different SEL programs did not demonstrate impacts on student academic achievement, behavior, or social-emotional development (Social and Character Development Consortium, 2010). The report highlighted the importance of the fidelity with which SEL programs are implemented, as prior research documents a clear association between high quality implementation and student outcomes (Domitrovich et al., 2008; Durlak et al., 2011). For example, Durlak and colleagues found that implementation quality was an important moderator of program impact, such that programs implemented with high fidelity produced significant effects across all outcome categories, including academic achievement. In contrast, those programs that experienced implementation problems failed to achieve a positive effect on academic performance and a number of other outcome categories. Further, the authors found that adherence to the following four evidence-based practices moderated program impact: a step-by-step training approach (S), using active forms of learning (A), focusing sufficient time on skill development (F), and having explicit learning goals (E). Programs following all four "SAFE" procedures demonstrated significant effects across all outcome categories, including academic performance, whereas those programs that did not follow all four procedures were only effective in about half of the outcomes.

More empirical research is needed to identify the specific mediators of the impact of SEL programs on enhancing academic outcomes (Durlak et al., 2011). For example, the available research suggests that executive function, a set of cognitive skills necessary for goal-directed behavior such as inhibition and planning, may play an important role by improving cognitive-affect regulation in the prefrontal cortex (Greenberg, 2006). Beyond the individual-level, SEL programs may enhance school environmental supports (e.g., a climate of high expectations for academic performance, and safe, orderly classrooms), teacher practices, and student–teacher relationships, which in turn may translate into improved academic achievement (Catalano et al., 2002; Durlak et al., 2011). There is also a need for additional research on SEL programs at the middle and high school levels, as there are comparatively fewer programs which have been created to be developmentally appropriate for adolescents.

Summary and Recommendations

The research base on SEL and academic achievement has grown over the last two decades and generally presents a strong rationale for educators, policymakers, teachers, and the public to consider incorporating SEL programming into standard educational practice. Empirical findings from several studies and recent meta-analyses indicate that SEL-oriented interventions can directly improve academic performance and related outcomes for student success, such as attendance and drop-out. As a result, there is growing support for SEL programming in U.S. federal legislation, such as the reauthorization of the Elementary and Secondary Education Act.

It is important to keep in mind that these positive outcomes are the result of carefully planned, well-implemented, teacher-taught SEL interventions. To optimize effectiveness, selection of research-based interventions responsive to the target population is key. The CASEL (2005) publication may be a useful starting place to select an appropriate intervention. Schools may also consider training teachers and staff to implement SEL programs, rather than hiring outside implementers, as research indicates that SEL programs taught by teachers and school staff produce the most positive results (Durlak et al., 2011). Schools should also receive adequate technical assistance or coaching when implementing programs in order to ensure high implementation quality (Domitrovich et al., 2008), as implementation problems have been found to significantly diminish the effects of SEL interventions. Finally, schools may consider integrating SEL programming with academic material, as this approach capitalizes on the interdependence of multiple dimensions of human development (Durlak et al., 2011; Zins et al., 2007).

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5.10
Ability Grouping

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Introduction

A fundamental decision that all educational systems must make is whether and how to group their students. Some forms of grouping, such as grouping by age, are commonly taken so much for granted that they are hardly even recognized as an actual decision. However, other forms of grouping are subject to much more controversy. This entry focuses on one such practice, tracking or streaming, which is the division of students into specific sets of classes within a school based on assessment of their academic ability or achievement, so that students attend all their classes with others of a roughly similar academic level. The purpose of this practice is to provide students in each track with a curriculum suited to their current skills and their anticipated educational and career goals. For example, three tracks within a school might be named "academic," "general," and "vocational," or "basic," "college-prep," and "honors," reflecting the kinds of students they enroll and the subject matter taught. School systems vary widely with regard to the extent to which students' and parents' preferences can impact the particular track in which a student is enrolled.

Those who support tracking compared to heterogeneous classrooms argue that it increases learning by allowing teachers to target instruction more precisely to students' existing skills. Specifically, they contend that high- and average-achieving students are better off with tracking because the presence of low-ability students does not limit the kind of material taught or slow their progress and that lower achieving students are better off because they are spared the threat to their self-esteem posed by constant comparison with their higher achieving peers. In contrast, those opposing tracking point out numerous potential disadvantages. For example, sometimes factors like social class or racial/ethnic group membership play a role in track placement, further disadvantaging already disadvantaged students by unfairly concentrating them in stigmatized lower tracks. In addition, low-track students are sometimes taught by less skilled teachers than those in higher tracks, thus potentially further undermining their achievement.

