

Effective Homework Assignments

PERHAPS more than any question other than “How much time should students spend doing homework?” parents and educators want to know, “What kinds of homework assignments are most effective?” Clearly, the answers to this question vary according to many factors, especially the developmental level of students and the topic area. Generally, answers are hard to find; and even for assignment variations that have been the focus of research, findings are sometimes hard to interpret. Still, a few consistent findings do emerge. (See Cooper 2007, for more detailed discussions of this research.)

Duration and Frequency of Assignments

Two studies conducted before 1980 suggested that longer assignments—in one instance twice as long; in the other, three times as long—were no more effective than shorter assignments. A more recent study also favored shorter assignments, but the difference was not statistically significant. All three of these studies involved mathematics homework.

Two correlational studies have examined the influence of the frequency of homework assignments. One study reported positive associations between homework frequency and students’ achievement in elementary school. The other reported no statistically significant direct effects of assignment frequency, but noted positive indirect effects.

Taken together, these studies hint at the possibility that shorter, but more frequent homework assignments may be most effective.

Timing of Homework Content

Ten of 11 experimental studies revealed that homework assignments that both (a) included practice of previously covered material and (b) introduced new, preparatory material for upcoming topics along with same-day content were superior to assignments that included only same-day content. Four of five studies that compared practice-plus-same-day content with same-day-only content favored the former. All three studies that compared assignments covering both same-day content and preparatory content with assignments covering same-day-only content favored the former, as all three studies did that combined both preparation and prac-

tice content and compared it with same-day-only content.

Seven studies, in which measures of achievement were made some time after a unit was completed also indicated that including practice of past material and introducing future material on homework was more effective than including same-day-only content. In fact, the effect of the distributed content was even greater when more time passed before the material was tested.

Most of these studies were done in mathematics classes. However, only one study has examined the effect of the timing of homework on students in elementary school, and only one on middle school students. The rest involve high school students. Still, the results of these studies are consistent with more basic research that has examined the impact of distributed practice on verbal recall tasks (Pashler, Rohrer, and Cepeda 2006). Thus, it seems safe to conclude that distributing the content of math homework assignments so that it includes material meant to practice past lessons or prepare for future lessons, or both, can be more effective than assignments that include only same-day content.

Hard and Easy Material

Nine studies have investigated the effect of dispersing hard and easy material throughout a homework assignment. On average, these studies revealed that dispersing hard and easy material throughout the assignment had a positive effect on measures of homework accuracy and completion rates. Also, students rated these assignments as being less difficult, requiring less effort, and requiring less time than the assignments that did not use interspersal.

Choices

In the past fifty years, only two small studies have compared the effects of assigning compulsory versus voluntary homework, or of allowing some choice in the content of homework assignments. Still, more basic research suggests good reason to believe that being offered choice in homework assignments could improve a student’s interest, motivation, and, ultimately, achievement. This reasoning rests on the assumptions that if children do things without the presence of obvious external demands, or that include expressions of

The views expressed or implied in this publication, unless otherwise noted, should not be interpreted as official positions of the Council.

autonomy, they are more likely to internalize positive sentiments about the activity (cf. Deci et al. 1991). However, the effect of making assignments completely voluntary will likely depend on the nature of the assignment (its intrinsic interest level) and the characteristics of students (their motivation and skill in the content area), and should be attempted cautiously.

Individualization

Taken together, several less recent studies revealed no consistent improvement in students' achievement when classes in which students were assigned individualized homework were compared with classes in which all students did the same assignment. The results also suggested that students who were struggling in school required more time to complete homework that was not individualized. By contrast, teachers spent considerably more time constructing and monitoring individualized assignments.

Recent research has investigated the effect of homework individualized on the basis of the student's *learning style* (Dunn, Dunn, and Price 2000). For example, eight such studies indicate that homework assignments that permit students to complete assignments under preferred conditions of noise, light, design, mobility, and time of day may improve students' achievement, attitudes, and conduct.

