Five characteristics of quality homework

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Homework often causes frustration for teachers, students, and parents because it has not been well-designed. A thorough review of the research as well as surveys of elementary and secondary teachers, students, and parents reveal that quality homework tasks exhibit five characteristics. First, a quality homework task has a clear academic purpose, such as practice, checking for understanding, or applying knowledge or skills. Second, the task is efficient in terms of time required to demonstrate student learning. Third, the task promotes student ownership of learning by offering choices and by being personally relevant. Fourth, the task instills a sense of competence —the student can successfully complete it without help. And last, the task is aesthetically pleasing to the student—it appears enjoyable and interesting (Vatterott, 2009).

Clear academic purpose

Homework typically supports learning in one of four ways: pre-learning, checking for understanding, practice, or processing. The ultimate goal of the assignment—pre-learning, checking for understanding, practice, or processing—should be clearly communicated to the student (Marzano, Pickering, and Pollock, 2001; Pink, 2009). Students should easily understand the value of the task, or be told explicitly how it helps learning. Students should have no trouble connecting the purpose of homework to classroom learning.

Pre-learning
Homework may be used to provide an introduction to a topic or provide background for a more in-depth lesson (such as reading or outlining a chapter before a discussion). Pre-learning may be as simple as finding out what students already know about a topic, or what they are interested in learning about (such as writing down questions they have about the digestive system). Pre-learning may also be used to stimulate interest in the concept (such as listing eye color and hair color of relatives for a genetics lesson).

Checking for understanding
Ideally, homework should provide feedback to the teacher about student understanding, allowing the teacher to adjust instruction, and when necessary, reteach concepts, before practice is assigned (Vatterott, 2010). Checking for understanding is the most neglected use of homework, yet the most valuable way to provide feedback to the teacher about learning (Fisher and Frey, 2007). For instance, asking students to do a few sample problems in math and to explain the steps lets the teacher know if the student understands how to do the problem. Journal questions about a class science experiment can reveal the student's understanding of what happened and why. Asking students to identify literary devices in a short story demonstrates the student's understanding of literary devices.

Practice
One traditional use of homework has been for the practice of rote skills, like multiplication tables, or content that needs to be memorized, like spelling words. Although practice is necessary for many rote skills, there are three mistakes commonly made with the use

of practice homework. First, teachers may believe they are giving practice homework, when it is actually new learning. For instance, the math teacher demonstrates how to divide fractions. Because students can successfully complete problems in class (immediately after instruction), the teacher assigns 20 problems as practice for homework. However, when some students arrive home they realize that they do not understand how to do the problems (Vatterott, 2010). Second, if teachers skip the step of checking for understanding, students may be practicing something incorrectly and internalizing misconceptions (Fisher and Frey, 2007). Practice should be assigned only after the teacher is confident that students fully understand the concept. When practice is assigned prematurely, it can cause student frustration and confusion (Vatterott, 2009). Third, distributed practice is better than mass practice—practice is more effective when distributed over several days (Marzano, 2010; Marzano, Pickering, and Pollock, 2001). In other words, a student may need to practice a math operation 50 times to master it, but it is more beneficial for that practice to be distributed over several nights. Some math teachers give two-tiered math homework: Part one is three problems to check for understanding of a new concept taught today, and Part two is 10 problems to practice and reinforce a concept previously learned (Vatterott, 2010).

Processing

Processing homework is used when we want students to reflect on concepts that were discussed in class, think of new questions to ask, apply skills or knowledge learned, synthesize information, or show that they see the big picture (Vatterott, 2009). Processing homework is often a long-term project, such as summarizing major concepts in a unit, writing an original poem, or applying a number of math concepts to the design of a landscape.

Purpose and the selection of homework tasks

The purpose of the homework determines the type of homework task the teacher should design. This relationship is illustrated in figure 1.