Because tracking and its potentially differential impact on different groups of students has been so controversial, a substantial amount of research has been conducted to illuminate tracking's impact on learning. This is a complex task, presenting major methodological challenges. For example, comparing the academic growth of initially low- and high-achieving students in tracked schools to assess tracking's effect is problematic because initially high-achieving students might well learn more than initially low-achieving students even if they were all in the same classes, leading to misleading conclusions about the impact of tracking.

However, researchers have developed numerous ways to deal with such problems, at least partially. For example, sometimes it is possible to compare the progress of students in school systems using tracking to that of academically similar students in systems not using tracking or in systems that start tracking earlier in students' lives, which allows comparison between the learning of initially similar students in tracked and untracked environments. Also, new and relatively sophisticated statistical procedures have helped to clarify the extent to which any differences found between high- and low-achieving students in tracked schools are due to track effects rather than to initial differences between students.

Research Evidence

Influential reviews of the literature on tracking have quite consistently concluded that tracking widens the gap between initially high- and low-achievers by undermining the achievement of initially low-achieving students (Gamoran & Berends, 1987; Oakes, Gamoran, & Page, 1992). Some have also concluded that tracking further increases the achievement gap by increasing gains among initially high-achieving students (Hallinan & Kubitschek, 1999). Tracking appears to have little impact on average students'

achievement, although this issue has received less attention than tracking's impact on high- and low-achieving students.

These conclusions are generally consistent with the results of research on the impact of both components of tracking: changes in the composition of classes and of the curriculum. Specifically, a substantial body of correlational research suggests that average peer achievement levels are related to individual achievement gains with higher achieving peers leading to more achievement gains, controlling for the individual's initial achievement (Schofield, 2010). Also, a more challenging curriculum itself is likely to be associated with more learning.

It is unfortunate that many studies of tracking do not address the broad issue of whether, overall, tracking increases or decreases achievement, focusing rather on the issue of its impact on the achievement gap between initially high- and low-achieving students. Perhaps this is partly because different forms of tracking may have quite different effects, making it hard to draw any overall conclusions about tracking's impact. For example, schools with less mobility between tracks produce greater inequality and lower academic achievement than tracked schools using more flexible practices.

However, two kinds of studies do speak to this issue. First, meta-analyses generally suggest that the *overall* impact of tracking is small to nonexistent (Kulik & Kulik, 1982; Noland & Taylor, 1986 cited in Wilkinson et al., 1999; Slavin, 1990). Second, studies employing data from large international studies like PISA, PIRLS, and TIMSS have explored the relationship between the age at which curriculum differentiation begins and students' overall achievement, as well as the achievement of different kinds of students. (Although *curriculum differentiation* was typically studied, normally students in these studies were placed in classes, tracks, or schools with different curricula on the basis of their achievement, making findings from these studies relevant here.) One of these studies concluded that both initially high- and low-achieving students are negatively affected by tracking, although low-achieving students were more negatively impacted (Hanushek & Woessmann, 2006). Other analyses of PISA data concluded that reading (but not math) scores are lower in countries that track students early in their educational careers than in those that track them later (Organization of Economic Co-operation and Development [OECD], 2004, 2005). Regarding the achievement gap, analysis of TIMSS data from 54 nations suggests that early tracking increases the achievement gap between students from different social class backgrounds (Schuetz, Ursprung, & Woessmann, 2005).

Overall, it appears that tracking tends to lower the achievement of initially low-achieving students and that in some cases it may increase the achievement of initially high-achieving ones. Thus, the question of what causes such effects arises. Numerous factors, from differences in the financial resources devoted to students in different tracks to the increase in social class and ethnic group homogeneity that commonly accompany tracking, have been suggested.

Another factor that may account for the differential impact of tracking on the achievement of high- and low-achieving students is the way in which tracking impacts teachers' behaviors. Indeed, a major review of the literature concluded that teachers' behaviors are influenced by students' social and academic background in a way that helps to explain school and class composition effects (Thrupp, Lauder, & Robinson, 2002). For example, teachers assign more homework in high-ability classes than in low-ability ones (Oakes, 2005).

An additional factor often implicated in tracking's impact on the achievement gap is the changes it creates in peer group processes. A massive review of the literature from many countries on this topic concludes that although the direct impact of peer effects is very modest, they often impact achievement indirectly by shaping many aspects of the instructional and social environment affecting achievement (Wilkinson et al, 1999)

Summary and Recommendations

The primary rationale for tracking is that it will improve student achievement by allowing teachers to adjust the content and pace of instruction to students' ability level. However, there is very little reason to believe that tracking improves achievement, except for high-achieving students in some cases. Indeed, evidence suggests that it frequently undermines the achievement of initially low-achieving students, thus increasing the achievement gap. Because low socioeconomic status and minority students are more likely to be found in lower tracks (Mickelson, 2001), tracking also decreases the potential of education to foster social equality.

