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Homework Research and Policy: *A Review of the Literature*

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Homework plays a significant role in education in the United States. According to the National Assessment of Educational Progress, two-thirds of 9-, 13-, and 16-year-olds reported doing homework, and the percentage was increasing (Anderson et al., 1986). Thirteen-year-olds reported spending an average of about one hour daily on homework (Walberg, 1991). These data show that homework accounts for about 20 percent of the total time the typical American student spends on academic tasks.

Considering these facts, it is surprising how little attention is paid to the topic of homework in teacher education. Most teachers in the United States report that in education courses they discussed homework in relation to specific subjects, but received little training in how to devise good assignments, how to decide how much homework to give, and how to involve parents.



Moreover, homework often causes a great deal of conflict among teachers, students, and parents. Indeed, many doctors and family counselors indicate that problems with homework are a frequent source of concern when children experience medical problems (Cooper, 1991).

In this article I describe the findings of a review of research on homework (Cooper, 1989). I examine the efficacy of homework as an instructional method,

develop a sequential model of the factors that influence homework outcomes, and propose homework policy guidelines for teachers, schools, and school districts (see also Cooper, in press). The review was supported by the National Science Foundation and included nearly 120 empirical studies of homework's effects and the characteristics of successful homework assignments.

The Role of Research in Improving Homework Practices

American researchers have studied homework for over 60 years. For example, Hagan (1927) compared the effects of homework with the effects of in-school supervised study on 11- and 12-year-olds' academic performance. The number and percentage of research documents containing references to homework indicate that scholars are more interested in homework now than ever before.

Researchers do not agree, however, on the advantages and disadvantages of homework as an instructional tool. Although more than 12 reviews of the homework literature were conducted between 1960 and 1987, reviewers' conclusions differed considerably. This variance is due partly to a lack of overlap in the literature that reviews cover, to diverse criteria for inclusion of studies, and to differing methods of synthesizing study results.

Defining Homework and Its Effects

I defined homework as "tasks assigned to students by school teachers that are meant to be carried out during non-school hours" (Cooper, 1989, 7). Omitted in this definition are

- a. in-school guided study,
- b. home study courses, and
- c. extracurricular activities, such as sports or student newspapers.

The list of possible advantages and disadvantages of homework is long and often surprising. These effects are given in Table 1. Among the suggested benefits of homework, the most obvious is that it will increase students' retention and understanding of the material it covers. Less directly, homework can improve students' study skills and attitudes toward school and teach students that learning takes place outside as well as inside of school.

Positive Effects	Negative Effects
<i>Immediate achievement and learning</i> Better retention of factual knowledge Increased understanding Better critical thinking, concept formation, information processing Curriculum enrichment	<i>Satiation</i> Loss of interest in academic material Physical and emotional fatigue
<i>Long-term academic</i> Learning encouraged during leisure time Improved attitude toward school Better study habits and skills	<i>Denial of access to leisure time and community activities</i> Parental interference Pressure to complete and perform well Confusion of instructional techniques
<i>Nonacademic</i> Greater self-direction Greater self-discipline Better time organization More inquisitiveness More independent problem solving	<i>Cheating</i> Copying from other students Help beyond tutoring
<i>Greater parental appreciation of and involvement in schooling</i>	<i>Increased differences between high and low achievers</i>

Homework has numerous potential nonacademic payoffs as well; most of these involve promoting student independence and responsibility. Finally, homework can involve parents and the broader community in schooling, increasing their appreciation of education and allowing them to reinforce students' achievement.

The possible negative effects of homework are perhaps more interesting. First, some educators note that any activity can remain rewarding only for a limited time. It follows that if students are required to spend too much time on academic material, they eventually will become bored with it. Second, homework limits the time students can spend on leisure-time and community activities that can impart important lessons, both academic and nonacademic. Third, parental involvement, however well-meant, often becomes parental interference. Parents can confuse children if the teaching methods they employ differ from those of teachers. Fourth, homework can lead to undesirable behaviors such as cheating, either through copying

of assignments or receiving assistance with homework that involves more than tutoring. Finally, homework could exacerbate existing social inequalities. Students from lower-socioeconomic homes are likely to have more difficulty completing homework than their more well-to-do peers. Poorer students are also more apt to work after school or may not have a quiet, well-lit place to do assignments.

A Model of the Homework Process

Table 2 depicts how and in what sequence numerous factors affect the usefulness of homework. The process begins with three factors—student characteristics, the subject matter, and especially grade level—that determine the benefits of homework.

