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# Enhancing Homework's Effectiveness through Student Motivation and Parental Involvement

## Abstract

Homework has varying degrees of effectiveness; therefore, it is important for teachers to know what elements aid in making homework assignments more effective to learners. There are outside factors that contribute to homework's effectiveness as well as types of homework assignments that will increase students' success. Two of the factors contributing to homework's level of benefits are student motivation and parental involvement. There are three types of homework assignments that increase the positive aspects of student motivation and parental involvement include interspersal assignments, interactive homework assignments, and project-based assignments. Improved homework benefits education, specifically Christian education, by enabling a tightly knit Christian community to cooperatively work toward improved student achievement. Research indicates that more than any other type of homework assignment, project-based homework most effectively keeps student motivation high and parents involved. Projectbased homework incorporates advantages that Christian school communities provide to the learning process. Project-based homework corresponds with a core set of beliefs and values that Christian school communities promote. Project-based homework also compliments the efforts of parents who are motivated to help the school learning environment. Lastly, project-based homework assignments help students to honor God through homework.

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Involvement

by

Jonathan T. Beutlich

B.A. Calvin College, 2003

Thesis  
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of the Requirements for the  
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Department of Education  
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(December, 2008)

Enhancing Homework's Effectiveness through Student Motivation and Parental  
Involvement

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### Abstract

Homework has varying degrees of effectiveness; therefore, it is important for teachers to know what elements aid in making homework assignments more effective to learners. There are outside factors that contribute to homework's effectiveness as well as types of homework assignments that will increase students' success. Two of the factors contributing to homework's level of benefits are student motivation and parental involvement. There are three types of homework assignments that increase the positive aspects of student motivation and parental involvement include interspersal assignments, interactive homework assignments, and project-based assignments. Improved homework benefits education, specifically Christian education, by enabling a tightly knit Christian community to cooperatively work toward improved student achievement. Research indicates that more than any other type of homework assignment, project-based homework most effectively keeps student motivation high and parents involved. Project-based homework incorporates advantages that Christian school communities provide to the learning process. Project-based homework corresponds with a core set of beliefs and values that Christian school communities promote. Project-based homework also compliments the efforts of parents who are motivated to help the school learning environment. Lastly, project-based homework assignments help students to honor God through homework.

## Introduction

For as long as homework has been in use, educators, students, and parents have argued over its effectiveness as a learning tool (Cooper, 2006). Proponents of homework argue that homework assignments help to develop positive study habits and self-regulatory strategies (Helle, Tynjala, & Olkinuora, 2007; Xu, 2006; Xu & Corno, 2004). That is, of course, in addition to the fact that they believe the repetition of material will help bring further understanding (Schuetze, 2004). Opponents to homework are less unified in their defense of the belief that homework is ineffective. The general consensus of homework opponents is that it leads to a lack of educational motivation in students, an increase in levels of cheating, parental interference, and/or general fatigue of students (Cooper, 2006). While research can be found to support both arguments, homework assignments continue to be used throughout educational institutions; therefore, a majority of teachers believe homework is an effective learning tool.

The purpose of homework is to improve student learning, and there are factors and types of homework assignments that dramatically increase the benefits that students receive from doing homework. With that in mind, three areas of focus regarding homework present themselves to educators. The first focus area aims to answer questions regarding the effectiveness of homework in general. While certain assignments or types of homework can be ineffective, the majority of homework that educators assign their students is a valid learning tool. The second focus area will include factors that add to the overall effectiveness of homework. These are factors that do not necessarily apply directly to the actual homework assignment. Rather, some factors under scrutiny are the role parents should play and the importance of student motivation. The third focus area is

aimed at specific types of homework assignments. While homework is generally beneficial, there are certain types of assignments that are more beneficial to learners than others, and student achievement can be improved through well-implemented and well-chosen homework assignments. Homework can be an effective learning tool, but educators must control factors that add to the overall effectiveness of homework and implement the types of homework assignments that are most effective. The following literature review consolidates studies done by researchers specializing in effective homework and answers the following questions. Is homework a useful learning tool? How can teachers improve their homework methodology? Finally, what type of homework assignments contain built-in controls for the aforementioned homework factors?

### Definition of Terms

The following terms will be used throughout the literature review. The terms are provided in order that the reader may be familiar with the context of the specific educational terminology that will be used.

**Authentic/real-world homework:** homework that closely mimics the real world problems and situations (Helle, Tynjala, & Olkinuora, 2007; Kondor, 2007)

**Classwork:** work given to students that is to be done during classroom hours (Trautwein, Ludtke, & Kastens, 2006)

**Collaborative:** working together, especially in a joint intellectual effort (Boekaerts, 2006)

**Constructivism:** an epistemology that values developmentally appropriate facilitator-supported learning that is initiated and directed by the learner (Van Dyk, 2006)



**Core values:** values upon which the whole community can agree (Pulliam & Van Patten, 2003)

**Homework:** work given to students that is to be completed during non-school hours (Cooper, 2006)

**Interspersing:** the scattering of less difficult problems/questions in a homework assignment (Cates & Dalenburg, 2005)