Because of tracking's effects on the achievement gap, many school systems have de-tracked, creating more heterogeneous classrooms. However, consideration of such a change often mobilizes strong opposition on the part of the parents of high-achieving children. School systems concerned about the impact of tracking on the achievement gap that face strong pressures *not* to de-track should consider using flexible modes of ability grouping by subject matter. Schools maintaining tracking systems should (a) use a flexible tracking system that encourages movement between tracks, (b) raise the performance requirements in lower-achieving tracks by providing more challenging work there, (c) make sure that the teachers of lower-achieving students are at least as qualified and experienced as those teaching higher achieving students and that their approach to teaching is designed to stimulate student interest and involvement.

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7.7

Role of Discussion in Reading Comprehension

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Introduction

Engaging students in classroom discussions about texts is thought to be a powerful approach to deepening their understanding of the texts and fostering their general comprehension abilities. Martin Nystrand (2002), one of the leading proponents of discussion as a means of enhancing reading comprehension, defined discussion as the "free exchange of information among students and/or between at least three participants that lasts longer than 30 seconds" (p. 30). However, discussion can be defined more generally as the open-ended, collaborative exchange of ideas among a teacher and students or among students for the purpose of furthering students' thinking, understanding, learning, or appreciation of text (Wilkinson, 2009). Participants present multiple points of view on the topic, respond to the ideas of others, and reflect on each other's ideas in an effort to build their knowledge, understanding, or interpretation of text. Engaging students in discussion about texts may provide an alternative means of fostering students' reading comprehension abilities beyond the explicit teaching of comprehension strategies (Wilkinson & Son, 2011).

To illustrate, the following excerpt is taken from a discussion between a teacher and a small group of 4th-grade students about a story called *Victor*, by James Howe. The story is about a young boy, named Cody, who is incapacitated, lying in a coma in a hospital bed. Cody creates an imaginary world ("The Land Above") inspired by the ceiling tiles in the hospital to help him get through the illness. During his stay in hospital, a mysterious man named Victor visits Cody and tells Cody stories about what his life will be like when he grows up. The teacher and students are trying to understand who Victor is:

Michelle: I think Victor's an angel.
Teacher: You think Victor's an angel? Can you tell me why you think so?
Michelle: Because he, well maybe he comes from like the land above, and that's where he's talking to him. And that's why maybe Cody can't see Victor 'cause he's from the land above and he's talking to him from up there.
Nancy: Maybe's he's just a figure, but he always has this thing on his face that he doesn't have…
Matt: But he, Cody kept saying "three tiles up, two to the left."
Teacher: That was interesting
Andrew: You mean "three tiles down, two to the left."
Nancy: Yeah, he was talking about the ceiling.
Sam: He thought it was a real place where people lived and stuff, but he said the funny thing about it was, he never gave them a name.
Andrew: And also, the reason why I don't think Victor was in the land above, well how could he be talking from the land above because remember when Cody said he could hear him, hear the screeching on the floor from when Victor was pulling up a chair to keep Cody company.
Teacher: So that's. Are you saying that's evidence?
Andrew: Yeah.
Teacher: Interesting.
Andrew: So how could he be from the land above? I mean he could be from the land above, but how could he be talking from the land above?
Matt: But how do you know people can't travel from and to [the] land above?
Nancy: This isn't realistic. This isn't like nonfiction, so anything can happen.

Note that the students had considerable responsibility for constructing their understanding and interpretation of the story. Michelle stated her opinion and the teacher asked a question that probed for the reason for her opinion ("Can you tell me why you think so?") that elicited a variety of responses. Most of the contributions came from students and there were many consecutive exchanges among students

with only brief, occasional comments from the teacher. The students appear to have been genuinely interested in exploring the issue of who is Victor, they asked questions that built on each other's responses, and they challenged each other's views, often using evidence from the text, in a collective effort to make sense of the story. This kind of exchange stands in contrast to the traditional recitation model or I-R-E pattern of classroom discourse in which the teacher *Initiates* a question, students *Respond*, and the teacher *Evaluates* the response. In a recitation model, the teacher controls the direction of the discussion and has interpretative authority. Students take a passive role as the teacher shapes and guides the students' learning.

