

EDUCATION

Comprehensive Programme Discussion

This document was prepared for a Comprehensive Programme Discussion with the Yad Hanadiv Trustees in April 2013. We welcome the opportunity to share it with interested readers. A Comprehensive Programme Discussion is a periodic attempt to step back from the details of what we are doing in a programme area. Such discussions present an opportunity to learn about international experience and best practices, and the situation in Israel – and to chart broad directions that may deserve attention.



Yad Hanadiv Comprehensive Programme Discussion in Education is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License](https://creativecommons.org/licenses/by-nc-nd/3.0/)

EDUCATION

COMPREHENSIVE PROGRAMME DISCUSSION

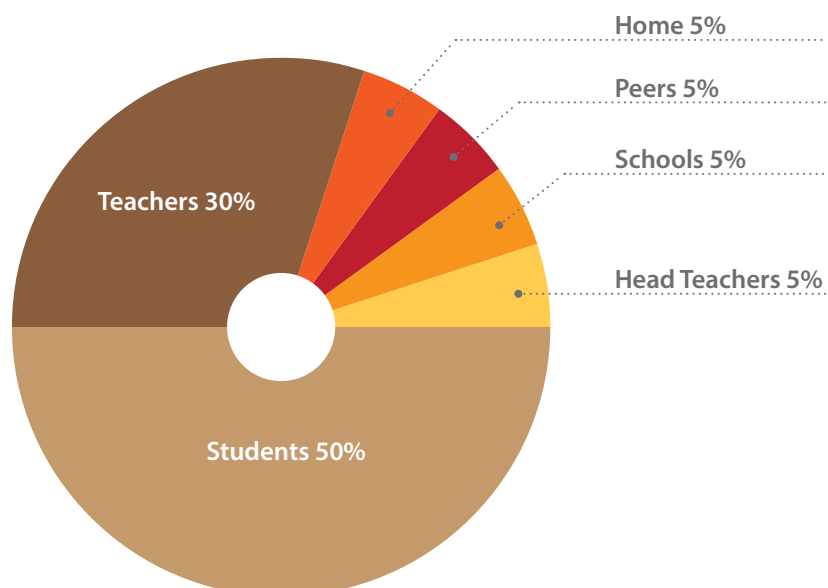
The Role of Education

There is a general consensus that school systems ought to deliver high level education for *all students*, providing them improved future prospects. Professor Ben Levin¹ puts it simply:

Improving student outcomes is the very purpose of the education system. If schools are unable to alter the life chances of the students who come to them, why invest in state education at all? We have a great deal of evidence that schooling does affect those life chances. No matter what background people come from, more education and higher levels of literacy are associated with better outcomes.²

Evidence for Levin's *cri de coeur* is provided by Professor John Hattie's³ meta-analysis⁴ of approximately 50,000 studies – disaggregating the effects on student achievement across 150 distinct variables. The results are shown in the pie chart below:

FIGURE 1: FACTORS INFLUENCING STUDENT ACHIEVEMENT⁵
(PERCENTAGE OF ACHIEVEMENT VARIANCE)



Hattie's large-scale study demonstrates that school-based factors – teachers, head teachers, school characteristics and the composition of students within classrooms ('peers') – account for as much as 45 per cent of the variance in student achievement. While the study confirms that factors unrelated to school are also influential – such as students' prior knowledge and attitudes, or the level of expectation and encouragement from the home – it would seem to repudiate claims that schools can do little to improve student outcomes or to close achievement gaps.⁶

Starting from the premise that state education has the ability to influence student achievement, the question becomes: What distinguishes an effective school system from a less effective one?

