Homework for secondary school students

School resources

Homework is defined as tasks assigned to students by teachers that are intended to be carried out during non-school hours1. Homework is a unique educational practice as it is the only learning strategy that crosses the boundary between the school and the home. Much virtue has been attributed to the practice of homework that has not been borne out by research. Both teachers and parents have strong feelings, both positive and negative, about the value of homework, and parents and teachers alike still confuse homework load with rigour, and compliance with responsibility. To further complicate matters, most secondary teachers have never been trained in the effective use of homework, so tend to rely on the traditional types of tasks they experienced as students.

In recent years, the practice of homework has come under critical review, with public attitudes around the globe changing and international trends emerging, mostly at the primary level:

- Eliminating homework in the first 2-3 years of primary school.
- Limiting homework to reading only in the first 6 years of primary school.
- Eliminating weekend or holiday homework.

Trends in homework practice at the secondary level have emerged more slowly, as homework research for specific content areas has been inadequate to draw consistent conclusions. Some general secondary trends include:

- More frequent use of study periods or academic labs during the school day, giving students time to complete homework or visit teachers for help.
- Schoolwide calendars that allow teachers to coordinate exam dates, due dates for major projects, and extracurricular events to avoiding overburdening students.
- Eliminating weekend or holiday homework.

Many of the changes shown above have occurred at the school or district level, but some countries, such as Finland, France, India, and the United Arab Emirates, have instituted changes through government mandate.

Homework and families

The diversity of families makes the practice of homework even more complicated. Parents within the same community may differ in their beliefs about the place of academic work in life. Some parents prioritise academics (wanting more homework), others want a balance of academics and chosen activities such as playing sports, cultural activities or service work, and others, wishing to reduce student stress, prioritise leisure and happiness (wanting less or no homework). There is also a growing parent activism around the world, driven by the role homework plays in student stress levels and an awareness of the need for balance in work, family time, downtime and sleep. Parents are speaking out with concerns about 'academic stress' and work/life balance for students and, as a result, are demanding secondary schools reduce the homework workload.

There are also concerns about homework as an equity issue. Economic differences can entrench privilege as children from wealthier families enjoy ready access to technology, tutors, and educated parents, while children of poverty may lack access to technology, materials, and favourable working conditions. A study by the OECD2 of students from 38 different countries showed that students from higher social classes did more homework than students from lower social classes. More affluent parents are also more likely to help with homework than less affluent parents. Students living in poverty often need to prioritise family responsibilities, such as paid work or caring for younger siblings, over homework.

In an effort to address the widening economic diversity of families and to accommodate different parental preferences, the following homework practices are gaining popularity in secondary schools:

- Allowing flexibility in when homework is due, moving away from daily homework to homework that may be turned in over several days.
- Differentiating homework—providing resources for students or parents who desire additional work (challenge packets, lists of websites) and allowing other parents to 'opt out' of homework, or to choose to limit the amount of time their child spends on homework.
- Providing more time during the school day or after school for students to complete homework. Some schools, especially those in high poverty communities, are extending the school day, so that all homework is completed at school.

The research on homework

The results of research about the benefit of homework to academic achievement are mixed, inconclusive, and sometimes contradictory. These results are not surprising given that homework involves the complex interaction of a number of factors, such as differences in students, teachers, tasks, home environments, measurements of learning, and the unique interaction between homework and classroom learning within individual students3. The pervasive flaw of the early homework research was that it focused almost exclusively on the correlation between time and achievement, with no consideration of the type or quality of the homework task. That research revealed that, up to a point, the correlation of homework time and secondary achievement appeared positive, but past the optimum amount of time, achievement either remained flat or declined4.

What was the optimum amount of time spent on homework for secondary students? Curiously, the appropriate amount of homework for different year levels was consistent with a longstanding guideline called the 10-minute rule (origin unknown). The 10-minute rule is a guideline many schools follow that homework should not exceed 10 minutes per year level per night, all subjects combined. That is, a student in year ten should be expected to complete no more than 100 minutes per night, while a student in year twelve should be expected to complete no more than 120 minutes per night5.

However, while the 10-minute rule may be helpful as an upper limit, it fails to take into account the quality of the task and differences in students' working speeds. It is important to remember that correlation of time and achievement is not causation: it is impossible to show that homework causes higher achievement. Correlating time and achievement also ignores many any other variables that may affect achievement. After controlling for motivation, ability, quality of instruction, course work quantity, and some background variables, no meaningful effect of homework on achievement remained6.

