
Title	Educational baggage: The case of homework
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Source	<i>REACT</i> , 2003(1), 1-15
Published by	National Institute of Education (Singapore)

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Educational Baggage: The Case of Homework

Martyn Quigley

Introduction

People seem to like homework. All around the world the setting of homework is so firmly established as a central pillar of the educational world that it is rarely questioned, sometimes even by those who have to do it. Nevertheless, concerns about excessive amounts of homework and the accompanying stress arise sufficiently often that the whole question of homework and whether it is a *good thing* (as Sellar and Yeatman (1930) might have put it) needs to be reviewed from time to time. This article takes a critical look at some of the issues arising from homework: what we expect it to achieve, what does it achieve, and whether there are any harmful outcomes.

What do Stakeholders Expect from Homework?

There are several groups of people who have a keen interest in homework. Statutory bodies, individual schools, teachers and trainee teachers, parents, and of course children. We first look briefly at the expectations of these stakeholders.

Statutory Bodies

Governments and government agencies certainly seem to like homework. Table 1 shows the purposes of homework as defined by the New South Wales Department of Education and Training for public schooling in New South Wales (DET, undated) and the other, from the UK Office for Standards in Education (OFSTED, 1996) for primary schooling.

Note that both sets of statements make mention of academic benefits arising from homework, but they also include an emphasis upon personal development.

Table 1.
The purposes of homework as defined by two statutory bodies.

DET	OFSTED
<p>Homework is valuable because it</p> <ul style="list-style-type: none"> • strengthens home–school links • allows for practising, extending and consolidating work done in class • teaches students how to plan and organize their time • develops students' research skills • establishes habits of study concentration and self-discipline which will serve students for the rest of their lives • reaffirms the role of parents and carers as partners in education • provides parents and caregivers with insights into what is being taught in the classroom and the progress of their children • challenges and extends gifted and talented children 	<p>Homework can</p> <ul style="list-style-type: none"> • create a firm partnership between parents and children in relation to children's learning • encourage parents (particularly of younger children) to spend time with their children • reinforce work covered in class or help practice or consolidate basic skills and knowledge (reading, spelling, multiplication tables) • encourage pupils to develop perseverance, initiative and self-discipline through independent study • learn study skills and improve personal organization • make pupils more responsible • prepare pupils for secondary school

They seem to suggest that completing homework will develop habits of mind and character traits which will promote personal development for effective lifelong learning. It is also noteworthy that the DET list says that homework *will* achieve these most desirable goals; however, OFSTED is much more cautious and merely suggests that homework *may help* achieve these things. If homework really *does* achieve the benefits claimed for it, why do so many adults so conspicuously lack the qualities embodied in the lists?

Trainee Teachers

A group of 25 graduate Singaporean students undergoing a one year teacher training course in the teaching of secondary mathematics were asked to consider the purposes of homework. After brainstorming in small groups for about three-fourths of an hour, their responses were aggregated and are shown in Table 2. It is notable that the students generated a similar set of claims for homework as the Australian and British statutory bodies, but in addition they also generated a distinct set of purposes which, for want of a better term, are collected under the heading *pragmatic* in Table 2. These purposes are not so much positive benefits as reasons why teachers find it necessary to set homework, whether or not they wish

Table 2.
The purposes of homework as generated by a group of teacher trainees.

Academic	Personal	Pragmatic
<p>Homework:</p> <ul style="list-style-type: none"> • gives pupils skill practice • familiarizes pupils with examination format and range of questions • gives practice in the whole range of examination past questions • is necessary for formative and summative assessment • encourages pupils to apply concepts • is essential for revision • prepares pupils for the next topic 	<p>Homework:</p> <ul style="list-style-type: none"> • fosters conformity • fosters self-discipline • develops personal responsibility • gives positive reinforcement • encourages pupils to take pride in their work • helps pupils become critical thinkers • encourages cooperative learning • helps pupils develop time management skills • encourages perseverance 	<p>Homework:</p> <ul style="list-style-type: none"> • is school policy • is expected by parents • keeps pupils busy at home • is a component of teacher appraisal • is important for career advancement (of teachers) • is demanded by the HoD • keeps pupils busy in class at the end of the lesson • is useful as a threat or punishment

Table 3.
Negative aspects of homework as generated by a group of teacher trainees.