**Interactive homework assignment:** homework designed to increase parent involvement during the completion of homework (Bailey, Silvern, Brabham, & Ross, 2006)

**Project-based learning:** learning in which a question and/or problem serves to organize and drive activities that culminate in a final product (Helle et al., 2007)

**Self-regulation:** student performing cognitive, affective or meta-cognitive learning activities spontaneously (Helle et al., 2007)

### Literature Review

The question of how teachers and students can make homework more effective for overall learning and achievement is important. Most schools and teachers assign a certain amount of homework (some schools even require it); therefore, most educators believe that there are benefits to assigning homework. Additionally, parents generally support teachers in the assigning of homework, which in turn means that parents also adhere to the belief that homework is beneficial (Xu, 2005). Since homework is given out on a regular basis and such a large scale, its very presence makes it an important educational topic. Educators want the very best for the learners that are under their tutelage, so it would follow that any improvements that teachers make to their techniques and methods would immediately and significantly benefit students.

Currently there is a general consensus in the educational community that homework offers a benefit to student achievement (Trautwein et al., 2006). “It [homework] leads to increased success on classwork and fosters attitudes and habits that lead to successful future learning” (Coutts, 2004, p. 183). The consensus that homework assignments are valid learning tools is additionally supported by Joseph Simplicio, Associate Dean for Academic Affairs at Palm Beach Community College and published educational author, when he says, “Studies that include original research, surveys, interviews, and literature reviews conducted by educators working on all levels and in all areas of education, have concluded that there is a positive correlation between homework and higher levels of student academic achievement” (2005, p. 138). Cooper, a prominent author and proponent of homework, also agrees that homework leads to higher student achievement, but he also comments that homework can be used to teach more than only classroom topics.

While homework is important, what is really important is that learning occurs in various places outside of school. It should be one of several approaches we use, along with soccer and the scouts, to show our children that learning takes place everywhere. (Cooper, 2007, p. 38)

Simplicio (2005), like Cooper, is aware that there are arguments against homework. Opponents decry homework because it takes away from family time, is “tedious, repetitious, and boring, which causes students to lose interest” (p. 139), and it is inconsistently stressed among teachers, which gives students mixed signals about the importance of homework (Coutts, 2004). Other opponents to homework view it in terms of a cost-benefit analysis. They believe that the costs of doing homework assignments

outweigh the benefits. Several of those costs are interference of time with friends, interference with sports, and/or interference of family time (Trautwein, Ludtke, Kastens, & Koller, 2006). Another argument against homework, and an important one to take note of, is that parental involvement could turn into parental interference (Cooper, 2007). Homework interference could be something as simple as the parents confusing the learner by having a completely different instructional technique than the one used by the teacher. In the worst case, homework interference could be the parents doing the homework assignment for their child. Lastly, some opponents even go so far as to hypothesize that homework encourages cheating through copying of assignments (*Homework*, 2008).

Despite this opposition, homework shows more positive outcomes than negative. It can even be a valid learning tool in areas indirectly related to classwork. For example, a recent research study validates this indirect connection by showing that homework includes socialization benefits (Bempechat, 2004). Those socialization benefits are typically developed between family members because students usually seek homework help from family; furthermore, Corno (2000) points out that with today's technology students' socialization opportunities are growing.

One unique role for homework in a modern era is to provide social communication and contact among peers, especially peers who live beyond the neighborhood school, thereby increasing a sense of community . . . Homework that allow for Internet and telephone exchanges between and among students invite the development of natural, collaborative communities. (p. 529)

Whether the socialization benefits of homework are done face to face with family members or over the World Wide Web, the beneficial power of collaborative homework that encourages family interaction is gaining credence.

Two of the strongest proponents of homework and its benefits to student achievement are Lyn Corno, professor at Teachers College, Columbia University, and Jianzhong Xu, professor of curriculum and instruction at Mississippi State University. In 2004 they collaborated to write a research study that powerfully supports homework assignments as effective learning tools. In addition to agreeing with research that says homework is beneficial for classroom content, Corno and Xu likened homework to a job that benefits students' future lives as well as their current academic achievement.

Corno and Xu (2004) began their research study with the question "How do students experience homework?" In order to have the greatest variety in their sample sets, Corno and Xu used a variety of student grade levels. They included third graders, junior high students, and high school students. In addition to the students, Corno and Xu included parents of students. The central method of data collection for the study was done through interviews of students and parents before, during, and after homework. The second method of information collection that Corno and Xu used was done through videotaping students' homework activity. Videotaping was used in an effort to be as unobtrusive as possible. Lastly, the researchers showed the parents and students the videotapes, so that the students and parents could give interpretations to complement Corno's and Xu's interpretations. "Our research suggests that features of homework sufficiently overlap with job related activities to conclude that viewing homework as a job has important benefits" (Xu & Corno, 2004, p. 227-228).

One such benefit of seeing homework as a job is that students have the right attitude toward homework. The study showed that students saw homework as work and not play.

Students rarely finish their homework exclaiming that they had great fun . . .