Due to such discrepancies and other flaws in homework studies, researchers disagree as to whether or not homework enhances achievement. While many hold strongly to their assertion that homework is beneficial, others point to newer studies that seem to discount early research. A new generation of homework

studies using more sophisticated analyses and controlling for more variables often fail to find a significant relationship between homework time and achievement for secondary students7.

Teachers should view the research through the lens of what they intuitively know about their students and apply the same principles of effective teaching and learning to homework that they would apply to the classroom. Teachers know that organisation and structure of learning matters, that feedback about learning is critical, that the quality of a learning task matters, and that student differences in prior knowledge, skill level, and learning preferences must be considered. Achievement is related not to the amount of homework or the time spent on it, but to the quality of the homework task, the student's perception of the value of the task, and how interesting the task appears. In other words, task quality is what really matters.

Purposes of homework

If homework is given, it should be purposeful and meaningful, not just given for the sake of assigning homework. Before designing a homework task, teachers must first determine the purpose of the task. This may include pre-learning, diagnosis, checking for understanding, practice, or processing.

- **Pre-learning:** traditional preparation homework, such as reading or outlining a chapter before a discussion, was often used as background for a more in-depth lesson. A more engaging use of pre-learning would be to discover what students already know or are most interested in about a topic. One strategy to stimulate interest is to give students a specific question such as 'Why are covalent bonds important?' or 'How and when are subordinating conjunctions used', and allow them to read whatever they choose to answer the question.
- **Diagnosis:** how do we design learning if we don't know where students are? Diagnostic homework may include pre-tests, a checklist of 'I can' statements, or a practice test to assess prerequisite skills. Diagnostic homework saves time—once teachers know where students are in their skills or knowledge, they can plan instruction more efficiently.
- **Checking for understanding:** this is probably the most neglected use of homework, yet it is the most valuable way for teachers to gain insight into student learning. For instance, journal questions about a science experiment may ask the student to explain what happened and why. Asking students to identify literary devices in a short story shows the teacher whether the student understands literary devices. 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.
- **Practice:** the traditional use of homework has been for the practice of rote skills, such as mathematical operations, writing conventions, or scientific processes. Although practice is necessary for many rote skills, there are three mistakes that teachers sometimes make with the use of practice homework. First, teachers may believe they are giving practice homework when, in fact, the student did not understand the concept or skill in class. The homework then actually involves new learning and is often quite frustrating. Second, if teachers skip the step of checking for understanding, students may be practising something incorrectly and internalising misconceptions. For instance, students should practise math operations only after the teacher has adequately checked for understanding. Third, distributed practice is better than mass practice—that is, practice is more effective when distributed over several days. A smart practice for math is two-tiered homework: Part One is three problems to check for understanding of a new skill, and Part Two is 10 problems to practise a skill previously learned.
- **Processing.** As opposed to rote practice, processing homework asks students to do something new with concepts or skills they have learned - to apply skills, reflect on concepts that were

discussed in class, think of new questions to ask, or sythesise information. Processing homework may be a single task such as applying algebraic concepts to solving a complex problem, or a long-term project such as demonstrating the use of figurative language and symbolism by writing an original short story. Processing homework helps students achieve a dexterity of skills by application—making the skill more automatic and more meaningful due to the context. This application acts as a rehearsal for tertiary education or for more advanced secondary coursework.

Designing quality homework tasks

Creating quality homework tasks requires attention to four aspects:

- **Academic purpose**—Tasks should communicate a clear academic purpose.
- **Efficiency**—Tasks should help students reach the learning goal without wasting time or energy.
- **Competence**—Tasks should have a positive effect on a student's sense of competence. Homework tasks should be designed so that the student can complete the task without adult help.
- **Ownership**—Tasks should be personally relevant and customised to promote ownership8.

Academic purpose: The academic purpose of a homework assignment—prelearning, diagnosis, checking for understanding, practice , or processing—as well as its connection to classroom learning should be clearly communicated to students. Ideally, all homework assignments should show one or more specific learning goals. Writing out definitions of vocabulary words or taking notes while reading a novel may sound like good homework, but one might question whether those tasks are appropriate to a focus on higher level thinking. Students shouldn't merely know what Newton's three laws of motion are – they should show how they are applied in situations such as automobiles or theme park rides. Students shouldn't merely show how digestion, respiration, and circulation occur - they should show how those processes interact and effect each other.