<p>Homework:</p> <ul style="list-style-type: none"> • demoralizes and depresses pupils • imposes heavy stress on the pupils • is actually often done by parents • is a major cause of myopia • steals time from the development of other desirable qualities • is often not completed (or not completed on time) thereby generating discipline problems • overloads teachers • kills pupils' interest in the subject • kills trees • encourages rote learning • leads to skeletal problems for some pupils

to do so. The students were adamant that the effects in the *pragmatic* column be considered as purposes because they were deliberately implemented.

The group of students also produced a fourth category of claims for homework and these are shown in Table 3. With refreshing bluntness the students pointed out that their experience of school homework just a few years earlier gave them a special perspective on homework which it was important to consider.

Parents

There is little doubt that parents like homework. For instance, Hoover-Dempsey, Bassler and Burow (1995) reported that all of their sample of parents of primary age children believed that homework was a normal part of schooling and that success in school was predicated upon success with homework. Kalantzis, Gurney and Cope (1991) found that low income parents supported homework just as much as high income parents, and that there was no difference either between parents who had English as their first language and those who did not. Brown (1999) surveyed the parents at a small Islamic school in Australia. Of the 88% who responded, 97% said that children in primary school should receive homework and 80% responded that children should be given homework as soon as they started school.

Schools

It certainly appears that schools must like homework, for they seem to set an awful lot of it. However, the motives of the actual teachers who set it may not always be straightforwardly for the pupils' benefit (see Table 2). Judging by the policies on homework described by British schools in their prospectuses, schools are keen to put a positive spin on homework. For instance, consider the following list of aims published by Witton Middle School (in Worcester in the UK) shown in Table 4 (Witton Middle School, 2001).

Similarly Ilfracombe College (in Devon in the UK) publishes the following in its guide for parents:

The College regards homework as a key part of the learning process. Regular and meaningful homework promotes achievement. It gets students into good habits, helps raise the expectations they have of themselves and encourages

Table 4.
The aims of homework of a middle school in the UK.

We believe that the role of homework should be to:

- encourage learning independent of the classroom
 - reinforce/consolidate classroom activities
 - develop self-discipline and time management skills
 - extend and enrich classroom experiences
 - involve parents and other adults in the children's education
-

them to share in the responsibility for their own learning. (Ilfracombe College, undated)

Notice the bold statements of the properties of homework as indisputable facts. Later we shall look a little more closely at these “facts”.

Teachers

In some ways teachers should be considered separately from schools. For one thing, they are the implementers of the school’s policy and what sounds very good in a policy statement may not be achievable in practice. Herold (undated) reports that one grade 3 teacher (primary 3) checks his pupils’ homework daily, and pupils who turn in homework on 12 consecutive days are awarded (*sic*) a homework pass, allowing them to skip the next homework assignment. This is quite astonishing — if homework is so good for children, why are they rewarded by being allowed to skip it? The teacher concerned apparently reported that “... the human brain needs to use what it learns over and over to get it into long-term memory. Homework reinforces concepts learned in school and gets the information ingrained in the brain” — a statement Skinner would have been proud of. Later we will see how naïveté such as this impacts upon the actual, recordable benefits of homework.

In large surveys, such as those of Featherstone (1985) and Rogers (1992), teachers and principals reported the following list of reasons supporting the assignment of homework.

1. Homework teaches self-discipline. (Of the teachers and principals sampled in one study, 88% agreed that homework “develops children’s initiative and responsibility” [Featherstone 1985, p. 6].)
2. Homework is believed to increase student achievement.
3. Homework fulfils the expectations of students, parents and the public. Teachers favour the practice by 95%, according to a recent Gallup Poll (Rogers 1992, pp. 13–15).
4. Homework increases the length of the school day without increasing the number of hours actually spent in school.
5. Homework provides an avenue of communication between the school and the parents (Kralovec and Buell, 2000, p. 35).

It is probably fair to say that the belief among teachers and principals that homework increases achievement and improves self-discipline, perseverance and

initiative is firmly established. Later on we shall examine these claims a little more closely.

Pupils

There is an astonishing dearth of material concerning pupils' views about homework. Kralovec and Buell (2000) report just one study in this area, and that consists largely of anecdotal evidence (Hinchey, 1996). Not surprisingly, interviews with children who do not do their homework are not likely to provide a balanced account, and so we leave this issue for the time being, pending trustworthy research in the future.