Homework means business and the student should expect to buckle down. As in the workplace, careless efforts and laissez-faire attitude are likely to make the wrong impression. (p. 228)

A second authentic aspect of homework mimicking the workplace that Corno and Xu found was that homework, like a task in the workplace, is multifaceted. Both homework and workplace “assignments” can be broken down into component parts and students/employees are expected to be able to handle each element in turn while multitasking when possible. A third area of correlation between homework and the workplace is the reward for doing good work and doing it on time. While homework performance translates into grades and school advancement, workplace performance translates into “financial compensation and career promotion” (p. 228). In both cases, diligence and hard work pay off with external rewards. While educators are typically assigning homework to supplement classroom content and topics, Corno and Xu (2004) showed that homework diligence is a skill that will have an impact on students for years to come.

We have said that viewing homework as the job of childhood suggests the possibility that homework can help develop good work habits and important job management skills. Both are highly valued in the workplace, as is being able to plan ahead, budget time, and deal with environmental and mental distractions.

Our research reveals that everyday experiences with homework . . . provide clear opportunities for children to develop important work habits and management strategies (p. 229).

Overall, homework is a valid learning tool that helps students increase achievement inside the classroom by reinforcing class content and outside the classroom by fostering study habits and prioritization skills. Homework also trains students to integrate lifelong skills and habits that they will use for years to come in the job market.

### *Factors*

Homework in general is a useful and an effective learning tool that increases student achievement; however, like many tools, outside factors affect how useful the tool actually is. Additionally, while all tools can be useful, there are still varying degrees of effectiveness among them. Teachers need to find which factors most positively contribute to making homework more effective so that they can exploit those factors to benefit the learners. Student motivation is one such key factor that contributes to the level of homework effectiveness.

### *Student Motivation*

Trautwein's et al. (2006) research showed heavy emphasis on homework and intrinsic student motivation. Their research was unique because it attempted to trace student motivation toward homework through the various grade levels. Their research indicated that as students get older, they are less intrinsically motivated to do homework assignments. One possible explanation that Trautwein et al. (2006) suggested is that as students get older, they see less personal value in homework.

Increasing awareness of age-normative developmental tasks outside of school may increase the perceived 'costs' of doing homework. Taken together, given the drop in the motivational antecedents of homework effort and the increase in conflicting motivations, it seems reasonable to assume a decrease in effort from late childhood to adolescence. (p. 1096-1097)

Xu, in a 2004 study, found similar results. "The results suggest that the experience of doing homework for both middle school and high school students does not appear intrinsically motivating, either in the task itself or in competition with other after-school activities" (p. 1796). Both Trautwein et al. (2006) and Xu (2004) found correlations between homework completion and student motivation. Simply put, students with low intrinsic motivation are less likely to do a homework assignment, and not doing a homework assignment means that students are not receiving any of the intended and documented benefits of homework.

Since studies show that homework by itself is beneficial to student achievement and prepares students for life after school, it is clear that if students are not doing homework, they are not reaping any benefits. Pamela Coutts, the director of the teacher education program at Macquarie University, discusses the problem of students not being motivated to participate in beneficial learning activities. Coutts (2004) contrasted what homework means to students and to parents. Her findings offer implications for educators regarding how student motivation impacts homework's effectiveness. Coutts found that parents are typically receptive to the idea of homework, encourage that it should be given out, and try to impart its importance on their children; however, most reasons regarding

homework's importance that parents give their child-student are related to long-term benefits.

Homework is to teach the child later in life they have responsibility and they have to be disciplined to get things done. It's life – we have to do things. It teaches the child to think for themselves. It's a steppingstone to future education and how the system works. To get good marks and get into University they have to put the work in (Father of Jane, grade 4) (p. 183).

Other long-range benefits of homework that Coutts listed are more abstract concepts like teaching responsibility, self-regulation, and time management. Not surprisingly, the motivational benefits of homework stated by parents drastically differ from the benefits stated by students. Teachers need to note that while parents' goals are worthwhile, the teacher is not trying to motivate parents, but students.

Students' reasons for doing homework assignments, according to Coutts, are more concrete. Students admitted that much of their motivation is for extrinsic reasons such as getting good grades or not getting into trouble with their parents and teachers. The intrinsic reasons are almost non-existent, according to Coutts. Students claim that they are not motivated to do homework because they see it as "boring and lacking intrinsic interest" (p. 186). Additionally, the students that Coutts interviewed saw homework as something that interfered with more desirable activities like sports and social interaction with friends. Coutts correctly reasons that for homework to be more beneficial to students, they must be intrinsically motivated to do it as well. "The challenge for teachers . . . is to assign homework that strengthens the targeted skills and knowledge but in a way that is relevant and interesting to students who all too often see homework's



costs” (p. 187). Educators need to find types of homework that increase the motivation factor so that homework assignments can become a more effective learning tool.

### *Parental Involvement*

While student motivation is an important factor for effective homework, it is not the only factor. A theme that runs through current research about making homework assignments more effective is the theme of parental involvement. The research indicates that as parents become more involved with homework, student motivation, achievement, and completion rates increase (Bailey et al., 2006; Bempechat, 2004; Bryan & Burstein, 2004; Cancio, West, & Young, 2004; Hong, Milgram, & Rowell, 2004; Xu, 2004; Xu 2005; Xu & Corno, 2004).