Figure 1
The relationship between purpose of homework and homework task
(Vatterott, 2009)

Purpose of homework	Example of skill or content	Example of homework task
Pre-learning	Main ideas of chapter	Complete an advance organizer of the chapter
Pre-learning	Vocabulary words and definitions	Draw pictures to illustrate each vocabulary word
Checking for understanding	Reading comprehension	Create a concept map of the chapter
Checking for	Division of	Explain the

understanding	fractions	steps, do three problems
Practice of skill	Division of fractions	Do 10 practice problems. Write two word problems for other students to solve.
Practice of rote memory	Multiplication tables	Write, recite, or create a grid of multiplication tables

Efficiency

Some traditional tasks may be *inefficient*—either because they show no evidence of learning or because they take an inordinate amount of time but yield little learning (Vatterott, 2010). Such tasks as taking notes while reading a novel, or coloring in a map may sound like good homework, but do those tasks actually help students learn? (Bennett and Kalish, 2006). Does writing definitions of words really help students to learn what words mean? Writing definitions is a low level rote task--the meanings of new words are best learned by using them in context (David, 2010). Better tasks might be:

Show you know the meaning of the science vocabulary words by using them in sentences or in a story; For each vocabulary word, read the three sentences below it. Choose the sentence that uses the word in the correct way (Vatterott, 2010).

Efficiency also means that assignments are adequately explained (preferably in writing) and structured so students are clear as to how to complete the assignment (Darling-Hammond and Ifill-Lynch, 2006). *Read Chapter Four* is an inadequate direction at any grade level. Reading to acquire information or to think critically about the content requires a scaffolded task. Teachers may rely on worksheets, but when students can simply fill in the blanks, they aren't necessarily demonstrating understanding of the content (Vatterott, 2010). A more meaningful scaffold would focus on broader concepts—graphic organizers, big picture questions, or reflective tasks such as: *List the four most important ideas in Chapter Three; Keep a journal-- After each chapter section, write a reaction to what you read*; *During your reading place post-it notes on the parts of the reading that you had questions about;During your reading place post-it notes on the parts that you found most interesting to discuss in class* (Vatterott, 2007).

If the homework assignment is to *Study for the test* does that mean memorize facts, review concepts, or learn new material that the student did not learn in class--how do students know? A study guide or take-home test that shows students exactly what they need to know is helpful—but they don't necessarily have to write or complete anything to study—each student should be encouraged to create their own best method of reviewing the information. The teacher should suggest possible ways for the student to do that, such as organizing notes into an outline,

writing test questions for themselves, putting important information on note cards, or studying with a partner (Vatterott, 2010).

Inefficient homework tasks are often well-intentioned attempts to create fun or interesting tasks, while losing sight of the academic focus. (What exactly is the learning purpose of solving a word puzzle? What evidence of learning does it show?). Projects that require non-academic skills (like cutting, gluing, or drawing) are often inefficient. Classic homework projects like models or poster displays are designed by teachers with all the best intentions--they see them as a fun, creative way for students to show what they have learned. But unless content requirements are clearly spelled out in a rubric, projects can reveal very little about the student's content knowledge and much more about their artistic talents (Bennet and Kalish, 2006). Even content rich projects can be inefficient in terms of time spent. Often teachers don't realize how many hours students may spend creating the projects and how tedious it may be for both the child and the parent. For many types of projects, there are more efficient ways to accomplish the same goal and to better demonstrate student learning. Instead of creating a model of ancient Greece, students could write a diary entry as if they were living in the time, discussing daily life, culture, and laws that affected them. Instead of building a model of the solar system, students could create a poster to show the planets' temperature extremes, periods of rotation in Earth time, and the importance of inertia and gravity to the motion of the planets (Vatterott, 2010).

Ownership

Students often do not complete homework simply because the task is not meaningful to them. In many classrooms students have little or no ownership of their learning in general—we teach, we assign tasks, we test—and students are the passive receptacles (Eisner, 2004; Guskey and Anderman, 2008; Intrator, 2004). They have no stake in the outcome—it doesn't mean anything to them—because it's not about them. As long as learning and homework is being "done to" them, the goals are ours not theirs (Cushman, 2010; Kohn, 2006). As a teacher once said, "I've never heard of a child not doing his work, it's our work he's not doing".