Does Homework Achieve its Aims? What Research has to Say

The research on homework and its putative effect on achievement is notable for its inconclusiveness. Cooper (1989a, p. 28) reports that "The conclusions of past reviewers of homework show extraordinary variability. Even in regard to specific areas of application ... the reviews often directly contradict one another." This may be partly due to the complex nature of the interaction of many variables on achievement, but it is also due to some fairly questionable research methodologies, including an over-reliance on self-reporting and correlational analysis.

The best known, and most thorough, review of the effects of homework on achievement is the meta-analysis of Cooper (1989a). In this work Cooper aggregated the results of more than 100 primary sources from 11 reviews. His main finding was that

The evidence is clear. Homework has substantial positive effects on the achievement of high school students [years 10, 11, 12]. Junior high students [years 8, 9, 10] also benefit from homework but only about half as much. For elementary [primary] school students the effect on homework is trivial, if it exists at all. (Cooper, 1989b, p. 89)

Primary Level

Although Cooper reported that homework has no detectable effect on achievement at the level of primary school (ages 5–12), several studies (for example Epstein, 1988) have reported that increased time spent on homework at the primary school level is actually negatively correlated with achievement. Margaret Brown of King's College, London, describing an on-going research

project on low attainment in numeracy in primary schools reported that doing regular homework does little to help children acquire numeracy ("Homework no help", 1999).

Lower Secondary Level

Increased time spent on homework is associated with higher achievement up to something less than two hours per school night. More homework than this leads to no further increase in achievement.

Upper Secondary Level

Increased time spent on homework is associated with higher achievement up to about 10 hours per week. An optimistic Cooper (1989b, p. 89) reported "... within reason, the more homework high school students do, the better their achievement." However, it is worth noting that Cooper had no data to support this claim beyond the 10 hour limit. This statement was, however, used to support political agendas calling for increased homework in schools in the US. What is often forgotten is that, even where these gains in achievement are observable, they are small compared to the gains found from classwork alone, and also small in relation to the amount of work expended by the pupils and the teachers concerned (Barber, 1986).

Post-Secondary Level

There seems to have been no research reported relating time spent on homework and levels of achievement.

Homework and Personal Development

Many claims are made for the benefits of homework as contributors to various personal qualities, such as *to encourage pupils to develop perseverance, initiative and self-discipline through independent study* (from Table 1, OFSTED, 1996). There does not seem to have been any significant research to substantiate this claim, or other similar claims. On the contrary, there are good reasons to suspect that homework has little, if any, relationship to the personal qualities mentioned above. For instance, what has completing a set of solutions to five quadratic equations got to do with perseverance, initiative and self-discipline? More importantly, can we find any plausible mechanism connecting the solution of quadratic equations with self-discipline? It seems unlikely.

Interestingly, some schools have homework policies which seem bluntly to contradict all reason. If homework *per se* contributes to certain personal qualities, then why should some subjects be outside its remit? For instance, Ilfracombe College has a policy which mandates that some subjects will appear on the homework timetable (mathematics, English, science, etc.) while others will not (physical education, drama, design and technology, etc.) (Ilfracombe College, undated). This example is particularly egregious for, as anyone who has completed a marathon (whether in the first 20, or outside the first 20,000) will readily testify, physical conditioning requires formidable levels of self-discipline and perseverance, and, in many cases, considerable initiative (to fit a training schedule into a busy professional life). It seems much more likely that if these qualities can be developed at all, they would be developed through physical education rather than mathematics.

Homework and Particular Subjects

There has been little research relating homework with particular subjects. Some studies suggest that homework has the greatest effects on social studies (Paschal, Weinstein and Wlaberg, 1984), while others suggest it affects mathematics the most (Austin, 1979), and others still that the subject is immaterial. It seems most likely that different types of homework will be effective in different subjects; however, empirical evidence is lacking.

Homework and Mathematics in Secondary School

The trainee teachers whose deliberations are reported in Tables 2 and 3 also produced a list of types of homework related to mathematics, and this is shown in Table 5.

Table 5.
Different types of homework encountered in mathematics.