As teachers know, students do not necessarily like or want to do homework; however, most students will still do their homework, and parental involvement is a significant contributing factor to homework completion rates and student motivation. In a research study done by Xu (2005), one-reason students have for doing homework is provided by the external motivation of parental involvement.

Instead, the children's predominant reason for completing homework was to win approval from their parents and teacher. For example, one girl said that she wanted her father to be proud of her; it made her feel good when he told her that all of her homework was right (p. 47).

All students would view homework as a way to improve their own education; however, having extrinsic reasons is not bad because the student is still doing the beneficial homework. Additionally, if students are doing homework for extrinsic reasons, “parents can exert influence on children's attitudes and behavior regarding homework” (Xu, 2005,

p. 47). In fact, parents have an effect on how well their child focuses on the nightly homework assignment. "Students said that they were most attentive to homework when they completed it with a parent, rather than with a peer or on their own; this occurred across age, gender, and socioeconomic levels" (Xu, 2005, p. 47).

Xu's (2005) studies on parental involvement with homework are unique and important because he focused on how parents can influence the behavior of the student, the homework attitude of the student, and the environment in which the student works in. Xu found that "students benefit from clear expectations regarding how to arrange the homework environment, as well as adults showing them how to cope when doing homework becomes difficult or distractions arise" (Xu, 2005, p. 48).

In a related study, Xu (2004) more closely examined the relationship between family help and homework management. Xu found that students do not always make the best decisions about how to manage and deal with homework distractions. "In a subsample of 551 students ages 10-15 years, more than 4 in 10 said that they did homework with a television set switched on, even though they felt that this made their studying more difficult and less effective" (p. 1788). The television being turned on was not the only reported distraction either. Telephone and television were the two main distractions, but other distractions included tiredness, pets, siblings, mood, and noises from appliances like vacuum cleaners and radios. Parents aid the effectiveness of a given homework assignment by helping students to manage all of these distractions. Whether parents set up a quiet study area and time, or help their child cope with internal frustrations and mood changes by providing positive feedback, they are helping the student focus more on the assignment, thus making it more effective (Xu, 2004). An

important factor to note about parental involvement is that none of it requires a certain level of education from the parent. In fact, the homework assignments could be in English and the parents could only speak Spanish and still be able to help their child maintain the right attitude toward homework and study environment (Xu, 2004).

To check whether or not parental involvement makes a significant difference, Xu (2004) administered a questionnaire to 121 middle school students from a large urban public school. All major ethnic backgrounds were represented in Xu's sample set. The questionnaire focused on five features of homework management that students might use to aid in homework completion. Each question was answered based on a five point scale where "1 = routinely" and "5 = never." Following the administration of the test, Xu did a follow up study to see if the results would differ under different conditions. The second, identical survey was given to 920 fifth through twelfth graders in a rural school.

Two different multivariate analysis of variance (MANOVA) tests and a Chi-square test were conducted to estimate the effects of family help on the five features of homework. The results of the two studies were similar. Both studies showed that family homework help aids in the areas of arranging the environment and controlling negative emotions. The second study showed that parental involvement was beneficial in the remaining three areas of homework management: managing time, focusing attention, and monitoring motivation.

Xu's study (2004) is important because it showed exactly how effective parental involvement is in making homework a more effective learning tool. If students do not do homework or are too distracted to focus closely on it, the assignment is not meeting its intended purpose. Parental involvement teaches students that homework is important;

additionally, parental involvement helps students manage many of the distractions and frustrations that result from doing educational work at home. The studies done by Xu (2004) should be particularly interesting to educators and parents because his data showed that “an adult being available for continued help to adolescents as they complete homework matters more than parents’ or family helpers’ level of education” (p. 1799). The research showed that as long as parents involve themselves in their child’s homework life and homework environment, the homework is more effective at doing what it was designed to do – extend class content, lead to higher achievement, and develop lifelong study and work skills.

### *Types of Effective Homework*

#### *Project-based assignments*

While student motivation and parental involvement have positive impacts on student achievement, teachers need to assign homework types that seamlessly integrate the use of those contributing factors. One type of homework assignment that teachers can use to increase the motivation factor of homework’s effectiveness is project-based learning (Appendix A).

Advocates of the project method tend to assume that most students find project-based studies motivating. Similarly, several studies have confirmed that other problem-orientated instructional approaches, such as problem based learning, promote student satisfaction, deeper approaches to studying, and self-directed learning . . . It is reasonable to assume that project-based learning promotes learning motivation as well (Helle et al., 2007, p. 398).

According to Helle et al. (2007), project-based learning addresses the problem of low student motivation toward homework. Helle et al. (2007) believe that because project-based learning encourages students to solve “real-life” problems, the students will be more intrinsically motivated toward finishing the project.

Helle et al. (2007) designed their research study to answer the questions “To what extent are students motivated by a model of work-based project learning?” and “Are the cognitive or motivational effects a function of student self-regulation?” (p. 400). In order to answer their research questions, Helle et al. (2007) used 58 college juniors who were already enrolled in a mandatory project-based course. The control group was a group of 51 college students enrolled in a similar subject course, but a course that was taught in the more traditional style of lectures and tests. The procedure for the experimental group was to work in teams of four to five students and design a particular information system for a hypothetical client. The final grade was a combination of the product itself and how well the group performed together.