Characteristics of the assignment are important as well. Homework assignments can be short or long, can have different purposes (such as the practice of old material, introduction of new material, integration of skills, or extension of the curriculum), can be designed for individual students or whole classes, and can be completed by individuals or groups. The time and effort teachers take to develop an assignment also varies.

When a student takes the assignment home, several factors will affect how it is completed, including the student's other time commitments, the home environment, and the involvement of others.

Finally, what the teacher does with assignments when students turn them in may affect homework's utility. Some teachers may simply collect assignments, whereas others go over them in class and provide written feedback, oral comments, or grades. Other teachers may permit students to correct homework as part of the learning process and even provide extra credit toward grades.

Is Homework Effective?

Table 2. A Model of Factors Influencing the Effect of Homework

Exogenous Factors	Assignment Characteristics	Initial Classroom Factors
Student characteristics	Amount	Provision of materials
* Ability	Purpose	Facilitators
* Motivation	Skill area utilized	Suggested approaches
* Study habits	Degree of individualization	Links to curriculum
Subject matter	Degree of student choice	Other rationales
Grade level	Completion deadlines	
	Social context	
Home-Community Factors	Classroom Follow-up	Outcomes or Effects
Competitors for student time	Feedback	Assignment completion
Home environment	* Written comments	Assignment performance
* Space	* Grading	<i>Positive Effects</i>
* Light	* Incentives	Immediate academic
* Quiet	Testing of related content	Long-term academic
* Materials	Use in class discussion	Nonacademic
Others' involvement		Parental
* Parents		<i>Negative Effects</i>
* Siblings		Satiation
* Other students		Denial of leisure time
		Parental interference
		Cheating
		Increased student differences

Three types of studies enable researchers to answer the question of whether homework enhances students' achievement. The first type of study involves comparing the achievement of students who receive homework with students given no homework or any other treatment to compensate for their lack of home study. Of 20 studies completed since 1962, 14 yielded results favoring homework, whereas six favored no homework. Most interesting is the striking influence of grade level on homework's effectiveness. According to these studies, the typical U.S. high school student, 14 to 16 years of age, in a class doing homework would outperform 69 percent of the students in a no-homework class, as measured by standardized tests or grades. In junior high school, students 11 to 13 years of age, the average homework effect was half this size. In elementary school, homework had no effect on achievement.

In another group of studies, researchers compared homework with in-class supervised study. The performance benefits of homework were generally about half what they were when homework was compared with no treatment. Most significant in these studies was the finding once again of a strong grade-level effect. For elementary students, in-class study proved superior to homework. In junior high, homework was superior, and in high school, homework's advantage was greatest.

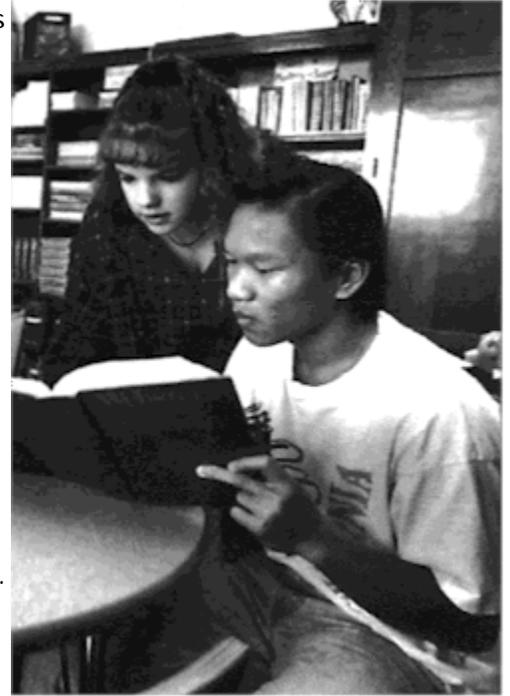
Finally, in 50 studies researchers correlated the time students reported spending on homework with their achievement. Many of these data were from state or national surveys. A total of 43 correlations showed that students who did more homework had better achievement, whereas only seven correlations indicated the opposite. Again, a strong grade-level effect was present. For elementary students, the mean

correlation between time spent on homework and achievement was almost zero; for students in middle grades it was $r = +.07$, and for high school students it was $r = +.25$.

Interpreting the Size of Homework's Influence

In the previous section I discussed the effect of homework across differing grade levels, types of outcomes, and content areas. The outcomes of homework can also be compared with those of other teaching methods. This allows the consideration of homework in a wider educational context, thus permitting a more accurate judgment of its value.