Effective Education Systems

An OECD publication entitled *Equity and Quality in Education* defines the highest performing education systems as 'those that combine quality with equity.'⁷ In effective state systems, the pursuit of excellence does not preclude insistence on equity, nor does the commitment to equity give licence to a retreat from high standards of achievement. In terms of educational policy, this means that in effective education systems personal and social circumstances are not permitted to present obstacles to realizing educational potential.⁸

Sir Michael Barber, the lead author of The McKinsey Report⁹ (exploring the characteristics of the top-performing education systems in the world in terms of quality and equity) is unequivocal that the key to effective education is the quality of teaching.¹⁰ As the report states, 'The top-performing school systems recognize that the only way to improve outcomes is to improve instruction: learning occurs when students and teachers interact, and thus to improve learning implies improving the quality of that interaction.'¹¹

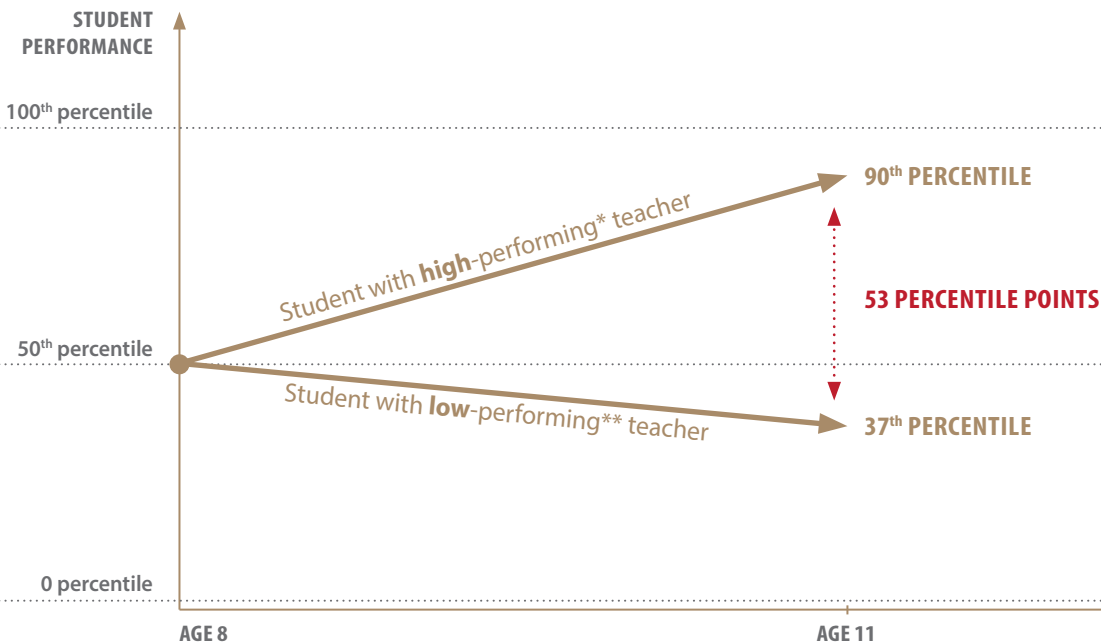
Indeed, Hattie's meta-analysis shows that teachers' attitudes and practices explain 30 per cent of the variance in student achievement. The difference between an effective teacher and a less effective one can be life changing: an average performing eight-year-old student taught by a high-performing teacher for three consecutive years will advance an average of 40 percentile points; taught by a low performing teacher, his ranking will *drop* by an average of 13 percentile points (Figure 2).¹²

A large body of education research attempts to characterize the attitudes and practices of effective teachers.¹³ It consistently demonstrates that effective teachers have a deep understanding and passion for teaching and learning; convey respect for all students; maintain a strong belief in their ability to affect students' knowledge, skills and learning outcomes; hold high expectations of all students; establish ambitious learning goals and transparent success criteria; guide learning through classroom interactions; monitor students' learning and provide formative feedback, and make use of a range of learning strategies.¹⁴

At the system level, the McKinsey Report identifies policies that enhance effective instruction:

1. Implementing clear curricular standards that specify what students are expected to know and be able to do, and aligning instructional and assessment frameworks with these expectations.
2. Getting the right people to teach by requiring high national standards for selection, competitive starting salaries (at or above average, relative to GDP per capita) and removing barriers to dismissing ineffective teachers.
3. Requiring practice-oriented, pre-service teacher preparation programmes which include supervised classroom induction – ensuring preparation for teaching by relying on an experiential rather than a theoretical focus.