The method of data collection Helle et al. (2007) utilized was two student questionnaires, one at the beginning of the study and one at the end of the study. Additionally, they conducted student interviews at the end of the course. Each questionnaire contained a dependent variable of “intrinsic study motivation,” which relates to student motivation, and the results were compiled using an ANOVA analysis to check for statistical significance.

The research study categorized students into three groups for easier comparison of student types. One group consisted of students who typically showed low amounts of self-regulatory behavior and, therefore, low motivation toward doing homework. The

second group was the intermediate self-regulatory group, and the final group was the group of students who showed high self-regulatory habits and, therefore, were generally perceived as having higher homework motivation. Helle's et al. (2007) study showed an increase in intrinsic student motivation for all groups of students that participated in the study; however, surprisingly, the group that had the greatest amount of change in self-regulatory behavior and homework motivation was group one. "In summary, the evidence suggests that intrinsic study motivation increased in the project group and that the motivational effect may be inversely related to student self-regulation" (p. 405).

Helle's et al. (2007) study showed that a teacher can improve students' intrinsic motivation to do homework by simply choosing the right type of homework assignment. Their study showed that one such type of assignment is the project-based learning assignment. Project-based homework allows students to become more involved in all aspects of the homework assignment. The student has an integral part in choosing the homework topic, the pacing, the area of focus, and the presentation of the material. Furthermore, project-based assignments are typically rooted in real world problems allowing the students to know that their decisions and effort on homework make a difference. Consequently, the project-based learning methodology is an effective homework type that increases student motivation.

#### *Interspersal assignments*

Fortunately for teachers and students, a project-based learning assignment is not the only type of assignment that increases student motivation. Studies show that interspersal assignments have positive effects on students' attitudes toward homework, homework completion, and homework difficulty levels (Cates & Dalenburg, 2005; Ford

& Skinner, 2004). Additionally, interspersal assignments are easily implemented into students' day-to-day homework lives because the assignment is a small modification to existing homework types (Appendix B). In many cases interspersal assignments will mix quick, easy questions and problems through an assignment that focuses on the target concepts of the day. It is a homework type that requires small changes in the creation of the homework assignment but can have a large impact on students' attitudes toward homework.

Cates and Dalenburg's (2005) research supported the belief that the use of interspersal assignments is a good way to motivate students to do their homework because the benefit of interspersal homework to students is the increase in problem completion. Students who finish a task quickly are motivated to continue working instead of quitting because of frustration. Interspersal assignments give students a beneficial boost of motivation to do the homework assignment because they are continually being given reinforcement problems that they can complete quickly and easily. "Specifically, because completing tasks may be reinforcing, interspersing very brief tasks allows for increased task completion rates and thus increases rates of reinforcement" (Skinner, 2002, p. 350). For Skinner, a beneficial assignment gives students the motivation to keep working through constant reinforcement.

Ford and Skinner (2004) also support interspersal assignments as a way to make homework assignments more effective by increasing student motivation. In their research, Herrnstein's Matching Law was used to help explain the reason for interspersing quick, easy problems among the more difficult target problems. Herrnstein's Matching Law states, "When a person is given a choice of two behaviors, his or her response will

be proportional to the rates of reinforcement for those two behaviors” (as cited in Ford & Skinner, 2004, p. 120). Ford and Skinner applied the matching law to homework by making the assumption that a completed task *is* reinforcement; therefore, even though interspersal assignments may be longer, they offer a higher return of reinforcement because of the quick, easy problems. Ford and Skinner (2004) believed that students are more engaged and focused for interspersal assignments because the students are constantly being reinforced. Their research also showed that more often than not, students will *choose* the reinforcing assignment despite the fact that it is longer. Because students are choosing their assignment and are being constantly reinforced, they are more likely to be engaged in what they are doing; therefore, making interspersal homework assignments more beneficial and motivating to learners.

The studies done by Cates and Dalenburg (2005) and Ford and Skinner (2004) are similar. Both studies attempted to find effects of interspersal assignments on students' completion rates, attitudes toward homework, and perception of difficulty level. Compared to each other, the two studies differed in only two main areas. In the Cates and Dalenburg study, the test subjects were in college and were given math assignments; the test subjects in the Ford and Skinner study were high school students and were given English grammar assignments. Despite the differences between the two studies, their results were similar. Both studies showed a statistically significant increase in student attitude toward interspersal assignments.