Walberg (1986) described results of 11 reviews of research on effects of instructional methods and teaching skills on student achievement. The instructional methods included individualized, special, and cooperative learning; ability grouping; direct and programmed instruction; advance organizers; higher-level cognitive questioning; use of praise; use of pretests; and television watching. For each strategy, Walberg calculated an effect similar to the one I used previously (e.g., the average high school student doing homework outperformed 69 percent of students not doing homework). In comparison with these instructional strategies, homework's effect on achievement can be described most accurately as above average. That is, homework's influence fell about in the middle of the 11 strategies. If grade level is considered, the relation between homework and achievement of elementary school students is comparatively small, but on high school students homework's effect is large, relative to the effect of the other 11 instructional techniques.



Another means of interpreting the size of an effect is to compare it with the cost of implementing the treatment. Homework is definitely a low-cost treatment. The most significant costs involved in assigning homework would be (a) a slight loss in instructional class time because time must be set aside for dealing with homework, and (b) additional outside-class preparation and management time for teachers.

Factors Affecting the Usefulness of Homework Assignments

In addition to studying homework's overall effectiveness, researchers also have examined how variation in assignments might influence their efficacy. One obvious question is whether homework is more effective for some subjects than for others. Based on the three sets of evidence just described, no clear influence for subject matter can be found. Still, homework probably works best when the material is not complex or extremely novel.

Another important concern is the optimum amount of homework. In nine studies researchers recorded academic performance as a function of increasing homework time. Elementary students' performance did not improve when they spent more time on homework. Junior high school students' achievement continued to improve with increased homework until assignments took between one and two hours a night. More homework than this was not accompanied by improved achievement. In contrast, high school students' performance continued to increase through the highest point on the measurement scales.

Other findings were related to differences in homework assignments. For example, there was considerable evidence that homework results in better achievement if material is distributed across several

assignments rather than concentrated only on material covered in class that day. Homework that requires students to practice material already taught, as well as assignments meant to prepare students for upcoming lessons, both proved beneficial. The few (poorly designed) studies of parent involvement indicated that giving parents a formal role in homework did not affect its utility. The same was true for individualizing homework assignments, which had a minimal effect on achievement but did significantly increase the time teachers spent on homework-related activities. Finally, I located no study in which researchers compared a homework feedback strategy (e.g., grading, instruction, or evaluative comments) with a no-feedback approach. Several studies involved comparisons of differing feedback strategies; no approach was clearly superior.

General Policy Guidelines

Table 3.1. A Recommended Homework Policy for Districts

Homework is a cost-effective instructional technique. It can have positive effects on achievement and character development and can serve as a vital link between the school and family.

Homework should have different purposes at different grades. For younger students, it should foster positive attitudes, habits, and character traits. For older students, it should facilitate knowledge acquisition in specific topics.

Homework should be required at all grade levels, but a mixture of mandatory and voluntary homework is most beneficial

The frequency and duration of mandatory assignments per week should be:

Grades one to three -- one to three assignments, taking 15 minutes or less

Grades four to six -- two to four 15-45 minute assignments

Grades seven to nine -- three to five 45-75 minute assignments

Grades ten to twelve -- four to five 75-120 minute assignments

Based on results of research and over 100 other articles, I developed homework policies for a representative (or average) American school district. These are listed in tables 3.1, 3.2, and 3.3. Although the policies would have to be adapted to any single district, they provide a good basis on which to begin discussions.

My first recommendation is that coordinated policies should exist at the district, school, and classroom levels. Some issues that must be addressed at one level are unique to that level, whereas others overlap.

Districts should offer a clear and broad rationale for assigning homework, including why it is sometimes mandatory, as well as general guidelines for the amount of how that should be assigned. Schools need to provide more specific time requirements, coordinate assignments between classes, and describe the role of teachers and principals. Teachers should outline what they expect of students and why.

Although I will not discuss the policies in detail, a few underlying philosophical points ought to be made explicit. First, elementary school students should be assigned homework, though it should not be expected to improve their achievement. Rather, homework should help young children develop good study habits,

promote positive attitudes toward school, and communicate to students that learning takes place outside as well as inside school. Thus, assignments to elementary students should be brief, should involve materials commonly found in the home, and should not be too demanding.

The academic function of homework should emerge in junior high school. Its use as a motivational tool should not be ignored, however. Thus, I advocate using both required and voluntary assignments. The latter should involve tasks that are intrinsically interesting to students of this age.

Table 3.2. A Recommended Homework Policy for Schools

The frequency and duration of homework assignments should be further specified to reflect local school and community circumstances.

In schools where different subjects are taught by different teachers, teachers should know:

1. What days of the week are available to them for assignments
2. How much daily homework time should be spent on their subject

Administrators should:

1. Communicate the district and school homework policies to parents
2. Monitor the implementation of the policy
3. Coordinate the scheduling of homework among different subjects, if needed

Teachers should state clearly:

1. How the assignment is related to the topic under study
2. The purpose of the assignment
3. How the assignment might best be carried out
4. What the student must do to demonstrate the assignment has been completed

Teachers should never use homework as punishment. Using it in this way communicates to students that schoolwork is boring and aversive.