Often when students do not complete homework, we fail to examine the learning task we have given them to do. Instead of asking, "How do we get them to do their homework?", we should be asking, "What's the task?" (Darling-Hammond and Ifill-Lynch; Kohn, 1999, 2006). Quality tasks allow students choices--the freedom to work from their strengths and demonstrate their learning by creating presentations or products that can be personalized (Eisner, 2002; Tomlinson, 2010). Students are most likely to be emotionally engaged by tasks that allow them to give their opinion, share information about themselves or their lives, solve a problem that is important to them, compete with others, imagine possibilities, or be creative (Intrator, 2004, Vatterott, 2007). The following are some examples of homework tasks that encourage student ownership:

- Students design their own method for learning multiplication tables that they then share with others—cards, writing, reading, drawing pictures, or creating a song, rap, or poem.
- Students create a question and answer game that covers the main ideas at the end of a unit.

- Students write directions for how to use a double balance beam that can be used by other students. (Vatterott, 2007).

When students practice reading (and hopefully grow to enjoy reading for pleasure), choice is especially important—choice of what, when, and how much to read. Typical assignments dictate what as well as how much: *Twenty minutes each night* or *two chapters from the novel each night* or *30 pages a night*. But forcing students into those requirements may have the perverse effect of students actually reading less than they would if they were not "on the clock" (Kohn, 2006). A better way might be:

Try to read an average of 30 minutes a night. Once a week, estimate about how much time you have spent reading. Write a short paragraph about what you have been reading.

If we want to promote ownership and encourage students to enjoy reading, we must go beyond the assigned reading list. One student who usually enjoyed reading lamented, "I just want to read something that *I want* to read!" What "counts" as reading should be broadened to include non-traditional sources such as blogs, websites, and magazines (Vatterott, 2010).

Ownership of learning is enhanced when students are encouraged to *self-assess* and reflect about their own learning (Costa and Kallick, 2004). Many students don't know how to self-assess because assessment has always been "done to" them. If they've been trained in a system of rote learning, to simply regurgitate information back, reflecting and evaluating their own learning is a foreign concept to them. They need scaffolded strategies to self-assess, check for their own understanding, and follow their own progress (Vatterott, 2009). For instance, a grade one teacher might encourage self-assessment with homework by asking students to "circle the part of the spelling word that is the trickiest". The teacher could then use that feedback to explain spelling rules to her students. Another way to help students to self-assess is to assign test corrections as homework after a test. For each question students got wrong they must state why they missed the question. They must then find the correct answer in their notes or book.

Once students learn how to take control of their own assessment, they feel more positive about their learning. "Students commented that self-assessment helped them feel prepared, improved the quality of their work, and gave them a better understanding of what they had achieved." (Andrade, 2008, p 60).

Given the knowledge we now have about developmental needs, brain-based research, motivation, learning styles, and failure orientation, it seems obvious that the locus of control for homework must reside in the student. "Research suggests that homework must be increasingly inspired by students' own interests and motivations" (Corno, 1996, p. 29). If we claim we want students to take responsibility for homework, we must give them more control over what they learn, how they learn it, and how they show that they've learned it. Students need and desire power over their own learning and are motivated by the prospect of choice and the opportunity for personal expression (Vatterott, 2007).

Competence

Quality homework tasks are designed not only to support classroom learning, but also to instill a sense of competence in the mind of the learner (Sagor, 2002).One of goals of homework is to help students feel positive about learning and for them to develop their identity as a successful learner. Educators have long understood that when students feel competent as

learners they are more motivated to approach learning tasks--success breeds success and failure is demotivating (Corno, 1996; Sagor, 2002).

In fact, when students feel unsuccessful approaching homework tasks, they often avoid the tasks completely as a way to protect their self-esteem (Goldberg, 2007; Past, 2006). A major demotivating problem with homework is tasks that students are unable to complete on their own (Darling-Hammond and Ifill-Lynch, 2006). Homework that cannot be done without help is not good homework.

Failure-oriented students are particularly sensitive about how they feel about approaching a task. If certain tasks reinforce their view of themselves as "smarter", they will more likely attempt those tasks (Glasser 1992; Sagor, 2002). Being successful at completing homework feeds the student's sense of competence. Tasks that make them feel "dumber" will be avoided to protect their self-esteem (Goldberg, 2007; Vatterott, 2009).