Finish off exercise started in class
Exercise not started in class (but related to the lesson in which it was set)
Exercise not started in class (but <i>not</i> related to the lesson in which it was set)
Extended project work
Reading to prepare for next class
IT-based work
Holiday homework
Past examination papers

This group of trainees subsequently carried out a one-week observation in secondary schools. They sat in on various mathematics lessons and made notes about, amongst other things, the type of homework which was set by the teacher. The results are illuminating. Of the 95 mathematics lessons observed, no homework was set in 32 cases. In 44 cases the homework set consisted of completing a routine exercise which was begun in class and which consisted of questions similar to those which the teacher had worked on the board as model examples. The remaining 19 homework pieces consisted of a complete exercise not started in class but also based on questions similar to those which the teacher had worked on the board as model examples. None of the other types of homework in Table 5 was observed on this occasion.

We can say therefore that in about half of the classes observed the homework consisted of the completion of an exercise consisting of skill practice or consolidation of procedures taught in the class. It is difficult to see what the pupils can learn from this type of exercise. For one thing, since the teacher taught the procedures in class and undoubtedly worked a few examples on the board, and since the pupils had the opportunity to work a few questions on their own under the expert supervision of the teacher, it seems likely that all, or at least almost all, of the learning of this procedure *had already occurred* before the pupils went home. The argument applies to the other case (an exercise not started in class) but perhaps not so strongly. These two types of homework also raise some other concerns. For instance, it punishes the slower pupils since it will take them longer to complete. And what happens if a child goes home with an exercise and by making a systematic error proceeds to master an erroneous algorithm? The teacher would surely detect this in class, but who is to detect it at home? A host of other related problems suggest themselves, but space does not permit their discussion here. The reader is referred to Kralovec and Buell (2000) for a detailed account.

Homework and Mathematics in Primary School

Another group of 49 primary teacher trainees kept a homework diary whilst on a teaching practice. Of the 460 homeworks set by the students during a four-week period, 303 (65.9%) were of the complete-an-exercise variety, 103 (22.4%) were whole exercises related to the lesson but not started in class, only one was an exercise designed to prepare for a coming lesson, and 53 (11.2%) were not classified.

We see that roughly two-thirds of the homework set is to practise skills and procedures taught in the relevant class. That this type of homework is so common is distinctly worrying, since the research results to date (described above) suggest the benefits to children in primary school of doing any homework at all is minimal, and since the type of homework most commonly set is at best of marginal benefit one has to wonder whether the children's time might be better spent doing something else.

Of course, some authors and commentators argue that even if homework is futile in improving academic achievement at primary level, it is still important to set homework in primary schools so that the children learn good work habits, develop self-discipline and perseverance, and so forth. Maybe so, and maybe not — little research has been done to find out. Consequently, those who do advocate homework in the primary school for such reasons need to present a mechanism to show exactly how a child who does homework does indeed develop those qualities described above.

So far we have been considering the possible benefits which various people claim for homework, and whether the reality bears out those claims. This paper has argued that those benefits, if they exist at all, are probably minor. To say that doing homework is of little, if any, benefit is one thing, but is it possible that homework is actually harmful to the children concerned? We look at this aspect next.

Homework and Health

Three distinct health risks associated with homework have emerged in recent years.

Stress

Large amounts of homework and domestic pressure to complete it have been regularly linked to high levels of stress in some children. For instance, a recent newspaper article reports that some girls in Singapore have resorted to self-mutilation as a response to high levels of stress especially related to examinations and school work ("Girls cut themselves", 2001). On occasion, some Singaporean children have resorted to suicide as a last resort ("Minister's Plea", 2000). Although Singapore's Minister of Education, Teo Chee Hean, has urged parents not to push their children too hard or to over-stress them, he admits that the pressure on children because of homework is a major problem and is likely to remain so, even though his ministry has taken steps to reduce the workload on children.

Eyesight

In May 2002, Mr. Chan Soo Sen, Minister of State for the Prime Minister's Office & Community Development and Sports of the Republic of Singapore reported that "... the two major health issues associated with our children today are not diseases but obesity and myopia." (Chan, 2002). Saw, Wu, Seet, Wong, Yap, Chia *et al.* (2001) report that educational level and academic achievement are good predictors of myopia, and suggest that these factors are most likely closely related to reading and other "near-work" activities. From their research with military conscripts in Singapore they found that the rate of myopia in new recruits rose from 26% in the 1970s to 79% in the 1990s. Further, they found that the odds of being near-sighted increased four times among personnel who had been enrolled in gifted or accelerated programmes whilst at school, and that finishing two years of pre-college courses also quadrupled the likelihood of myopia (Saw *et al.* 2001, p. 858). It seems that near-focusing of the eye is strongly related to the development of myopia. Homework is particularly pernicious in this respect because it involves prolonged periods of near-focusing without even the relief of switching focus from desk to blackboard as happens continuously in classrooms.