Research Evidence

The origins of discussion as a teaching method can be traced back to Socrates and Plato, though research on discussion about text as a means of enhancing students' abilities and learning has a shorter history. One of the first empirical studies on the topic was a doctoral dissertation by Casper (1964) on the effects of the Junior Great Books discussion program with gifted fifth-grade students as measured by a test of intellectual operation based on the work of J. B. Guilford. The 1980s and 1990s saw a proliferation of approaches to conducting high-quality discussion about text. There are now a large number of discourse-intensive pedagogies that serve to disrupt the traditional I-R-E pattern of classroom discourse in favor of more open-ended, collaborative exchanges of ideas among participants for the purpose of improving students' comprehension of text (e.g., Beck & McKeown, 2006; Beck, McKeown, Hamilton, & Kucan, 1997).

Several major studies have shed light on the incidence of discussion about text in teaching of language arts. Commeyras and DeGroff (1998) surveyed the teaching practices of a random sample of 1,519 K-12 U.S. literacy teachers and related professionals and found that only 33% of respondents reported that they frequently or very frequently had students meet in small groups to discuss literature in their classrooms. Commeyras and DeGroff also found that discussions were more common in elementary and middle school classes than they were in high school classes. In a large observational study of eighth-grade and ninth-grade language arts and English classes in eight Midwestern communities in the United States, Nystrand (1997) found that open-ended, whole-class discussion averaged only 52 seconds per class in eighth grade and only 14 seconds per class in ninth grade. Similarly, in an observational study of 64 middle and high school English classrooms in five U.S. states, Applebee, Langer, Nystrand, and Gamoran (2003) found that the amount of time spent on open discussions averaged only 68 seconds per class. Discussions also seem to be relatively uncommon in UK classrooms (Alexander, 2006). Thus, despite educators' recognition that discussion has potential value, discussions about text are quite rare.

What does research show about the effects of discussion on reading comprehension? There have been three major reviews of the role of discussion in shaping students' reading comprehension. Nystrand (2006) provided a broad, narrative review of the role of discussion in promoting reading comprehension. Murphy, Wilkinson, Soter, Hennessey, and Alexander (2009) conducted a meta-analysis of 42 studies of the effects of nine approaches to conducting text-based discussions on measures of teacher and student talk and individual student comprehension and learning outcomes. Murphy, Wilkinson, and Soter (2011) followed up with a review of the literature on the role of discussion in enhancing students' comprehension, focusing on the results of studies in which researchers assessed the effects of discussion on measures that are independent of the texts discussed. Collectively, these reviews show that the effects of discussion vary depending on the nature of the discussion and the type of study. Many approaches to discussion are effective at promoting students' literal and inferential comprehension, producing effects as large as 3.0 standard deviations for single-group design studies and 0.8 standard deviations for multiple-group studies. Some approaches are effective at promoting students' critical thinking, reasoning, and argumentation about text, producing effects as large as 2.5 standard deviations for single-group studies and 0.4 standard deviations for multiple-group studies.

The effects of discussion also vary by type of outcome measure. The effects of discussion have been assessed on measures of teacher and student talk, researcher-developed measures, including complex writing tasks (e.g., persuasive essays), and commercial, standardized tests of reading comprehension. By and large, the effects are greatest on measures of student and teacher talk—student talk increases and teacher talk decreases—they are smaller on researcher-developed measures of comprehension, and they are smaller still on commercial, standardized assessments of comprehension.

A number of other factors seem to moderate the effects of discussion on reading comprehension. One factor is the kind of talk. Increases in student talk do not necessarily result in concomitant increases in student comprehension; rather, it seems that a particular kind of talk is necessary to promote comprehension (cf. Wells, 1989). Productive discussions are structured and focused yet not dominated by the teacher. Students hold the floor for extended periods of time and they are prompted, either by the teacher or by other students, to discuss texts through open-ended and authentic questions. In productive discussions, there is a high degree of uptake where the teacher or students incorporate the ideas of others into their questions and build on each other's ideas. Another moderating factor is students' reading ability. The benefits of discussion seem to be more potent for students of below-average ability than for students of average or above-average ability, presumably because students of higher ability levels already possess the skills needed to comprehend stories. Yet another factor is time spent discussing texts. Interestingly, it seems that the

greatest effects of discussion become apparent in the first three weeks in which discussions are implemented.

