WHITE PAPER

Homework Research Gives Insight to Improving Teaching Practice

Richard W. Herrig

Research summaries (approximately 150 published) regarding the effectiveness of homework and its impact on student achievement have given educators mixed messages for more than 100 years. Education's response during this period has shifted dramatically so has the public's attitude toward homework.

Although the late 19th century and early 20th century marked a period of homework emphasis focusing on memorization and rote practice, the beginning of the progressive education movement began a public dialogue regarding homework that continues today. The first systematic research of homework and its impact on children's health was conducted by physician Dr. Joseph Mayer Rice (Rice, 1897). [1] The nation saw a shift towards homework limitation policies as the public's attitude that homework was harmful to childhood development fueled the progressive education movement into the 1930's. [2] As the medical community's focus on developing healthy children took on increasing importance during this period, homework practices became a strange bedfellow with child labor practices. In 1930, the American Child Health Association, coupled homework with child labor as the "chief causes of the high death and morbidity rates from tuberculosis and heart disease among adolescents." [3] Further, James B. Nash, Professor of Physical Education and Health, New York University, in his 1930 research summary, declared homework, "legalized criminality." (Nash, 1930). [4] Further homework research in the 1930's concluded, with few exceptions, that homework in elementary and junior high grades had little or no positive effect on achievement. This conclusion about homework was incorporated into the Encyclopedia of Educational research (Otto, 1941) and remained unchanged until the end of the 1950s. [5]

A departure from this emphasis began in the late 1940's and lasted into the 50's. An academic excellence movement began to take roots and the Soviet Union's successful launch of the Sputnik in October, 1957, caused the nation to shift its
focus once again towards a homework emphasis out of fear that the United States was falling behind academically and the education system lacked rigor. [6] So great was this event that it spawned the passage of the National Defense Education Act in 1958. [7][8] Stanford Medical School Professor Avram Goldstein conducted a reanalysis of data that scholars in the 1930s assembled and his conclusions differed significantly from those scholars. He concluded homework positively influenced student achievement in elementary and high school grades and published his findings in The Elementary School Journal (Goldstein, 1960). [9] While this decade saw a trend towards more favorable views regarding homework's impact on student achievement and increased demand for homework assigned, it was short-lived. Education's emphasis again shifted away from homework in the late 1960's but the public's focus, and education's response, once again turned towards a homework emphasis with the release of *A Nation at Risk* in 1983. [10][11][12]

Studies on the value of homework and its impact have increased since the 1960s although conflicting results continue to surface. Harris Cooper, considered to be one of the current leading experts in homework research indicated in his findings that twenty studies comparing the achievement of students who receive homework with those given no homework, fourteen are pro-homework. Additionally, of fifty studies correlating time spent on homework with student achievement, Cooper indicates that forty-three showed that students who did homework had better achievement. (Cooper, 2000)[13] The most oft-cited research summaries supporting some positive findings between homework and achievement includes work done by Keith (1982) (1992), Cooper (1989a), and Marzano et.al. (2001). These research findings, and others, aren't without criticism though as Alfie Kohn demonstrates in his article, "Abusing Research: The study of Homework and Other Examples, *Phi Delta Kappan*, September, 2006. Kohn claims, "neither academic nor non-academic justifications for homework are supported by the available evidence." [14] Despite this discourse, the current prevailing thought within the educational community is homework, constructed purposefully, can enhance student learning and, in turn, positively impact student achievement.

**Implications for Homework Policy and Practice**

We know research produces data subject to analysis. Research on homework practices is an inexact science given the many variables including definition of homework, socio-economic demographics, amount and type of home support, and standardized versus classroom assessment results to name but a few. While a direct cause-effect relationship cannot be drawn, there are implications that can give
educators direction. While discourse exists among researchers regarding interpretation of results, the need to design effective homework practices reside at the core of improving student achievement. Even when those summaries concluded that regular homework favors higher achievement, educators have tended to "paint with a broad brush" those summaries to justify homework practices rather than examine the specific narrow findings and assess how those findings may drive instructional practices.

The general conclusions from multiple research studies suggest that although there is some positive correlation between homework and achievement, it varies by grade level, amount, and type of homework assigned. Generally, the positive effect homework has on achievement appears to be almost nil at the elementary levels, increasing slightly for upper elementary and middle school-age students, with the greatest impact for high school students. While no clear pattern emerged from these studies that homework is more effective in some subjects than others, although some studies showed homework is more effective for math. (Cooper, 2008) [15] Recent studies focusing on the role of self-efficacy beliefs (Kisantas et al. 2011) however, showed increasing the amount of time spent on mathematics homework does not lead to higher mathematics achievement scores while providing appropriate homework support resources and addressing self-efficacy issues appears to have a positive effect. [16] Other studies (Zimmerman & Kisantas, 2005; Kisantas & Zimmerman, 2009) reported self-efficacy for learning a predictor of GPA. [17] Findings suggest homework should be well-designed according to purpose.