High school teachers can view the home as an extension of the classroom. Homework that involves practice and review of lessons previously taught and simple introductions to material prior to its coverage in class is desirable. Assignments that require students to integrate skills or differing parts of the curriculum should also be common.

Regardless of students' ages, the formal role of parents in homework should be minimal. Parents vary in interest, knowledge, teaching skills, and time available. Clearly, parents of young children should be more involved. In particular, they need opportunities to express how much they value school achievement. Besides helping their children to practice of reading, spelling, and math skills, parents can express their interest by having contracts with their children about study times, offering rewards for completed assignments, or merely by signing homework before it is returned to school.

I also advise that teachers individualize few assignments within classes. Developing individualized homework demands considerable teacher time and has few benefits. Teachers who teach the same course to several classes that are progressing at different rates might consider giving the same assignments to the top students in the lowest class and the lowest-performing students in the highest class.

Finally, most homework assignments should not be graded. Teachers should not view homework as an opportunity to test. Almost all students should complete assignments successfully; thus, teachers should not differentiate much among performance levels. Having students do homework out of fear of negative consequences turns a situation ideal for building intrinsic motivation ("I must enjoy this; I'm doing it and the teacher isn't standing over me") into one that implies that the teacher believes students need rewards or punishment in order to complete assignments. Teachers should collect homework, check it for completeness, and give intermittent instructional feedback. This procedure shows that the teacher takes homework seriously and that it is purposeful. The major purpose should be to identify individual students' learning problems.

Homework for Students with Learning Disabilities

Table 3.3. A Recommended Homework Policy for Teachers

All students in a class will be responsible for the same assignments, with only rare exception.

Homework will include mandatory assignments. Failure to turn in mandatory assignments will necessitate remedial activities.

Homework also will include voluntary assignments meant to meet the needs of individual students or groups of students.

All homework assignments will not be formally evaluated. They will be used to locate problems in student progress and to individualize instruction.

Topics will appear in assignments before and after they are covered in class, not just on the day they are discussed.

Homework will not be used to teach complex skills. It will generally focus on simple skills and material or on the integration of skills already possessed by the student.

Parents will rarely be asked to play a formal instructional role in homework. Instead, they should be asked to create a home environment that facilitates student self-study.

Much attention has been given recently to the use of homework with learning-disabled students. When I surveyed studies of homework conducted prior to 1986, I found few that included students with learning disabilities. More research in this area exists today, and a colleague and I recently reviewed this literature (Cooper & Nye, in press). We wanted to determine how homework practices and policies that produced positive outcomes for students without disabilities might differ for students with disabilities.

First, we examined studies of the overall effectiveness of homework for students with learning disabilities. This research indicated that the generally positive effects of homework for students without disabilities also should appear for students with learning disabilities.

Nevertheless, the characteristics of successful homework assignments for the two types of students are different. For example, research has consistently shown that homework assignments for students with learning disabilities should be brief, emphasizing reinforcement of skills and class lessons rather than integration and extension of class work. In addition, students who do not possess certain minimum skills in an area may not benefit from homework at all.

It is vital that teachers monitor homework assignments for students with learning disabilities. Monitoring might involve reviewing completed assignments promptly in class, rewarding students for completeness and/or accuracy, and allowing students to begin assignments in class so that teachers can make certain that students understand assignments.

Parental involvement is essential for students with disabilities. These students tend to have less developed self-management and study skills than their peers, and their ability to study relies more on the provision of a proper environment, both physical and emotional. Students with learning disabilities may need periodic rewards while they work on assignments or immediately after completing assignments as well as more help in finishing tasks. Research suggests that parents' involvement should be prolonged rather than intermittent.

Summary

The relation between homework and student academic performance is influenced heavily by grade level. The effects of homework on elementary students appear to be small, almost trivial; expectations for homework's effects, especially short-term and in the early grades, should be modest. Homework should be viewed as one of several methods teachers can use to show children that learning takes place everywhere. For high school students, however, homework can have significant effects on achievement. Indeed, relative to other instructional techniques, and considering the minimal costs involved in implementation, homework can yield a considerable increase in academic performance at this level. Finally, homework can have significant benefits for students with learning disabilities, but its positive outcome is contingent on (a) teacher preparation and planning; (b) assignments appropriate to the skill, attention, and motivation levels of students; and (c) appropriate involvement of parents.

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