Why does discussion seem to benefit students' reading comprehension? As reviews of the research suggest, the key agent is the talk in the discussion. But what does the talk accomplish? The views of scholars who do research on discussion differ on this issue. Some scholars argue that the talk in discussion fosters greater student engagement in making sense of the text (e.g., McKeown, Beck, & Blake, 2009). They contend that the talk serves as a tool to help students organize their thoughts, make inferences, reason, and reflect on the meaning of the text. Some scholars take a more social view of learning and argue that the talk makes students' thinking public, enabling them to learn how others think about the text and prompting them to come to terms with different points of view (e.g., Almasi, 1994). Some scholars take an even more social view of learning and argue that the talk enables students to coconstruct knowledge and understandings together (e.g., Wells, 2007). According to this view, the talk functions as a vehicle that enables students to combine their intellectual resources to collectively make sense of the text. Neil Mercer (2000), a British psychologist who studies language use in the classroom, calls this process "inter-thinking."

Regardless of which perspective on talk is taken, the talk in discussions seems to be especially productive when students are encouraged to consider others' perspectives and to explain, elaborate, and defend their positions; that is, to argue constructively about the issues raised by the text. Students come away from such discussions knowing not only how to think critically and reflectively about the text they have discussed but also, it is hoped, how to apply these ways of thinking to other texts in other reading situations (Reznitskaya et al., 2008).

Taken together, the level of evidence on the effects of discussion on reading comprehension might best be described as moderate (Kamil et al., 2008). Although current studies suggest that discussion improves reading comprehension, producing some medium to large effect sizes, more experimental and quasi-experimental studies of the topic are needed. Much of the research consists of single group prepost design studies or multiple-group studies with criterion measures that afford little confidence in the veracity of the outcomes. It is important to seek evidence of the effects of discussion beyond measures of the effects on learning and comprehension of texts that were the subject of the discussion—measures of students' abilities to comprehend new, unfamiliar texts and to perform novel comprehension-related tasks. It stands to reason that enabling students to engage in discussions about texts should improve their comprehension of those same texts. The more interesting and important question is whether the discussion enables students to acquire the habits of mind to transfer their comprehension abilities to new texts and novel tasks (Wilkinson & Son, 2011).

It is also important to compare the effects of discussion to those of explicit instruction in comprehension strategies (cf. McKeown, Beck, & Blake, 2009)—the currently favored approach to teaching comprehension. There is ample research showing that instruction in small repertoires of comprehension strategies produces robust gains in students' comprehension, especially for students with learning disabilities, and that the benefits can transfer to new texts and novel tasks (Wilkinson & Son, 2011). If discussion-based approaches to teaching comprehension are to gain traction in classroom instruction, more research is needed that compares discussion about text with explicit strategy instruction.

Summary and Recommendations

For teachers, professional development is fundamental to the implementation of productive discussions. As indicated earlier, there is considerable consensus about what is involved in conducting productive discussion about text. But conducting these discussions is not easy (perhaps this why they are so rare in classrooms). Although there is good understanding of their general framework, there is no one way of conducting discussions; there are no prescribed moves that can be applied with all texts and all topics because what a teacher needs to do depends on the momentary ebb and flow of discussion. For most teachers, implementing productive discussions about text requires a substantial shift in their knowledge and beliefs about their role as a teacher and about the role of talk in learning and its potential benefit for students' comprehension. It also requires a deep conceptual understanding of what constitutes productive talk about text. For these reasons, sustained and scaffolded professional development is fundamental to the implementation of productive discussions about text

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8.25

The Impact of Teaching Assistants on Pupils

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Introduction

The Growth of TAs Worldwide. Since the early- to mid-1990s, there has been a phenomenal growth in classroom- or pupil-based support staff. These adults are known in different countries by different names: *teaching assistant, classroom assistant,* and *learning support assistant* are common in the UK; *paraprofessional and paraeducator* in the United States; and *teacher aide* in Australia. In line with the UK Government, in this paper, we use the generic term *teaching assistant* (TA) to cover these equivalent roles.

A recent international survey reports a general increase in TAs employed in schools in the United States, Australia, Italy, Sweden, Canada, Finland, Germany, Hong Kong, Iceland, Ireland, Malta, and South Africa (Giangreco & Doyle, 2007). We are also aware of increases in use of TAs in New Zealand. The growth and numbers of TAs seem most pronounced in the UK. In 2011, TAs comprised a quarter of the total school workforce in state schools in England, and over half of all support staff. TAs are therefore now a sizeable part of the school workforce. It also seems numbers of TAs have been increasing at a faster rate than teachers. These data aside, it is difficult to obtain exact figures on the number of TAs and their proportion in the school workforce. There is an urgent need for international data on TA employment.