FIGURE 2: THE EFFECT OF TEACHER QUALITY ON STUDENT PERFORMANCE



* Among the top 20% of teachers

** Among the bottom 20% of teachers

Analysis of test data from Tennessee showed that teacher quality affected student performance more than any other variable; on average, two students with average performance (50th percentile) would diverge by more than 50 percentile points over a three-year period depending on the teacher assigned to them.

Source: Sanders and Rivers, *Cumulative and Residual Effects on Future Student Academic Achievement*, McKinsey.

4. Nurturing instructional expertise: providing teachers with the knowledge and skills to deliver effective instruction reliably in different circumstances, systematically informing teachers about specific weaknesses in their own practice, and motivating teachers to make necessary improvements.¹⁵
5. Ensuring the selection and development of effective head teachers who are prepared to serve as instructional leaders.¹⁶
6. Providing frameworks and programmes that expect and enable teachers to learn from one another's practices.
7. Using evidence to inform practice and ensuring data-driven decision making at all levels of the system.
8. Providing early identification of, and customized support for students in need.¹⁷

Significant New Developments: Technology in Education

Technology can make important contributions to improving teaching and learning. Innovations such as blended learning (where students learn in part through online delivery of content and instruction), MOOCs (Massively Open Online Courses), so-called flipped classrooms (where, in contrast to the traditional classroom-homework division of responsibility, students learn content concepts online at home and practice applying them in the classroom), are just some of the ways technology is entering classrooms.¹⁸ Even as such technologies enter the existing system, they hold the potential to challenge the traditional goals, assumptions, structures and activities that characterize state education as we know it. In particular, technology has the potential to release schools from constraints of *time* (when and for

how long teaching and learning happen), *space* (where teaching and learning happen), and *personnel structures* (who teaches, and how many students each teacher has). It promises *the availability of real-time and ongoing information about individual student learning* (helping teachers understand the adjustments needed to help more students progress).

9. While these innovations have yet to demonstrate conclusive effects on student achievement,¹⁹ there is no question they are rapidly becoming part of the fabric of state education. The American National Centre for Education Statistics estimates that in the United States, more than a million K-12 students took online courses in school year 2007/08. While this represents only a small part of the 81.5 million US students, the rate of K-12 state school student enrolments in online courses rose by 65 per cent between 2002/03 and 2004/05.²⁰

Educational technologies are more likely to realize their potential if they are perceived not only as technical advances, but as catalysts for rethinking conventional practices of teaching and learning, and hence for revising long-standing policies. Technologies that provide teachers with real-time data on individual student learning will be of limited use in an environment that imposes severe restrictions on teacher access to student information; technologies that afford students access to virtual instruction are thwarted by policies that preclude student learning from 'uncertified' personnel. The flipped classrooms described above only work well if teachers are prepared to customize instruction.

The Israeli Context

See Appendix: Facts about the Israeli Education System

The most salient characteristic of education in Israel is the persistence of achievement gaps. These to date have been little affected by policy reforms or adjustments in practice. According to the results of international tests administered between 1990 and 2005, Israeli students at the primary and secondary school levels performed below their counterparts in most OECD countries, while exhibiting the largest achievement gaps. Results of standardized tests in 2007 and 2009 indicate similar trends; although in 2011 Israeli students scored above the OECD average, achievement gaps remain high.²¹ With regard to high school students, in 2009 46% passed the matriculation examination nationally. Among those who did, there were conspicuous gaps in achievement linked to socio-economic level and ethnicity.