Fig. 1. School children on their way home.

Skeletal Problems

There is growing concern in many countries about potential skeletal problems arising from the practice of carrying large loads of books to and from school. The American Academy of Orthopedic Surgeons reported that thousands of American youths have back, neck and shoulder pain caused by their heavy backpacks ("A Real Pain", 1999). It is unlikely that children of other nationalities are more resistant to pain caused by heavy loads, and heavy backpacks are a common sight in many ASEAN countries. Figure 1 shows two primary school children on their way home from school in Malaysia.

Conclusion

It is difficult and perhaps unwise to draw too many conclusions from the existing research on homework. For one thing, the research corpus itself is suggestive at best and inconclusive at worst. For another, homework is, by virtue of being done at home, highly dependent on the home environment and family values. The research described above has been conducted almost exclusively in North America, Australia and Europe, and may not reflect the ASEAN situation. Furthermore, homework is a highly emotive issue, indeed the same piece of research has sometimes been interpreted in bluntly contradictory ways to serve different political and social ends. Nevertheless there are a few conclusions which may be tentatively drawn.

- (a) Most of the research on homework to date has been correlational. This means that *even if* doing more homework is correlated with higher achievement, we still cannot say whether it is the completion of homework which causes the higher achievement, or whether it is simply that higher achieving children just happen to like doing lots of homework. It could well be that some third factor (or set of factors) is driving both homework and achievement, parental expectation for instance.
- (b) Even where there is evidence of achievement gains associated with homework we should keep in mind that these gains are small compared to the gains associated with classroom instruction. A consequence of this is that achievement gains are much more likely to come from increasing the length of the instructional school day than by assigning large doses of homework.
- (c) All of the research suggests that homework is of little value in raising levels of achievement at primary school. Some studies even suggest that homework depresses academic achievement.

- (d) Homework seems to be of some value academically in lower secondary school, but only up to about two hours per night, and the benefit is only about half that for upper secondary students.
- (e) For upper secondary students and also presumably for post-secondary students, homework is of some benefit up to about 10 hours per week.
- (f) Homework is often justified on the grounds that it develops personal qualities, such as self-discipline, initiative and perseverance. These claims have not been researched in any depth at all, so the claims are based on intuition, not evidence. Similarly, national, district and school policies on homework are based more on tradition and wishful thinking than on research evidence. Those who advocate the development of personal qualities through homework have yet to put forth anything approaching a plausible mechanism by which these personal qualities might emerge from doing homework.

Implications

Teachers may assign homework, broadly speaking, for one of three reasons. For any given piece of homework they should be aware of which of them applies, and should consider carefully the nature of the work which they consequently assign, perhaps something like the following.

1. *Academic:* The teacher should assign work directly related to the specific instructional objectives of the lesson to which it applies. However, since the children will be expected to learn the material *at home*, the teacher should refrain from teaching it during the lesson since this defeats the object of the homework.
2. *Personal:* If the teacher is concerned with developing personal qualities then the homework should reflect this. In the case of, say, self-discipline and perseverance, a piece of work which is extremely difficult, very long, very tedious, and which must be completed under severe time constraints will develop self-discipline and perseverance. And for maximal benefit the work should be set for the weekend, or on the eve of a major public holiday, preferably when the World Cup Final is being televised.
3. *Administrative:* If the teacher is setting homework for neither of the above reasons, but purely to satisfy the school's policy, then the homework

should be as short, pleasurable, and as interesting as possible. For instance, in mathematics the children could collect some data for authentic statistical work. Perhaps they might count the number of siblings for a demographic analysis, or maybe the number of legs on their cats to investigate the incidence of feline amputation!

Seriously, teachers should think carefully before assigning homework and should be prepared to say exactly what a piece of homework is supposed to achieve, and how it is supposed to achieve it. The worst and least justifiable reason for setting homework is that the parents expect it. No teacher should claim that.

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