

Is Homework “Deliberate Practice”?

Advance Uncorrected PROOF

FROM OUR EARLIER WORK work together, my student collaborators knew that getting good at something takes long hours of “deliberate practice.” In order to solidify their skills in the outside activities they pursued, they said, they often worked for hours on their own time. Jacob, for example, played in a neighborhood basketball league in New York City.

When I finish a game, I make notes on what I did bad. I ask my friends what I need help in. Then, when I’m alone, I practice by myself. If I’m bad at free throws, I take fifty free throws. If I’m bad at three-pointers, I take a lot of three-pointers. My stamina is not that good, so I push myself by running in the park every day.

— JACOB

Ideally, their homework for school classes should serve the same function, kids agreed: pushing them to reach a new place that was just within their capability. But when we applied the criteria for deliberate practice to their typical assignments, the homework typically fell far short. The students summarized the situation in the following chart:

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WHAT KIDS TELL US

It’s always been a predetermined assignment: This is what you’re going to do. It’s always on the whiteboard even before you get into class, and it’s not necessarily what students need at that point. — BRIDGET

“Deliberate practice” looks like this...	... but homework often looks like this
It has an express purpose	We don’t know the point of doing it
It’s geared to the individual	Everyone gets the same homework tasks, no matter what each person needs to work on
It involves attention and focus	We can do it without thinking
It requires repetition or rehearsal	We’re repeating something just to get it over with, not to perfect and remember it
It requires careful timing	It takes more time than we have to do it
It leads to new skills	We don’t use it for anything after it’s done

What would it take to turn homework into the kind of practice that would help students strengthen their skills and knowledge in academic subjects? Perhaps the most powerful steps in that direction would occur, we speculated, when students could start to think of homework as “getting good” at something—and when teachers could welcome feedback from kids on what best supports that developing mastery. In the following sections, students will join that conversation with many perspectives from their own experiences.

WHAT’S THE HOMEWORK FOR?

My student collaborators often did not know the point of the homework their teachers assigned them. In order to feel motivated to do it, they said, they had to believe that the work mattered.

We need homework that is important, that helps us toward a certain goal we have to meet. The homework that’s given can seem random, like a non sequitur—it has nothing to do with anything. – CLAUDE

They especially resented homework assignments that seemed like busy-work.

I think a lot of these drills are intended to keep kids focused on something, and to keep them out of trouble: “Let’s just give them something to do.” – BRIDGET

Kristian objected when her sign-language teacher made students copy out material from a book on sign-language etiquette:

The repetition in this case wasn’t helping me use sign language better. If you really want me to learn it, ask me to practice it with someone in real life—maybe go to an event where they use sign language. – KRISTIAN

Above all, students believed that homework should match whatever they individually needed to work on. Instead, they said, teachers usually handed out the same homework to everyone.

I don’t think I’ve ever had a teacher who’s geared the homework specifically for what I’m missing. It’s always been a predetermined assignment: This is what you’re going to do. It’s always on the whiteboard even before you get into class, and it’s not necessarily what students need at that point. – BRIDGET

I need help with atomic radius in chemistry, and another girl has a problem with some other topic. But the teacher doesn’t know our weaknesses and what we’re good at. The homework, it’s just a general “what we need to know.” We all learn at different paces, and in different ways, so centralize on what we need to learn, and how the homework is going to help us. – VIVIAN

These students did recognize that practicing certain things outside of school would move them ahead. When they saw that homework helped them, they felt the same motivation to do it that they experi-

enced in other learning activities, like dance or sports. Christina, for example, treated homework with a perfunctory attitude if she didn't feel that she needed that practice. But she actually took it more seriously if she was having trouble in a subject:

If I already get something perfectly, I'll just do the homework on the bus on the way to school. But if I don't understand something in class, or if I'm just getting to understand it, I'll do my homework, hand it in, and if I get it wrong I'll try again. – CHRISTINA

Because students needed practice in different aspects of the work, Kristian said, homework tasks should reflect that variety.

Ideally, the teacher would know individual students enough to say, "Let me give you this worksheet, because it will help you." If you were to leave it up to us to pick the one we have the most trouble with, I don't think we'll pick the one that we need. – KRISTIAN

Small groups might work together on assignments, Aaron suggested, focusing on what each student needed most.

Small groups of peers could help each other do the assignment. It could either be the people that are bad at one thing all grouped together, or people from varying levels in one group, like if I'm good at pronunciation and someone else was really good at conjugating. – AARON W.