Non-school-related factors certainly help account for these gaps.²² Still, taking into consideration the characteristics of effective school systems set out above, the following systemic weaknesses cannot be ignored:

1. *Clear National Curricular Standards.* Israel lacks a coherent standardized curriculum, making it more difficult to correlate teacher practices with student learning (see Professor Mike [Marshall] Smith's Report at: <http://www.yadhanadiv.org.il/sites/default/files/downloads/resources/Marshall%20Smith%20Report.pdf>).²³
2. *Getting the right people to teach.* In 2005 the Dovrat Commission found that teacher salaries were low, recruitment and selection unsatisfactory and teachers' working conditions in schools inadequate. While the Ofek Chadash (New Horizon) reform (2008) at the primary school level and Oz Letmura (Courage to Change) reform (2011) at the secondary school level begin to address salaries and working conditions, they do not touch standards of recruitment and selection.
3. *Practical pre-service preparation for teachers.* While Israel's colleges and universities provide pre-service programmes for teachers, these tend to be primarily theoretical and do not prepare

teachers to provide effective instruction. The Israeli system offers neither clear goals nor the quality inspection needed to ensure that pre-service programmes produce effective teachers.²⁴

4. *Systematic and ongoing professional development of teachers.* Although the reforms provide professional development opportunities for teachers, and most teachers avail themselves of approved frameworks of professional development, studies suggest that fewer than half of Israel's teachers view current professional development (*hishtalmuyot*) options as helping them to improve their teaching practice.²⁵
5. *Enabling teachers to learn from one another's practices.* Although some local authorities or networks, including those supported by Yad Hanadiv, encourage the sharing of practical knowledge among their teachers, the Ministry of Education does not attend systematically to learning communities of teachers.
6. *Selecting and developing effective instructional leaders.* Avney Rosh, The Israel Institute for School Leadership, established by Yad Hanadiv and the Ministry of Education in 2007, has made significant inroads towards improving head teachers' pre-service preparation and professional development by focusing on instructional leadership. But instructional leadership is known to be more effective when it is carried out as a collaborative effort of head and leading teachers. The Israeli education system does not identify the important role of expert teachers who facilitate the professional development of their colleagues.
7. *Data-driven decision making and practices.* The National Authority for Measurement and Evaluation (RAMA), established in 2006, has, in a short period, enabled data-driven decision making at all levels, profoundly improving the ability of the system to monitor its progress. Still, without an adequate education R&D infrastructure, the system lacks critical information and empirical evidence to support policy-making and teaching practice and to promote the customization of learning. Moreover, there remains 'cultural' resistance to data-driven decision making.²⁶
8. *Early diagnosis and customized support for students in need.* Although Israel suffers from achievement gaps that are among the largest in the world, policies and schools do not adequately focus on identifying and attending to struggling students. Resources are not systematically allocated based on students' educational needs.²⁷
9. *Technology.* The National Programme for Adapting the Educational System to the 21st Century was launched in 2010 to integrate technology into schools and classrooms. The programme has equipped 700 schools with technological infrastructure, and provides technological services and professional development for 30,000 teachers. It is too early to assess the initiative's impact on schools and particularly on teaching and learning, but there are concerns that too much emphasis has been placed on procedural implementation and providing equipment, at the expense of improving teaching and learning.

The following unique features of the Israeli education system compound the complexity of making needed improvements:

- Arab and ultra-Orthodox students are in separate tracks, each with different rules and regulations and unequal resources.²⁸
- Divisions of authority among ministry, district, municipality and school leaders are blurred and bewildering.²⁹
- Changes in Education Ministry leadership and policies occur frequently.³⁰



*The Dorothy de Rothschild
Campus of the Open University*

Yad Hanadiv has a long-standing tradition of significant initiatives in education. Among them are the establishment of **Educational Television** (1966), the **Centre for Educational Technology** (1971), the **Open University of Israel** (1974), the **HEMDA Centre for Science Education** (1988), the **Initiative for Applied Educational Research** (2003) and **Avney Rosha – The Israel Institute for School Leadership**. Established in 2007 as a joint initiative of Yad Hanadiv and the Ministry of Education to serve as a professional hub for head teachers in Israel, Avney Rosha identifies and trains promising school leaders and develops standards and knowledge resources for school management. For more on each of these initiatives, see [Selected Projects](#) in the Yad Hanadiv website.