Cates and Dalenburg (2005) began their study by accepting sixty undergraduate student volunteers from a variety of chosen majors at an unnamed Midwest university. While the students were volunteers, they did receive nominal extra credit from their



professors for participating in the study. The students were presented with four pairs of assignments. Each pair of assignments contained a control assignment and an experimental assignment. The control assignment contained fifteen math problems that required students to multiply a 3 x 2 math problem (example:  $356 \times 43$ ). The experimental assignment also contained fifteen 3 x 2 multiplication problems, but additionally contained a set number of 1 x 1 (example:  $2 \times 5$ ) multiplication problems. It is important to note that the experimental assignment actually contained more math problems than the control assignment, and the easier 1 x 1 problems are interspersed into the assignment every three to five problems. Students were given three minutes to work on each assignment and were told to work the problems in order without skipping any. After the students were done with the control and experimental homework assignments, the students were asked to answer questions related to both assignments. Those questions were: “a) Which assignment would require more time to complete from start to finish? b) Which assignment would require more effort to complete from start to finish? c) Which assignment was most difficult? and d) Which assignment do you prefer for homework?” (p. 90).

Cates and Dalenburg (2005) analyzed the data in several different ways. They collected data on the number of problems completed, the number of target problems completed, the accuracy of the target problems completed, and the relative problem completion rate ratios. T-tests, Chi-square tests, and Cohen's d tests were all run to check for statistical significance with the alpha level being set at .05. In terms of homework accuracy and problem completion rates, the interspersal assignments offered no statistically significant advantage or disadvantage to students. Conversely, the

interspersal assignments were shown to be statistically significant in student attitude toward the homework. According to students, regarding the areas of assignment difficulty, time to complete, effort required, and preferred assignment choice, the data showed a statistically significant advantage toward the interspersal assignments.

The studies done on interspersal assignments show that if educators modify homework by interspersing relatively easy problems throughout the assignment, student attitude can be improved. An advantage to an interspersal assignment is that it can be easily and quickly created. In many cases, modifying an existing assignment could make it an interspersal assignment. It is important for teachers to note that interspersal assignments are not any shorter and do not eliminate any of the target problems being assigned. Rather the interspersing of easy problems makes the assignment longer with no cost to the target problems. The advantage of the interspersal assignment is in the motivation it provides to students. As reinforcement is built so is student motivation to continue working on the homework assignment.

#### *Interactive homework assignments*

It is clear that parental involvement is beneficial to homework's effectiveness, completion, and student attitude toward homework. Knowing this raises a possibility of designing a type of homework assignment that encourages parental involvement. This type of homework assignment and involvement would do more than ask parents to simply help control environmental factors.

Homework assignments that actively involve parents already exist. They are called "interactive homework assignments" or IHA for short. "An IHA is homework designed to increase parent involvement during the completion of home learning

activities and student outcomes” (Bailey, Silvern, Brabham, & Ross, 2006, p. 155).

Bailey et al. (2006) support the use of IHA because of studies, like Xu's, that show how parents can have a positive impact on student learning through homework. “Specific components of the homework have been found to support the notion that as parents interact positively with their children during the completion of this work, children become more engaged and are more likely to learn subject matter” (p. 155). According to Bailey et al., in order to maximize the effectiveness of homework, teachers need to design homework that fosters parent-child collaborations because “not only does parental involvement improve students' academic performance it also improves their perceptions of personal competence, and self-management” (p. 156).

An example of an IHA is the “Teachers Involving Parents in Schoolwork” (TIPS) model developed by J.L. Epstein, director of “Children's Learning” at John's Hopkins University. The TIPS model has several stages to each interactive assignment. Early in the assignment, students are tasked with identifying a problem, thinking through potential solutions, and articulating the solutions to parents. In the second stage students solve the problem and explain their solutions to parents. From here, both parents and students are tasked with applying the new skill(s) to an everyday situation. The fourth and final stage of the TIPS model encourages parents to share their insights and problem solving strategies. According to Epstein “this version of IHA increased students' motivation to complete home learning activities and enhanced essential writing skills that are key to gathering ideas, editing, and revising” (as cited in Bailey et al., 2006, p. 156).

Lora Bailey et al. (2006) conducted a research study to document the effectiveness of interactive homework assignments on student learning. Bailey et al.

(2006) used students from three different schools in southeastern Alabama with student achievement gaps in reading. The researchers divided the students between two groups – a control group and an experimental group. In addition to the students, Bailey et al. (2006) involved the parents of each student. The control group consisted of 84 student/parent groups that did not receive IHA. The experimental group consisted of 84 student/parent groups that did receive IHA. The instruments used to gather data from the study were a) pre- and post-parent surveys, b) parent checklist of behaviors, c) pre- and post-inference tests, d) student diaries, and e) IHA rubrics (Bailey et al., 2006).

In order to check any statistically significant increase in student achievement, the researchers analyzed the types of homework assignments currently being given by teachers and ranked them according to how well they worked as IHA. Additionally, the researchers determined baselines for student achievement before any IHA were given. During the four-week experimental period, the control group was given their normal homework assignment type and the experimental group was given IHA and asked to record their progress in a diary provided by the researcher.

The data was analyzed using a battery of *t*-tests, ANOVA tests, and Repeated Measures *F*-tests to check for statistical significance. Levene's test of equality of error variances was also run. The results showed that there was a statistically significant difference between groups on homework design. Furthermore, there was a significant difference in student achievement scores that favored the experimental group.

Bailey's et al. (2006) study goes a long way to support the notion that direct homework interaction between students and parents powerfully enhances the effectiveness of homework. Interactive homework assignments work on two levels.