While most of the research summaries discussed in this article focus on homework and its relationship to student achievement, it should be noted that outside of the educational community, recent developments in the field of brain research has produced increased knowledge of how the brain learns, processes, and retains information. More importantly, this research has taken an important place in some teacher education and professional development programs across the nation. Educators could benefit by understanding how the brain processes information (Stahl, 1985) [18] and in particular, working memory capacity (Miller, 1956) [19] and develop instructional practices using this knowledge. An educator’s effectiveness can be enhanced with knowledge of how memory (Buckner, Kelly, and Petersen, 1999; Wagner et al., 1998) [20] and retention (Buzan, 1989; Thomas, 1972) [21]. Perhaps as important, an educator should be aware of how the brain fabricates misinformation during recall (Shallice, 1999) (Gazzaniga, 1998a, pp. 156-158) [22].

The implication for educators and their practice, while absent direct cause-effect data, has given focus to specific instructional practice developments. Classroom
teachers and school leaders need to reflect on their practices and ask themselves is what they are doing working? If not, they need to turn to those dedicated to reviewing research; those who have gleaned trends and implications from the research to propose changes in instructional practices, in particular, homework. Some of those proposed considerations follow:

Homework, to be effective and to support learning, should exhibit five characteristics: [23]

- **Purpose**: assigning homework practice, elaboration, or preparation,
- **Efficiency**: showing evidence of learning and good use of time,
- **Ownership**: customize tasks to fit student learning styles and interests,
- **Competence**: differentiate assignments to ensure student success, and
- **Aesthetic Appeal**: structure homework to appear appealing for students.

Student engagement, during lesson delivery, guided practice, and assigned homework, should be a critical consideration when designing instruction. Homework should be just as engaging and aesthetically appealing as the lesson itself, perhaps more so. It should involve the use of color, illustrations and photos, and real-world examples.

The general prevailing conclusions and recommendations for homework include:

- Create support structures for homework including journals that help students organize assignments and provide communication between student, teacher, and parents. (Vatterott, 2010)
- Effective homework allows space for students to take notes, organize thoughts, show their work, ask clarifying questions of the teacher, and defend their position. Such features help students develop crucial study skills as they learn to outline, identify key points, and organize their thoughts and notes. Homework that is embedded in the same book as the instructional lesson can also create a strong support structure by offering point-of-use help and references for students. This is particularly helpful for parents who are struggling to help student with their homework.
- Districts and schools should establish clear policies regarding the use of homework. (Cooper H, 2000)
- Time limit recommendations should involve consideration of student development level, quality of home support, and grade level.
Recommendation by the National Parent Teacher Association and the National Education Association (2000) include:

- 10-20 minutes/day grades K-2
- 30-60 minutes/day grades 3-6

Cooper (1994, 2000) suggests:

- one to three assignments/week taking 15 minutes or less/Grades 1-3
- two to four assignments, 15-45 minute assignments/week/Grades 4-6
- three to five assignments, 45-75 minute assignments/week/Grades 7-9
- four to five assignments, 75-120 minute assignments/week/Grades 10-12
- 10 minute rule guideline: 10 minutes/grade level nightly

Connors (1992) suggests:

- grade 5, 30-60 minutes/night
- grade 6, 30-60 minutes/night
- grade 7, 45-90 minutes/night

- Teachers assign homework at instructional levels that match student's skills. (differentiated assignments) (Rademacher, Deshler, Schumacher, & Lenz, 1998; Rosenberg, 1989)[24]

- Assign positive consequences for homework completed; avoid negative consequences for homework not completed. (Cooper 2000)

- Students should receive timely and specific feedback beyond a check mark or grade that includes imbedded instructive comments on all homework assigned. (Butler, 2000; Tavares, 1998; Cooper, 2000; Vatterott, 2009)

- Consider distributed practice, focused practice over several days or weeks, to enhance mastery. (Anderson, 1995; Newell & Rosenbloom, 1981)[25]

- Define parental involvement to include facilitation of homework completion not content instruction. Parents should provide a consistent time and place in the home for their children to complete homework. (Balli, 1998; Balli, Demo, & Wedman, 1997, 1998; Perkins & Milgram, 1996)[26]
Notes


5. Gill & Schlossman, 2004, op. cit., p. 176


12. Vatterott, C. 2009, op. cit., chapter one


25. Plato, J. (2000) "Homework and Its Role in constructivist Pedagogy," CTER Master's Program Brief, University of Illinois at Urbana-Champaign


References


Focus on Effectiveness, Northwest Regional Educational Laboratory, Portland, Oregon.