What this Might Mean for Yad Hanadiv

As we consider how Yad Hanadiv might build upon its substantial past contributions to education, it may be useful to note the varied ways that foundations elsewhere choose to invest in this area.

The **Hewlett Foundation**³¹ strives to raise educational achievement in disadvantaged communities by working to transform accountability frameworks from an emphasis on rote skills to a ‘deep learning’ orientation – testing whether students have acquired the content, critical thinking, problem-solving ability, collaboration, communication and independent learning skills needed to succeed in the twenty-first century global workforce. Their approach is to catalyse changes in national and state assessment frameworks, and through the provision of excellent online learning opportunities, to improve classroom content. In 2011 the Foundation spent \$33 million on education (out of a total of \$202 million in grants paid).

The **Wallace Foundation**³² aims to improve learning and enrichment opportunities for children-at-risk. The foundation works directly with system-level actors to identify vexing problems and build collaborative solutions, such as nurturing instructional leaders in underprivileged areas and supporting frameworks for extended school time and after-school learning. These interventions are carefully studied, and the applicable knowledge is then disseminated so as to enlist educators and policy makers into scaling up what works. In 2011 the Foundation spent \$62 million, of which 77.3 per cent was spent on education – 34.6 per cent on school leadership and 42.7 per cent on after-school activities.

The **MacArthur Foundation**³³ has replaced its ‘Education Programme’ with a ‘Digital Media and Learning Programme’, by-passing state school systems and focusing instead on technological infrastructures and tools in order to catalyse a radical shift in the ways that young people learn. In 2011 the Digital Media and Learning Programme spent \$25 million (out of the foundation’s \$239 million annual grant-making), on developing open-source software and digital learning tools and establishing learning labs in museums.

Although these foundations take different approaches to improving student learning, they all contend with a core set of strategic questions:

- How is success defined and measured?
- Over what period of time can results be accomplished?
- What is the required scale of investment?
- How can impact be maximized?
- Which collaborations and alliances are essential to success?

Israel’s persistent achievement gaps and the weakness in factors known to contribute to effective state school systems offer a rich menu of plausible directions for Yad Hanadiv to consider.