One principal reason for the growth in TAs worldwide is the way inclusion into mainstream schools has become the favoured means of educating children with special educational needs and disabilities. TAs are seen as integral to this process. Another reason, in the UK at least, was to help deal with problems with teacher workloads—a main contributory factor to the crisis in teacher retention during the 2000s. The English and Welsh Governments in 2003 implemented *The National Agreement*, as it was called, to raise pupil standards and tackle excessive teacher workload, in large part via new and expanded support roles and responsibilities for TAs and other support staff.

There is much debate about the appropriate role of TAs. There is ambiguity because in one sense TAs can help pupils *indirectly* by assisting the school to enhance teaching (e.g., by taking on teachers' administrative duties), but many TAs have a *direct* teaching role, interacting daily with pupils (mainly those with learning and behavioural needs), supplementing teacher input, and providing opportunities for one-to-one and small-group work. This direct instructional role affects boundaries between teaching and nonteaching roles and has been controversial in the UK (Bach, Kessler & Heron, 2004) and elsewhere (e.g., Finland, Takala, 2007; and the United States, Giangreco, 2010).

Given the scale of the increase in TAs, and their direct, educational role, it is vital to ask about the impact of TAs on pupils' educational progress. Worryingly, such evidence is very thin. This chapter, therefore, makes heavy use of the largest study yet conducted on TAs—the UK 5-year Deployment and Impact of Support Staff (DISS) project (Blatchford, Russell, & Webster, 2012)—which was set up to describe the characteristics and deployment of TAs and other school support staff, and to address, for the first time, their impact on teachers, teaching, and pupils.

Research Findings

Impact of TAs on Academic Outcomes. Reviews by Alborz, Pearson, Farrell, and Howes (2009) and Slavin, Lake, Davis, and Madden (2009) show that experimental studies that examined the effect of TAs who deliver specific curricular interventions (mostly in literacy), tend to have a positive impact on pupil progress when TAs are prepared and trained, and have support and guidance from the teacher and school about practice.

However, other experimental studies report negative results. Klassen (2001), in a study of 67 pupils who had a statement of special educational needs (SEN) for a specific literacy difficulty or dyslexia, and who were assigned ad-

ditional support for literacy, found they made less progress than their unsupported peers. Finn, Gerber, Farber, and Achilles (2000) found that there was no compensatory effect of having TAs (extra to teachers) in larger ("regular") classes.

Curricular interventions led by TAs take up only a small part of pupils' school days, and a main limitation of research in this field is the lack of rigorous empirical studies of the impact of TAs when judged in relation to normal forms of deployment under everyday conditions over the school year. Such results were provided by the DISS study (see Blatchford, Bassett et al., 2011; Blatchford, Russell, & Webster, 2012). This used an alternative, longitudinal, and naturalistic design within which the analysis studied effects of TA support (based on teacher estimates and measures from systematic observation) on 8,200 pupils' academic progress in English, mathematics, and science under normal classroom conditions. Two cohorts of pupils in seven age groups in mainstream schools were tracked over one year each. Multilevel regression methods were used to address the independent effect of TA support on pupil outcomes, controlling for factors known to affect progress (and TA support), such as pupils' SEN status, prior attainment, eligibility for free school meals, English as additional language, deprivation, gender, and ethnicity.[1]

The results were striking: 16 of the 21 results were in a negative direction and there were no positive effects of TA support for any subject or for any year group. Those pupils receiving the most support from TAs made less progress than similar pupils who received little or no support from TAs, even after controlling for factors likely to be related to more TA support (e.g., prior attainment and SEN status). Furthermore, there is evidence from the DISS study that learning outcomes for pupils with the highest levels of need, who are typically those who receive the most support from TAs, are worse (Webster et al., 2010). These results are troubling, and we turn to likely explanations once we have looked at other effects.

Impact of TAs on Pupils' Behaviour, Motivation, and Approaches to Learning. It would seem to follow from reports of teachers (Blatchford, Bassett et al., 2011; Blatchford, Russell, & Webster, 2012) that assigning TAs to particular pupils, usually those with problems connected to learning, behavior, or attention, would give these pupils more individual attention and help them develop confidence and motivation, good working habits, and the willingness to finish tasks. Schlapp, Davidson, and Wilson (2003) identify the benefits of classroom assistants more in terms of the range of learning experiences provided and effects on pupil motivation, confidence, and self-esteem, and less in terms of pupil progress. The DISS study found the presence of TAs helped maintain classroom focus and discipline through an extra pair of eyes.