One assignment could also address the different needs of many students, if it allowed learning in a variety of ways, Claude noted. For example, his English class was working on a multi-part project, where the homework took different forms:

You can choose an essay, or you can do a poem. And for one part, you do an artistic representation of what you wrote. With more options and more choices, it might open up learning, and wanting to do things, to all students, not just a certain specific group. – CLAUDE

NO FOLLOW-UP, NO GAIN

When a teacher did not follow up on their homework, students felt that they were left hanging. Did it matter whether they had done it? Why?

The next day, some teachers barely look at it. You worked so hard to get it done, and they just look and say, “Oh you did it, fine.” It’s like it’s just for nothing. – VIVIAN

Naturally, students wanted teacher feedback on the homework they turned in.

So many of us have no idea what’s going on! And when we don’t go over homework in class, it feels like we’re being ignored. – KRISTIAN

She has to keep moving forward, she has to stay on her path. But there are some of us that fell through the cracks, and we’re, like, “Wait, come back, rewind, so I can get what I need!” – CLAUDE

Without an explicit teacher response, Kristian said, her homework did not seem like deliberate practice.

I really want the teacher to evaluate it, so I can know what I’m doing wrong. From there, she can go over what we need, and maybe create another homework assignment to explore something that we didn’t get. – KRISTIAN

And unless a teacher intervened, said Christina, practicing something wrong in a homework assignment could be worse than not practicing it at all.

Until you understand what you’re doing wrong and how you can change it, you’re just going to continually do it wrong and think that you’re doing it right. – CHRISTINA

Following up on homework, however, could not realistically entail one-on-one feedback from teacher to students on each assignment. Instead, students said the classroom should resemble an orchestra rehearsal, with the conductor and those who are practicing working together to identify what needs improvement and make it happen. Teacher and students would then share the responsibility of using homework to diagnose problems of understanding. And teachers should act on that information right away.

Students felt much more willing to work on homework when their teachers consistently went over it and helped them learn from it. Working out the problems people had, Nick said, helped to solidify the knowledge he needed to move forward.

We investigate the problems we did as a class, and try to figure out how to get through them. You know why you got the problems wrong. You know what to do about it next time. The concepts will always pop up again later. You learn projectile motion, and then start learning things that build up on top of it, so you have to get projectile motion down. — NICK

WHEN HOMEWORK ISN'T FAIR

Evaluating their homework for diagnostic purposes made a lot of sense, these teenagers agreed. But grading their homework defeated its learning purpose. From their activities outside school, they knew that making mistakes played an important part in learning to do something well. Still, it wasn't fair to make them worry about getting a low grade on a task they were just learning.

It feels like teachers are contradicting themselves when they take off points because you get a homework answer wrong. They're saying: "Stay up, do my homework, and then come back with it all

right.” That’s not practice, that’s more like a test that comes at the wrong time! – NICHOLAS

If teachers had to give homework, they should support the risks that kids took in doing it, said Erika:

My teacher would give us a worksheet for homework, but he didn’t count answers wrong. He gave you credit for trying, which I think helped me. I was more willing to try, because I knew that if I got it wrong, he was going to take time to make sure that I understood it. He offered a lot of help in tutoring and stuff. – ERIKA

Grading homework had an even worse effect, kids said: It fostered dishonest or cynical behavior on the part of both teachers and students.

Some homework is just busy-work, to give us more grades. The end of the quarter comes and teachers say, “I don’t really have enough grades to put in, so now I need you guys to do this worksheet, this, this, this, and this.” – AARON W.

It took me five hours to do this really difficult math homework, and I still didn’t understand it, but I was trying my best. Another girl totally copied it off the Internet—she got 100, and I got a 39. If I ask her, she doesn’t understand it. But the teacher doesn’t care how many hours we spent on it—she’s looking at if you got it right or wrong. So in the long haul, who’s smarter—me, or the chick who copied it off the computer? – VIVIAN

For students who couldn’t get the homework done because of their family circumstances, a bad grade on homework felt like one more card in a deck stacked against them. Dina’s parents both worked sixteen-hour days as home health aides, and she spent her evenings making the family dinner, doing laundry, and supervising younger children.

I do my homework on the bus, but that's not enough time—and usually I fall asleep before it's done. That's why my grades aren't so good, even though I want to go to college. — DINA

Many thought that the requirement to take work home also was unfair to students who had no one to help them with their questions. Family members often cannot provide the help that students need when they are working at academic tasks, said Rachel:

When you're home, it's harder to ask questions if you're having trouble. I can't ask my parents: they don't know about math, they don't know what I'm reading in school. I can call a friend. But it's not the same as being in the actual learning environment with everyone else around you. — RACHEL M.

Students also said they got more out of their academic practice when they could do it in collaboration with others.