NOTES

- 1 Professor Ben Levin is former Deputy Minister of Education for the province of Ontario. He currently holds the Canada Research Chair in Education Leadership and Policy at the University of Toronto. For more information about Ben Levin and his work, visit: webspaces.oise.utoronto.ca/~levinben/.
- 2 Ben Levin, *How to Change 5,000 Schools: A Practical and Positive Approach for Leading Change at Every Level* (Cambridge, MA: Harvard Education Press, 2010), pp. 50–51. Recently, Prof. Levin was invited by UNESCO to write an abridged version of this, entitled: *How to Bring about Lasting, System-wide Improvement in Schooling Performance*. It can be downloaded at: http://www.iiep.unesco.org/no-cache/news/single-view.html?tx_ttnews%5Btt_news%5D=1146&tx_ttnews%5BbackPid%5D=262
- 3 Professor John Hattie is Director of the Melbourne Education Research Institute at Melbourne University in Australia.
- 4 Meta-Analysis refers to methods that combine results from various studies, so as to identify patterns among results in a statistically valid manner. This is significantly more reliable than the results of separate studies, due to the difficulty of controlling variables and individual biases.
- 5 By *student* he means the skills and attitudes that students bring with them, mostly related to socio-economic background. *Teachers* refers to what teachers know, do and care about. *Home* means the levels of expectation and encouragement provided to the students in their respective homes. *School* means school finance, school size, class size and school buildings. *Head teacher* means the effect of the head teacher on learning through the school climate and culture rather than through direct learning. *Peers* are those with whom the students go to school. J. Hattie, *Teachers Make a Difference: What is the Research Evidence* (2003). See https://www.det.nsw.edu.au/proflearn/docs/pdf/qt_hattie.pdf
- 6 David Berliner, former President of the American Education Research Association (AERA), for example, argues that: 'The achievement gaps between blacks and whites, Hispanics and Anglos, the poor and the rich, are hard to erase because the gaps have only a little to do with what goes on in schools, and a lot to do with social and cultural factors that affect student performance.' <http://www.schoolsmatter.info/2012/10/david-berliner-on-inequality-poverty.html>
- 7 OECD (2012), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, OECD Publishing, 2012, p. 9.
- 8 This definition of K-12 educational goals has been embraced by educational policy makers around the globe, and will serve as a basic assumption in this paper. For criticism of that view, see for example: D. Ravitch, *Education: Achievement Gap Starts before School Starts*, (2011). <http://www.mysanantonio.com/community/northwest/news/article/Education-Achievement-gap-starts-before-school-2213710.php>
- 9 M. Barber and M. Mourshed, *How the World's Best Performing School Systems Come Out on Top*, Chicago: McKinsey & Co., 2007. See <http://mckinseysociety.com/how-the-worlds-best-performing-schools-come-out-on-top/>
- 10 Large bodies of work have demonstrated the crucial importance of teaching. This has been quantitatively reinforced by studies linking the quality of teaching with student achievement. For example: *Visible Learning* by John Hattie, 2009; *Classroom Instruction that Works* by Robert Marzano, 2001; *Teacher Quality and Student Achievement* by Linda Darling-Hammond, 1999.
- 11 M. Barber and M. Mourshed, *Ibid.*
- 12 Individual student information is linked to specific teachers allowing estimation of teacher effectiveness, in comparison to other teachers (based on the TVAAS database, which contains six million student test records from 1991 to the present).
- 13 For rigorous evidence based on large-scale studies, see for example: *Visible Learning* by John Hattie, and *Classroom Instruction that Works* by Robert Marzano.
- 14 See for example Hattie's meta-analysis at: <http://www.educationalleaders.govt.nz/Pedagogy-and-assessment/Building-effective-learning-environments/Teachers-Make-a-Difference-What-is-the-Research-Evidence> and Marzano's meta-analysis at: http://www.marzanoresearch.com/research/meta_analysis_database.aspx
- 15 See also R. Elmore, *School Reform from the Inside Out*, Cambridge, MA: Harvard Education Press, 2004.
- 16 See also K. Leithwood, K. Seashore Louis, S. Anderson and K. Wahlstrom, 'Review of Research: How Leadership Influences Student Learning', The Wallace Foundation (2004). <http://www.wallacefoundation.org/knowledge-center/school-leadership/key-research/Pages/How-Leadership-Influences-Student-Learning.aspx>
- 17 See also Levin, *How to Change 5,000 Schools*, op. cit.
- 18 For a review of these technologies, see: www.nmc.org/pdf/2012-technology-outlook-for-stem-education.pdf