On the other hand, there are concerns that TAs can encourage dependency, because they prioritise outcomes of activities rather than encouraging pupils to think for themselves (Moyles & Suschitzky, 1997). Giangreco (2010) has argued that overreliance on one-to-one paraprofessional support leads to a wide range of detrimental effects on pupils (e.g., in terms of interference with ownership and responsibility, and separation from classmates).

The DISS study examined the effect of the amount of TA support on eight scales representing so called Positive Approaches to Learning (PAL) (see Blatchford, Bassett et al., 2011; Blatchford, Russell, & Webster, 2012); that is, distractibility; task confidence; motivation; disruptiveness; independence; relationships with other pupils; completion of assigned work; and follows instructions from adults. The results showed little evidence that the amount of support pupils received from TAs over a school year improved these dimensions, except for those in Year 9 (13- to 14-year-olds), where there was a clear positive effect of TA support across all eight PAL outcomes.

Impact of TAs on Teachers and Teaching. Although effects of TAs on pupils' academic learning is worrying, it is worth noting that the DISS study consistently showed that TAs and other support staff had a strong positive effect on teachers' job satisfaction, levels of stress, and workload—chiefly by relieving teachers of many of their administrative duties (Blatchford, Bassett et al, 2011; Blatchford et al., 2012). Results from systematic observations also confirmed teachers' views that TAs had a positive effect in terms of reducing disruption and allowing more time for the teacher to teach.

Summary and Recommendations

How do we account for these negative results found by the UK DISS project? One obvious explanation might be that pupils given most TA support would in any case have been likely to make less progress. However, such explanations, in terms of preexisting characteristics of pupils, are unlikely because key pupil characteristics that typically affect progress (and TA support), such as SEN status, prior attainment, and measures of deprivation, were controlled for in the statistical analyses. To be of any consequence, any potential factor would need to be systemic across all year groups and subjects, and related to *both* attainment and TA support.

So, if pupil factors do not appear to be explaining the negative relationship between TA support and pupil progress, what is? The wider pedagogical role model (presented in Figure 8.4) was developed to summarise and interpret other results from the DISS study concerning the broader context within which TAs work, and which are likely to maximise or inhibit their effectiveness.

The WPR model has three key concepts:

1. *Preparedness.* Preparedness concerns the lack of training and professional development of TAs and teachers, and day-to-day aspects of planning and preparation before lessons, and feedback afterwards, which are likely to have a bearing on learning outcomes for pupils.