First, they involve the parent in the manner that Xu (2005) showed is helpful. The parent is involved by helping students with time management, controlling distractions, keeping motivation high, and controlling emotions. Second, IHA encourage collaboration between the parent and the student, which increases student achievement. "This study and its findings add support to claims that strategies to involve parents in the completion of homework improve parental involvement and student achievement" (p. 161).

## Discussion

### *Summary*

Homework has been used as an educational learning tool for decades, and it will continue being used to enhance classroom learning. There is no denying the fact that there are both proponents and opponents to homework. Both are capable of defending their reasons with viable studies, but what must be asked is whether homework contributes enough positive results to outweigh the negative claims. The answer to that question is a resounding "yes." Homework not only further deepens students' classroom knowledge and increases their achievement, but it also teaches students lifelong skills like time management, prioritization, discipline, and distraction avoidance. Students will need all of those skills after they graduate from any level of education, which is why homework can legitimately be called, as Xu and Corno (2004) put it, "the job of the student" (p. 227). Furthermore, homework transforms students into lifelong learners by showing them that learning happens outside of the classroom. Few learning tools hold as much potential as homework does when used correctly.

As long as homework continues to be viewed in a favorable light and assigned by teachers, it is imperative for educators to make homework as effective as possible. Two

important factors that contribute to homework's overall effectiveness are student motivation and parental involvement. In order to increase student motivation toward homework, teachers can modify the type of homework assignments being given. Project-based assignments increase student motivation because project-based assignments can be collaborative, real world, chosen by the student, and applied to their lives. Interspersal assignments also increase student motivation by allowing the students to be continually reinforced that they are doing well.

Parental involvement is an equally important factor that contributes to effective homework. Parents can help students maintain the right attitude toward doing homework assignments, and parents can help control and limit distractions that adversely affect student focus on homework. Additionally, interactive homework assignments, like TIPS, encourage parents to participate collaboratively with their child during homework time. Interactive parental involvement works as positive modeling to students and improves student achievement.

Teachers need to continually refine their craft by using the best tools available to them, and one such tool is homework. Project-based assignments, interspersal assignments, and interactive homework assignments are all useful learning tools that help students manage motivation and increase achievement. It is through the continued development of such tools and the control of beneficial factors that students will continue to learn through homework.

*Conclusion**Implications*

It is encouraging that many researchers agree that homework is an effective learning tool; however, research also shows that some homework assignments are not as effective as they could be. Homework assignments are valuable to learners, but with minor changes homework assignments could be much more valuable. A typical homework assignment involves the repetition of class content taught that day. Coutts (2004) and Simplicio (2005) would say that this kind of homework is “tedious, repetitious, and boring, which causes students to lose interest” (p. 139). In other words, some researchers would call typical homework assignments unmotivating to students. Therefore, it is the teacher's responsibility to help increase homework motivation among students.

A goal that teachers strive toward is to motivate students to become lifelong learners. Lifelong learners are learners who are continually motivated to learn more, but a key characteristic of a lifelong learner is that they do much of their learning outside of the classroom. By definition, work and learning done outside of the classroom is homework, but students will not become lifelong learners if their outside learning experiences are boring and not motivating. If students are to become lifelong learners, teachers must use learning tools that keep students intrinsically motivated toward learning on their own time.

In addition to intrinsic student motivation, parental involvement is a key factor that helps students stay motivated toward learning outside of regular school hours. Many educators' current assignments do not encourage students and parents to interact with

each other. If teachers used a tool that more directly involves parents in their child's homework assignments, educators could see positive gains in completion rates, student motivation, and time management strategies that researchers link with parental involvement.

Fortunately, Christian school teachers can use the Christian school community itself to increase the effectiveness of homework assignments. Christian school communities have the advantage of a tightly knit bond between the home and school. The bond between home and school is so important to the Christian school community that many Christian schools' mission statements overtly declare it. For example, the mission statement of Kalamazoo Christian School in Kalamazoo, Michigan is

The Kalamazoo Christian Schools, in partnership with Christian families and churches, prepare students to serve God responsibly in His world, by equipping them with knowledge, skills, and a biblical vision for life, for the advancement of His kingdom (Kalamazoo, 2008).

Similarly, the mission statement of Calvin Christian School in Escondido, California is

The mission of Calvin Christian School, in cooperation with the home and church, is to teach the whole child from a Biblical worldview, providing children from Christian families with an excellent education for a life of Christ-centered service (Calvin, 2008).

In both mission statements, one significant focal point is the emphasis on the partnership between the Christian home and school.

Many Christian schools attempt to strengthen the bond between home and school by requiring that enrolled families sign a statement of faith. The statement of faith helps



alert parents to the fact that they are an integral part to the Christian school and its mission. Altogether, the home and school partnership encourages parents, teachers, and students to continually interact with each other to ensure the best possible learning environment for students. Parental involvement is a significant factor of student learning. Teachers in Christian schools know that most students' families are eager to help their children stay motivated because a core value system is shared. A core value system is an important attribute that Christian schools count on. Pulliam & Van Patten (2003), support the importance of a core value system in education is found. "It is very important for education that a core of common values still exists, for otherwise there would be no social consensus concerning essential action" (p. 15). A shared set of core values by the parents in a Christian school implies more supportive parents; therefore, Christian school families are more often willing to involve themselves with student homework assignments, which helps to increase a homework assignment's effectiveness. Christian school teachers need to look for homework assignments that the Christian home and school community can cooperatively work on, so that the homework itself becomes more intrinsically motivating to students.