- 19 Surprisingly, only a few rigorous research studies of the effectiveness of online learning for K–12 students have been published. When aggregated, the studies found that, on average, students in online learning conditions performed moderately better than those receiving face-to-face instruction. The difference between student outcomes for online and face-to-face classes was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face. The meta-analysis concludes that: 'In light of this small corpus, caution is required in generalizing to the K–12 population because the results are derived for the most part from studies in other settings (e.g., medical training, higher education): See: *US Department of Education, Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, 2009. <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf> As to OECD countries, available data suggest that both the intensity of usage (i.e. the amount of time technology is used) and the quality of usage (i.e. the variety and relevance of the technology used) are still low. For the OECD review, see: http://www.oecd-ilibrary.org/education/pisa-2009-results-students-on-line_9789264112995-en.
- 20 A. G. Picciano and J. Seaman, *K-12 Online Learning: A Survey of School District Administrators*, Needham, MA: The Sloan Consortium, 2007. http://sloanconsortium.org/sites/default/files/K-12_Online_Learning_1.pdf
- 21 In January 2005 The National Task Force for the Advancement of Education in Israel (The Dovrat Committee) submitted a comprehensive report on the state of education to the Government. For the English version of the report, see http://www.knesset.gov.il/docs/eng/dovrat_report_eng.doc. More recently, on the 2007 TIMSS test (<http://timss.bc.edu/timss2007/mathreport.html>), Israeli students' scores were unsatisfactory and Israel displayed a high level of variance based on socio-economic and ethnic factors (see Appendix II). On the 2009 PISA (<http://www.oecd.org/pisa/pisaproducts/48852548.pdf>), Israeli students scored well below international averages in reading, maths and science, and once again Israel demonstrated dramatic variation across socio-economic backgrounds and sector affiliations. Even though the results of the recent national standardized test (*Meitzav*) show improvement in student achievement, the gaps remain steady (see Appendix IV). In addition, on TIMSS 2011, Israeli student averages stood at 516 – about 50 points higher than the average score. While some attribute these results to new policies affecting the quality of teaching and learning, others maintain they are merely the result of better preparation for these specific tests. It is still too early to conclude whether these results constitute a trend of improvement.
- 22 The Adva Centre, for example, argues that achievement gaps are, to a large extent, a result of a market-oriented education system, combined with social policies that increase inequality between different sectors within society. S. Svirsky, S., and N. Dagan-Buzaglo, *Exclusion, Inequality and Loose Control: The State of Israeli Education*, Tel Aviv: Adva Centre, 2009.
- 23 Professor Mike (Marshall) Smith visited Israel on 2012 at the invitation of Yad Hanadiv and submitted a report about the Israeli education system. Among its central themes was the lack of a coherent national curriculum. The report is available online at: <http://www.yadhanadiv.org.il/sites/default/files/downloads/resources/Marshall%20Smith%20Report.pdf>
- 24 The Dovrat Report, 2005. See http://www.knesset.gov.il/docs/eng/dovrat_report_eng.doc.
- 25 S. Avidor, 'The Necessary Change in Characteristics for Teaching Candidates, in their Training and Professional Development', in T. Kfir and T. Ariav (eds), *The Crisis in Education towards Improved Teacher Training*, Hakibbutz Hameuchad: Van Leer Institute, 2008, pp. 145–175 [Hebrew].
- 26 In 2007 Yad Hanadiv established a Visiting Committee for the purpose of investigating the relationship between education research, policy and practice in Israel. Michael McPherson (Chair), President of the Spencer Foundation, Professor Bob Schwartz of Harvard University and Professor Michal Beller, Director of the National Authority for Measurement and Evaluation in Education (RAMA) submitted the McPherson Report in 2008. The report elaborates in detail the insufficiency of applicable educational research in Israel.
- 27 The Dovrat Report, 2005. *op cit*.
- 28 The Dovrat Report, 2005; Adva Center, 2009; Smith Report, 2012; Barber Report, 2012.
- 29 The Dovrat Report, 2005; Smith Report, 2012.
- 30 The Dovrat Report, 2005; Smith Report, 2012.
- 31 <http://www.hewlett.org/>
- 32 <http://www.wallacefoundation.org/Pages/default.aspx/>
- 33 <http://www.macfound.org>.