Efficiency: some traditional tasks may be inefficient in terms of time spent—either because they show no evidence of learning or because they take an inordinate amount of time. Is the goal for the student to simply read a 30-page chapter, or is the goal to identify key concepts within the chapter? Does the research paper need to be 10 pages long to demonstrate the learning goals? Teachers often believe that more reinforcement of learning is always desirable, when in fact, for some students, it may not be necessary. Efficiency is what works best for an individual student to reach the learning goal.

Competence: Homework tasks should be designed not only to support classroom learning but also to instill a sense of competence in the learner. In fact, when students feel unsuccessful in approaching homework tasks, they often avoid the tasks completely as a way to protect their self-esteem. Teachers should adjust homework difficulty or the amount of work based on their assessment of the student's skill level or understanding.

Ownership: When we give students more ownership of the homework task, we make it more efficient and students are more motivated. The ultimate goal of ownership is independent learning, but often secondary school homework is not structured with enough agency to allow for that independence. Many secondary students still don't know how to learn on their own or what is the best strategy for them, often because their studying has been tightly prescribed. Perhaps that is because teachers believe the tasks they prescribe will naturally lead to the learning they desire for all students. But one size does not fit all—students learn in different ways and we should respect those differences. To develop independent learners, we must first empower them to assess their unique learning needs and discover how they learn best. Then we must give them the freedom to develop their own methods of reaching the learning goals. Allowing secondary students that freedom is important preparation for tertiary education, where

homework is often less structured with less guidance and where students are expected to design their own strategies for mastering content and studying for exams.

Student ownership begins with choice. Homework choice can be as limited as 'pick any 10 of the 30 problems', as specific as having students work only on learning goals that they are struggling with, or as wide open as a self-selected and self-designed project. Students may not always have a choice about the learning goal, but they can almost always be given some agency in designing the best task for them to reach the goal. Some secondary schools have replaced traditional teacher-prescribed homework with the student's freedom to choose only the tasks they believe they need to prepare them for the next in-class assessment.

Flipped homework: Flipped homework has the potential not only to be efficient but also to allow for student ownership. Flipped homework is the practice of delivering direct instruction through instructional video as homework, and then spending class time on application, analysis, and practice (in other words, the video explains quadratic equations, then students work through problems in class). Flipped homework is increasingly popular at the secondary level, especially in communities where all students have internet access. In a survey of more than 2000 K-12 students in the United States currently experiencing flipped homework, 52% reported that flipped homework took less time than traditional homework and 67% reported that the videos made understanding the content 'easier' or 'much easier'9. This is not surprising, since videos allow students to pause and repeat instruction as needed.

Flipping can be made even more efficient by asking students to go beyond watching the video and taking notes. Some teachers ask students to complete a formative assessment about the video. Formative assessments could be to complete a sample problem, answer a few questions to check for understanding, summarise important points, or list questions they have. Some teachers have their students rate their level of understanding of the video as green (I understand), yellow (I am confused on some parts), or red (I don't understand). That feedback can then be used the next day to group students for follow-up tasks.

Should homework be graded?

Research has shown that effective feedback is one of the most powerful influences on learning10. As more secondary schools focus on mastery learning, homework may be increasingly viewed as formative feedback. The current consensus among researchers is that homework's best use is as **formative assessment**—assessment **for** learning that takes place during learning11, in which case the homework would be given feedback but not graded. Of course, if homework is used as a **summative assessment,** and the teacher is confident the work was completed independently by the student, it would be reasonable that it would be graded.

If an NCEA assessment is to be set as homework, it is beneficial to students if teachers first prepare them through some explicit instruction and low-stakes assignments (ungraded or weighted lightly) that focus on the development and practice of individual subskills (or knowledge) that are contained within the NCEA task. This might be the research and analytical skills required to complete a research project or the figurative and rhetorical language features needed for a portfolio of different writing genres. Students would receive targeted formative feedback and be given additional resources as needed to better prepare them for the high-stakes assessment.

Homework is just one part of an overall instructional plan. As our curricula, teaching strategies, and assessment strategies evolve to better meet student needs, so should our homework practices. Only

by creating assignments that are effective and equitable can we make homework a valuable part of instruction and learning.

Endnotes

[1] Cooper, H. (2007). The battle over homework: Common ground for administrators, teachers, and parents. (3rd edition). Thousand Oaks, CA: Corwin Press.

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[4] Cooper, H. (2007). The battle over homework: Common ground for administrators, teachers, and parents. (3rd edition). Thousand Oaks, CA: Corwin Press.

[5] Vatterott, C. (2018). Rethinking homework: Best practices that support diverse needs, 2nd edition. Alexandria, VA: Association for Supervision and Curriculum Development (ASCD).

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