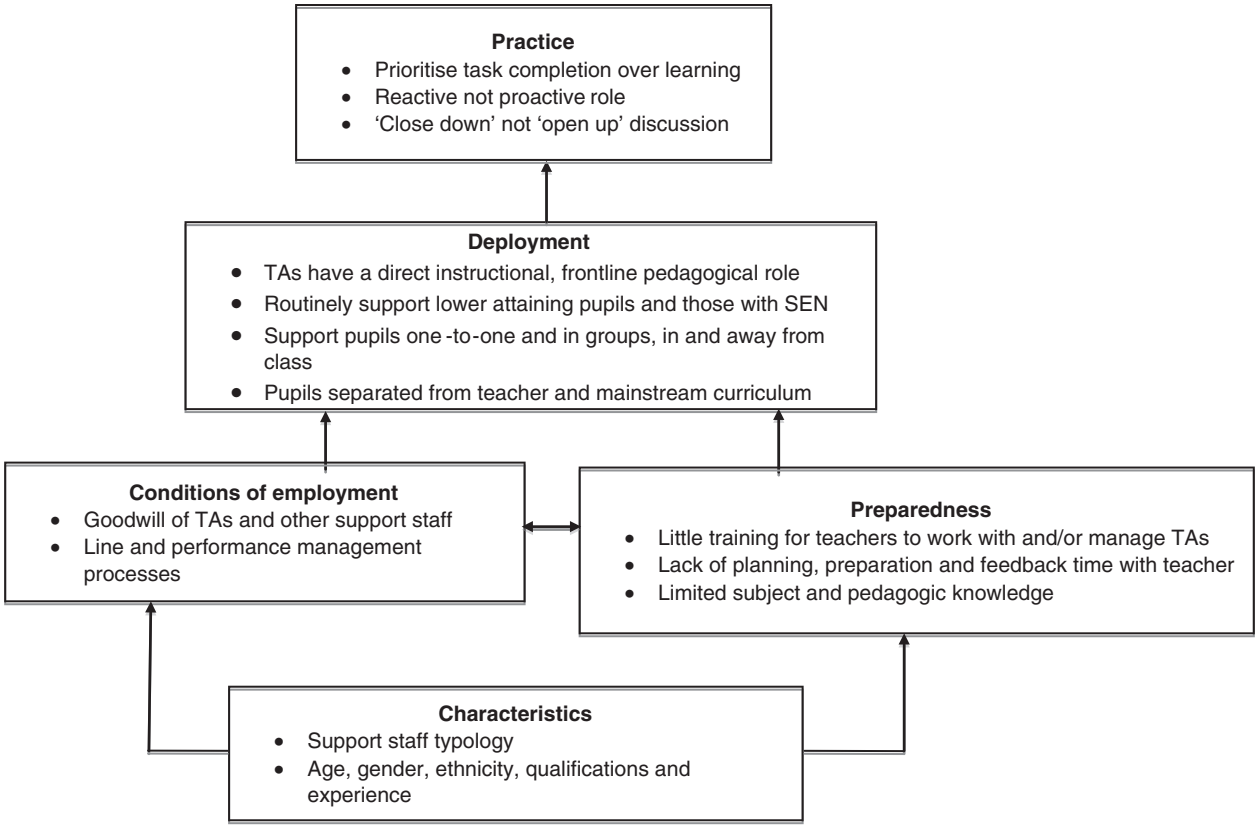

Figure 8.25.1 The wider pedagogical role model.

2. *Deployment.* The DISS study found TAs have a direct pedagogical role, interacting with pupils, usually in one-to-one and group contexts, and predominantly with pupils with SEN. The more severe a pupil's needs, the more interaction with a TA increases, and interaction with a teacher decreases. Pupils' interactions with TAs are much more sustained and interactive than those they have with teachers. This might seem pedagogically valuable, but it also means that TA-supported pupils become separated from the teacher, missing out on everyday teacher-to-pupil interactions and mainstream curriculum coverage (especially where TAs are given responsibility for leading interventions away from the classroom).
3. *Practice.* The DISS findings show that pupils' interactions with TAs are much lower in quality than those with teachers (Rubie-Davies, Blatchford, Webster, Koutsoubou, & Bassett, 2010). TAs are more concerned with task completion than learning; and inadequate preparation leads to TAs' interactions being reactive. In addition, teachers generally open up pupil talk, whereas TAs close down talk, both linguistically and cognitively (Radford, Blatchford, & Webster, 2011).

Conclusions

Though data are limited, there are signs of a huge increase in the use of paraprofessionals working in education, many with front line educational roles. The largest study to date of the impact of TAs on pupils' academic progress has shown that there is a negative relationship between the amount of support from TAs and pupils' academic progress. The findings from DISS, and the work of Giangreco, show that TAs in the UK and the United States have a predominantly remedial role, supporting lower-attaining pupils and those with SEN. Teachers like this arrangement because they can then teach the rest of the class in the knowledge that the children in most need get more individual adult attention. But the more support pupils get from TAs, the less they get from teachers. It is perhaps unsurprising then that these pupils make less progress.

The WPR model summarises the most likely explanations for the DISS study findings. There are likely to be similarities with the ways in which TAs are deployed and prepared in other countries apart from the UK (e.g., Giangreco, 2010; Takala, 2007), although only the DISS project has so far been able to produce data on the effect of TA support on pupil attainment in such a large scale and systematic way.

Future research needs to examine the possible explanatory factors of preparedness, deployment, and practice of TAs in different countries, where TAs may have different characteristics and different systems for deploying TAs may operate.

It is the lowest achieving pupils who benefit most from high-quality teaching. As Giangreco. (2010) has argued, we would not accept a situation in which children without SEN are routinely taught by TAs instead of teachers. The pres-

ent remedial role of TAs lets down the most disadvantaged children. There needs to be a reconsideration of the use of TAs in the context of the inclusion of pupils with SEN.

We have been careful to stress that these effects are not the fault of TAs. Instead, these effects are attributable to decisions made about them, often with the best of intentions, together with inadequate training for teachers on how to work with TAs, and a lack of opportunities for them to properly brief TAs before lessons. There is a clear need for a fundamental rethink of the appropriate pedagogical role of TAs. It is important to address untested assumptions that they help to raise standards. Should TAs have a primary, frontline instructional role? If so, what should this consist of? If not, what would a secondary nonpedagogical role consist of? It also means reexamining the role of teachers to ensure they adopt an inclusive pedagogy, are not reliant on TAs teaching on pupils with SEN.

Note

1. Further details on the rationale for this approach and further justification for claims about the causal role of TAs on pupil outcomes can be found in (Blatchford, Bassett et al., 2011).

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