APPENDIX

FACTS ABOUT THE ISRAELI EDUCATION SYSTEM

1,450,000 STUDENTS; 120,000 TEACHERS; 4,000 SCHOOLS

NUMBER OF STUDENTS BY TYPE OF SCHOOL



 = 100,000 STUDENTS

AVERAGE SALARY



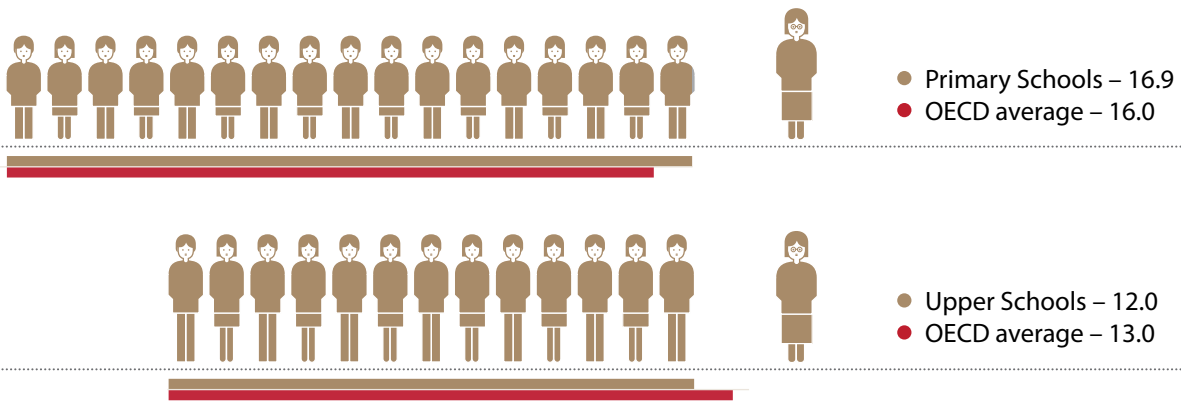
EDUCATION INVESTMENT PER PUPIL

EDUCATION INVESTMENT PER PUPIL IN A WEALTHY LOCAL AUTHORITY CAN BE AS HIGH AS 16 TIMES THE INVESTMENT PER PUPIL IN A POOR ONE.

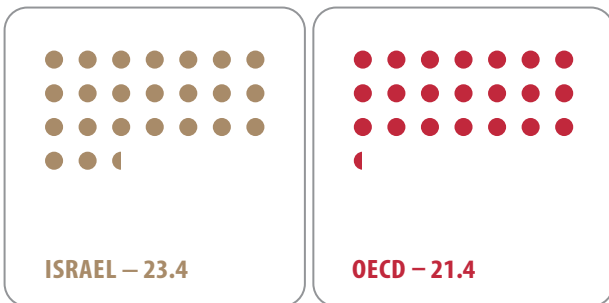
16

ISRAEL – OECD COMPARISONS

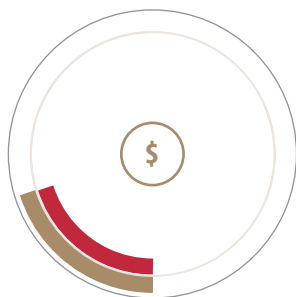
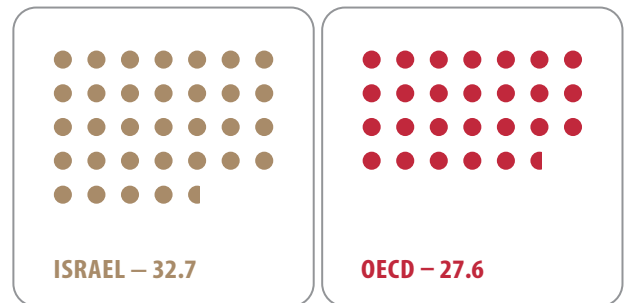
AVERAGE NUMBER OF STUDENTS PER TEACHER



AVERAGE CLASS SIZE (PRIMARY EDUCATION)

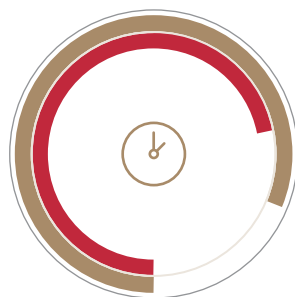


AVERAGE CLASS SIZE (SECONDARY EDUCATION)



AVERAGE EDUCATION SPENDING PER CAPITA (as % of GDP)

- Israel – 20.2%
- OECD – 20.1%



YEARLY AVERAGE HOURS PER CLASS (9th grade)

- Israel – 1040
- OECD – 921



PART-TIME EMPLOYMENT WITHIN THE EDUCATION SYSTEM

- Israel – 48.8%
- OECD – 20%