Homework

Homework is used for a number of purposes in schools, but is most usually aimed at allowing students to practise concepts learned during the day to reinforce them, and to encourage students to learn research skills using libraries, the Internet or other resources such as books at home.

In PISA, to find out if students pursued their separate subject areas in studies outside school, they were asked to indicate in addition to their classroom hours, for each of science, reading and mathematics:

- the time spent attending out-of-school-time lessons (at school, at home or somewhere else) – referred to as "out of-school lessons" below;
- the time spent studying or doing homework by themselves – referred to as "self-study" below.

For both these components, the time spent on work outside school was categorised into two or less hours per week and more than two hours per week. It can be seen (Table 17) that most students spend two hours or less doing work outside school and that on average across the OECD there are few differences between males and females for all three subject areas.

The data on time spent on self-study shows greater variation between males and females. For science, on average across the OECD, a greater percentage of females (27%) than males (23%) spent two or more hours per week on self-study. The outcomes were similar in both mathematics (38% of females spent two or more hours per week on self-study compared to 32% of males) and reading (36% of females compared to 26% of males). So in each of the subject areas females spend more time on self-study than males.

In science, for example, there was a large difference between males and females in Poland with 31% of males spending two or more hours per week on homework compared to 52% of females. For mathematics the largest difference occurs in Poland with 35% of males reporting two or more hours per week compared to 50% of females and for reading the figures are even a little greater, 36% for males and 57% for females. In Italy, 73% of females report that they spend two or more hours on reading homework per week – this is the highest percentage of students in any of the three subject areas.

The observation that females spend more time on homework is in accord with other research in the area. Wagner, Schober, and Spiel (2008) concluded this in a paper that presents three studies which deal with the time 15-year-old students spend working at home for school. Using diaries as a data collection method they found that the students invested on average 11.7 hours per week in work done at home for school and that females spent more time than males.

Rogers and Hallam (2006) in a study of GCSE students in the United Kingdom also found the same gender differences. Interestingly, their findings suggested that, overall, high-achieving males have better studying strategies than high-achieving females and that they achieve high standards while doing less homework.

CONCLUSION

The extent to which males and females have different outcomes in education and the labour market is an extremely complex discussion. This report shows that there are, indeed, significant differences in many areas. The evolution of these differences provides some challenging issues for parents and educators.

At the primary education level, studies by the IEA indicate few gender differences in science and mathematics, but a clear advantage to females in reading.

At the secondary level, international data confirm an on-going advantage for females in reading, but also show differences in performance in favour of males in some areas of both mathematics and science. In

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fact, there has been an increase in the gender differences observed in reading from 2000 to 2006. It would seem that policy makers and educators could take note of this trend and investigate ways to arrest its development. The data also show that male and female students are making different tertiary education and career choices in relation to science, with females showing a preference for health related courses and males for computing science. Taking all the observations and analyses together it seems that gender differences are actually increasing as students get older.

Female students have much higher levels of interest in reading than males, with the converse being true in relation to mathematics. The results of PISA 2003 mathematics showed that females generally had higher levels of anxiety about mathematics and that the level of anxiety is associated with performance. At the same time, there were no major gender differences in problem solving – leading to the conclusion that females' capacity in mathematics could be expanded if the levels of anxiety were lower. In relation to science, however, interest and engagement do not differ significantly between male and female students.

In summary, the results show that schools and societies do not always succeed in fostering comparable levels of motivation, interest or self-confidence in different areas among male and female students. Male students need to be helped towards a more positive approach to reading, which requires them to see it as a useful, profitable and enjoyable activity. Teachers need to consider the expectations that they have of students of both sexes and adopt strategies to raise the levels of self-confidence and motivation of students in those areas where each are weak. This cannot be achieved simply through classroom practice, since reading is a cultural practice influenced by the social context. Promoting male reading interest therefore needs to involve the family and society more widely. In similar respects, females need wide support in developing their interest and self-regard in mathematics. In particular, female students who do not have confidence in their mathematical abilities are likely to be constrained in their future choice of career, making it important to aim to build this aspect of their confidence.

At the same time, the influence of the cultural beliefs prevailing in a country and the effect of the media have not been considered in this report, but are influences which cannot be ignored. It is possible that by the time students are reaching the age to make choices for education after secondary school, that these influences are becoming very important. It was seen in the report that females graduate at a higher rate from general programmes at secondary school, but are showing definite preferences when entering tertiary level science education, with much smaller numbers taking up computer sciences compared to life sciences. This weakness in or aversion to computer studies was also shown, in the three countries that participated, by the results obtained in the PISA 2006 CBAS project, where females scored significantly lower than males.

The question of whether males and females are better being schooled in single-sex or mixed-sex surroundings continues to be a vexing one for education authorities around the world. The evidence from PISA does not support the notion that females tend to do better in a single-sex environment. However, caution is needed in interpreting these results because of the relatively small numbers of students and because PISA does not measure either the social environment or the social development of students which is also an important goal of education.

In a number of previous studies of secondary students it has been found that, in general, females do more homework than males. The results from PISA 2006 support this observation in all subject areas.

At the same time, PISA has shown that there are, indeed, areas where some of the accepted pre-conceived notions regarding stereotypic male and female behaviour are simply not true. Females did not score more highly in life sciences as would have been widely expected. The results from PISA 2006 also demonstrated the clear advantage that females have in identifying scientific issues.

Notes

1 Further detail on the development and implementation of PISA is provided in the Annex.

2. The Slovak Republic and Turkey did not participate in PISA 2000. while Luxembourg. the Netherlands. the United Kingdom and the United States were not included in the trend comparison for reasons described in the PISA 2006 initial report. PISA 2006: Science Competencies For Tomorrow's World (OECD, 2007).

3. The vast majority of items are retained from one PISA survey to the next to be re-used. so unreleased items cannot be described here.

4. ESCS was derived from the following variables: the higher occupational status of the father or mother; the higher educational level of the father or mother; and the index of home possessions obtained by asking students whether they had at their home various items such as a desk to study at. a room of their own. a quiet place to study. a computer they can use for school. any educational software. a link to the Internet. their own calculator. classic literature. a dishwasher. a DVD player or VCR. the number of cellular phones. televisions. computers. cars and books at home. The rationale for the choice of these variables was that socio-economic status is usually seen as being determined by occupational status. education and wealth. As no direct measure on parental income was available from PISA (except for those countries which undertook the parent questionnaire). access to relevant household items was used as a proxy.

5. In this two-level regression analysis. students serve as Level 1 and schools serve as Level 2. The dependent variables are the five plausible values in science; independent variables at Level 1 are the gender variable (0=male and 1=female) and students' ESCS; an independent variable at Level 2 is school average ESCS; and the cross-level interaction between gender and school average ESCS is included. Intercepts and slopes for gender are randomised. Students' ESCS and school average ESCS are grand-mean centred. Normalised final students weights as well as normalised replicates are used.

6. For the purpose of this analysis these are those countries in which students with an immigrant background represent at least 3% of the 15-year-old student population.

7. It should be noted also that much of the research that has been done so far is in the measurement of effects of single-sex classrooms. rather than single-sex schools. For this PISA is unable to provide any information because the PISA sample is an age-based sample taking students across classes and indeed across grades. There is also no teacher questionnaire in PISA to give information on this.

8. This restriction applies to all analyses in PISA.

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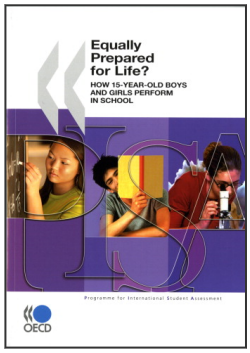

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