By modifying existing homework assignments, Christian school teachers can begin increasing student motivation and encouraging parental involvement to ensure students have the best possible homework experience. More than any other assignment type, the project-based assignments best incorporate factors beneficial to improving student learning. A project-based assignment can easily involve parents, it can intersperse previous knowledge with new target goals, and it can provide student motivation because students have more freedom of choice with the assignment.

Furthermore, project-based assignments encourage social interactions on several different levels. If the project-based assignment is a group project, students will interact with peers as they work together. Additionally, a project-based assignment allows students to take advantage of modern technology and possibly interact with adults who are leaders in their respective fields of study. Most importantly the homework interaction will involve the parents, which further deepens parental involvement and student motivation through shared core values therefore, homework's effectiveness is increased.

In addition to increasing student academic achievement, student motivation, and parental interaction, project-based homework assignments help students to see parts of God's kingdom. Specifically, project-based homework illustrates to students the unique gifts and talents that each student possesses. I Corinthians explains that Christians are each members of one body, and that the body cannot function properly unless each part does its job. Collaborative project-based assignments model the same idea of a cohesive unit made of different parts. Each student brings to the group a unique skill set, whether it is leading, teaching, encouraging, or speaking. The group will learn most effectively and perform best when each student's skills are applied to the various parts of the assignment. By embracing the group dynamic and celebrating student differences, the project-based group assignment type is poised to most effectively mimic how God intends for his kingdom people to interact.

Project-based homework assignments also allow students to reform parts of God's kingdom. Often a project-based assignment is based on a real world problem and asks students to provide possible solutions. Because the world is fallen, it has many needs that Christian students can address through project-based assignments. Whether it is an

economic crisis, social and cultural animosity, or dangers to the environment, project-based assignments help students cross the boundary that lies between classroom content and application to real world issues. Project-based assignments give students the power and opportunity to put their knowledge and faith into action by acknowledging that a group of individual students can work as one body to solve real world needs. The project-based assignment truly is a multipurpose assignment type because it not only incorporates factors that enhance student learning, but also teaches lifelong learning skills and values that contribute to God's kingdom.

It is a goal of the Christian school that students become lifelong learners devoted to restoring God's kingdom, and all teachers need to help students achieve that goal. Lifelong learners are motivated students throughout their lives. They are motivated to learn both inside and outside of the classroom. In order to attain that motivation, it is important that students learn to appreciate that learning does not stop upon exiting the school building. Homework is a student learning tool that helps students understand and practice the goal of motivated lifelong learning. In order to best achieve that goal, teachers work to control certain factors that try to maximize student effort. By keeping student motivation high and including parents in the learning process, homework is capable of doing its job of increasing student achievement and giving students a chance at being successful lifelong learners.

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## Appendix A

*Project-based assignment*

## Culminating Activity! 😊

*The Annual Beutlich Independent Film Festival*

Our culminating activity will involve you and your group producing a piece of popular culture that you will share with your peers and your families. During the last week of our myths themed unit, you and your group are going to write a short film screenplay that each of you will also be actors and actresses in.

Your film will find ways to incorporate the six myths that we have studied into one ten-minute film. Your group can pick the genre of the film, the costumes, the plot, etc. You will write, edit, and film your movie on Monday-Friday to be presented on Friday evening at the Annual Beutlich Independent Film Festival.

The whole class is invited (obviously) as well as your families. Bring them all for a fun evening of food, fun, and film. As with any film festival the directors of each film will have the opportunity to introduce the film before and explain the content of the film afterward (that way all the pop culture newbies in the audience understand your “artsy” film).

## Final Film Requirements:

- Representation of each myth studied
- Plot
- At least 10 minutes in length
- End credits
- Opening Title

## After Explanation Requirements:

- Description of each myth in film. This includes a brief explanation of what the myth actually is, and how exactly your film attempted to portray that myth
- Explanation of how that myth is a distortion of what Christ has intended.
- Advice on how Christians can help redeem cultural myths in popular media.





Appendix B

*Interspersal assignment*

Mr. Beutlich  
7<sup>th</sup> Grade math

Name: \_\_\_\_\_

Grade: \_\_\_\_\_

Directions: Complete the following problems and show your work in the space provided.  
Do not use a calculator.

1.  $364 \times 19$

2.  $487 \times 22$

3.  $4 \times 2$

4.  $197 \times 14$

5.  $921 \times 84$

6.  $547 \times 41$

7.  $289 \times 75$

8.  $9 \times 6$

9.  $454 \times 38$

10.  $308 \times 63$

11.  $787 \times 59$

12.  $6 \times 3$

13.  $891 \times 15$

14.  $7 \times 5$

15.  $182 \times 44$

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