Differentiating homework tasks

Since learners differ in readiness and may vary in their pace and development of intellectual skills, differentiation of homework tasks is an important strategy for developing competence (Margolis, 2005; Minotti, 2005; Tomlinson and Imbeau, 2010).

As with classroom instruction, homework should be differentiated based on the learner's unique profile of readiness, learning style, and organizational skills (Tomlinson, 1999). Most students are eager to be successful when the difficulty and amount of work are reasonable. To meet the needs of a variety of learners, homework may be differentiated in one of three ways— by difficulty or amount of work, by the amount of structure or scaffolding provided, or by learning style or interest.

Homework tasks that are too difficult for students to complete are a major demotivator for many students, especially academically challenged students (Tomlinson, 2003; Vatterott, 2003). Students with limited readiness may need homework with simpler reading or more concrete tasks. More advanced students may benefit from more challenging tasks or the opportunity to explore topics in greater depth (Tomlinson and Imbeau, 2010). For example, in one grade three classroom, students take a spelling pretest at the beginning of the year. Those students who know all the grade three spelling words are not required to complete grade three spelling homework.

In a secondary science class, a recent homework assignment contained eight questions to check the student's understanding of kinetic and potential energy. All students were expected to complete those questions. A challenge question was also given—all students were encouraged to attempt the challenge question, but only the students enrolled in geometry were required to complete the challenge question.

Closely related to difficulty and equally important, is the *amount* of work students are assigned. The same task that takes the average student 15 minutes to complete could take another student over an hour, causing some students to spend excessive time on homework. On the other hand, students who master concepts quickly can easily become frustrated when they must complete the same number of practice problems as students who have not yet mastered a concept (Vatterott, 2009).

A simple means of differentiating is to make homework *time-based* instead of *task-based*. Instead of assigning all students 20 questions to answer, all students are instructed to complete what they can in a specified amount of time: "Answer as many questions as you can in 30

minutes, draw a line, and work longer if you like" (Vatterott, 2010). This provides valuable feedback to the teacher about working speed and level of understanding.

Adding structure or scaffolding to homework tasks may be appropriate for some students. One method is to require less writing for some students, giving them fewer blanks to fill in, or answers that can be circled instead of written out. Many struggling students have poor fine motor skills, which makes writing tedious (Vatterott, 2009). Some students may be expected to create a graphic organizer of their reading, while other students may be provided with the skeleton of an organizer and be required to fill in only a few key ideas. Some students may be given a word bank for answering questions, or be given a copy of class notes to help them study. Math homework may be given with a choice of correct answers or math manipulatives may be loaned out for homework. Some students may be allowed to use a peer helper who they call if they have problems with homework. Hint sheets or lists of supplemental web sites can also be given.

Aesthetics

Every day students make decisions about whether to complete a homework assignment based on their first impressions. The way homework *looks* is important. Five page worksheets or endless lists of definitions or math problems look boring and tedious. While those things may not be important to some students, for others those aspects of the task strongly effect motivation and the willingness to attempt the task (Minotti, 2005). Closely related to the student's need for ownership, the aesthetic component refers to the *presentation* of the task--how enjoyable or engaging the task appears, as well as the visual appearance (Vatterott, 2009). As a gourmet cook would say "presentation is everything." The *presentation* of homework is about how *appealing* the task is judged to be--the way it looks on paper, whether it appears easy or hard, fun or tedious, interesting or boring. Presentation is probably most important to younger students and academically challenged students. Those students are easily overwhelmed by spaces that are too small to write answers in or worksheets that have too much information on a page.

Wise teachers have learned that students at all levels are more motivated to complete assignments that are visually uncluttered. Less information on the page, plenty of room to write answers, and the use of graphics or clip art make tasks look inviting and interesting (Vatterott, 2009).

Conclusion

If we want homework to be meaningful it must first be a positive experience— work that is able to be completed without help and an experience that makes kids feel competent. It must be adequately explained and scaffolded to be an efficient task. To fully take ownership of homework, learners must have choices of tasks that are customized to be meaningful to them. And most importantly, they must be able to freely communicate to teachers when they are struggling with homework, knowing that they can admit they do not understand a task, and can do so without penalty.

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