Group Assignments

A vast literature on cooperative learning in groups suggests this approach can be highly effective (Johnson, Johnson, and Holubec 2002) provide an exhaustive review. Only two small studies conducted since 1990 have evaluated the effect of group homework assignments compared with the effect of the same assignment done alone. The results suggest that some content will lend itself to group assignments (e.g., some types of class presentations, debates), and to be most effective, such assignments need to be carefully structured and monitored as suggested by research in cooperative learning. Also, the effectiveness of group assignments is likely to be related to the developmental level of the students.

Computer-Based Homework Assignments

Three studies revealed short-term effects on achievement in favor of Web-based assignments, but the effects on attitudes and the time needed to complete assignments were mixed. One study that looked at computerized help with homework versus help from the class instructor found results favoring the live assistance. An important point to note is that these studies do not systematically examine the many

different ways in which computers can be used. All the studies have used high school students. Generally, then, the research on using computers in homework raises more questions than it answers. Moreover, teachers should not assume that all children have at-home access to computers with similar capabilities. In sum, the issue is a complex one, and much more study is needed.

Study Aids

Study aids for helping students complete their homework come in several different forms, including giving students agenda or assignment journals and offering classroom instruction on assignment-management and study skills. The only study that purposively manipulated the use of study aids (including instruction on how to use them) found significant positive effects. The other, less rigorous studies produced results generally consistent with this finding.

Comments and Grading

A review of the research by Walberg (1999) found two studies that looked at commenting as feedback and three that looked at grading. These studies suggested that homework is much more effective when these types of feedback are used. Importantly, little difference was observed in the relative effects of comment and grades. These results are consistent with our review of studies that compared different feedback strategies. To date, then, research results seem to indicate the importance of providing some form of feedback on homework. However, the different forms of feedback do not seem to differ much in their effectiveness, nor do different schedules for providing feedback.

Rewards

Rewarding students for handing in homework can increase completion rates. The types of rewards employed have included extra play time on computers, extra free time, coupons for purchases at the school store, and "free homework" passes that allow students to skip future assignments without penalty. Not surprisingly, most of these studies have focused on students with learning disabilities or poor motivation.

Summary

In sum, studies that examined practice and preparation homework have consistently favored assigning homework for these purposes, and have suggested that distributed content may have a larger impact on delayed measurement of achievement than on immediate measurement. Interspersing easy and hard problems throughout an assignment also appears to improve its effectiveness, perceived difficulty, and

enjoyableness. Finally, individualization of assignments by difficulty may have little effect on students' ultimate achievement, but preparing assignments that take into account individual students' learning styles may be more effective.

The research on other variations in assignments suffers from inconsistent results coupled with a simple lack of research. Evidence hints that long assignments are no more effective than shorter ones, but that more frequent assignments may be more effective. Group assignments can be effective, depending on the content and students involved. Some sort of teacher-feedback strategy appears to improve the effectiveness of homework assignments, but research does not indicate the superiority of one feedback strategy over another. Finally, research offers sound evidence that giving homework-completion incentives to students who have learning disabilities proves beneficial.

By Harris Cooper
Judith Reed, Series Editor

REFERENCES

- Cooper, Harris. *The Battle over Homework: Common Ground for Administrators, Teachers, and Parents*. Thousand Oaks, Calif.: Corwin Press, 2007.
- Deci, Edward L., Robert J. Vallerand, Luc G. Pelletier, and Richard M. Ryan "Motivation and Education: The Self-Determination Perspective." *Educational Psychologist*, 26 (1991): 325–46.
- Dunn, Rita, Kenneth and Gary E. Price. *Learning Style Inventory (LSI)*. Lawrence, Kans.: Price Systems, 2000.
- Johnson, David W., Roger T. Johnson, and Edythe Johnson Holubec. *Circles of Learning*, 5th ed. Minneapolis, Minn.: Interaction Book Co., 2002.
- Pashler, Hal, Doug Rohrer, and Nicholas J. Cepeda "Temporal Spacing and Learning." *APS Observer* 19(2006): 30, 38.
- Walberg, Herbert J. "Productive Teaching." In *New Directions for Teaching Practice and Research*, edited by Hersh C. Waxman and Herbert J. Walberg, pp. 75–104. Berkeley, Calif.: McCutchen. 1999.