Group homework doesn't pile it all on one person, it divides the work up evenly. You have different ideas, you get to communicate, and you feed off each other. — CLAUDE

Students helping other students, you connect with them, because you know them, you can understand their problems, so you could break it down the way they understand it. You get your work done twice as fast, it's much easier, and you all share your knowledge. — JACOB

But arranging a time and space for group homework often proved nearly impossible for students with different commitments and far-flung home locations.

Given all of these considerations, many students believed that doing additional academic work at home was penalizing them for things beyond their control. Since kids did realize the value of extra practice, however, we tried to come up with better ways for kids to get the practice they needed outside class. (See sidebar, page [TK].)

Doing Our Homework at School

Rather than sending them home with assignments, many students thought it more fair to provide times and places at school for their academic practice and preparation. They came up with these suggestions:

Give us time in class to practice. After the main part of a lesson, allow twenty minutes for kids to practice the knowledge or skills involved. Let us work in groups or by ourselves, depending on our needs. Watch where we are having trouble and take steps to help.

Schedule a regular period into every school day for academic support. We could select (or be assigned) this elective to give us a quiet space with access to teachers and peer tutors. Don't label it as remedial, just as time for independent study. Provide breakout spaces for students who are working in groups.

Schedule an extended period once weekly for students to have access to teachers and peer tutors. This is like the daily academic support period, but it takes place once a week for a longer time.

Provide an after-school support program. We could choose to do our homework here, or teachers could assign it if we are falling behind. Teachers and peer tutors should be present to help if we need it. Again, students working in groups will need breakout spaces.

SO MUCH HOMEWORK, SO LITTLE TIME

In addition to their concerns about equity, other factors made taking work home both unrealistic and counterproductive, my students said. They recognized that effective practice was not necessarily enjoyable, but they didn't think they learned much when exhausted.

I don't want to continue my school day at home! I burn out as soon as I get home at four o'clock. I understand the benefits of having homework—the deliberate practice, improving yourself and increasing your knowledge. But definitely I'm not going to spend more than two hours a night on school. — RACHEL M.

I get home and I'm knocked out. I don't even want to do my homework, and my body doesn't want to do it, either. — CLAUDE

Faced with an overload, students like Vivian made nightly choices about which homework to rush through, or put aside completely.

I get home from soccer practice at seven o'clock, and I really don't feel like doing all that homework. I'm like, "Okay, what's more important, math or history?" My eyes are closing, but I just push myself to stay up late. Sometimes I drink coffee, so it's unhealthy, too! — VIVIAN

When she did try to bulldoze through an assignment, said Vivian, she often found that she didn't get much out of it.

When I'm doing math homework, I just really go fast and crazy, and in the end I still don't understand it, really. It's just a lot of pressure. And it shows: I'm always tired in class, because I spent all my night doing my homework! Teachers don't see "Vivian totally understands that." They see "Vivian did her homework." — VIVIAN

Joe was more willing to do his math homework, he said, because his teacher parceled it out over time, in manageable pieces.

I don't think that people can handle massive amounts of correction at one time. You're going to have to feed it to us by the spoon. My teacher just gives me a couple of things that I should work on: "You need a little bit of help on this, and I will walk you through it." I work on those things, I get better at them, then she gives me a couple more. — JOE B.

"It's better to understand what you're doing than to get the homework done," agreed Claude. Teachers and students could have it both ways, he proposed: less homework, but geared toward deeper understanding.

One focused question can make you think as much as twenty or thirty homework questions combined! And it shows more understanding, instead of just having questions where you can just copy other people's understanding. Then everybody can contribute to the question in class—you look at what other people say, and it adds to your understanding. — CLAUDE

THE "FOUR R'S" OF HOMEWORK AS PRACTICE

At its best, students agreed, their additional work after a lesson could be like practicing a sport or a musical instrument. It didn't ask them to try something they weren't ready for. (They knew that if they started out doing it wrong, it would take a very long time to undo.) Instead, it added value to their lessons through what we decided to call the "four R's" of deliberate practice:

- Reading themselves for new learning
- Repetition and application of knowledge and skills
- Reviewing material learned earlier, and
- Revising their work.

We agreed that if homework always fit into one of those categories, it would yield the best results. Students' practice would always be

aimed at acquiring new knowledge, applying new skills, and creating their best work with what they knew and could do.

Readying students for new learning. Students understood that teachers wanted them to be ready to participate in class. Doing her chemistry homework ahead of time, Vivian said, helped her come to class better equipped to learn.

The homework takes me really long, because I'm constantly reading and looking at my notes and stuff. But I have to admit that when I'm in class I understand everything better. It's in my head already, because I studied it so much last night. And most of her test questions come from the homework, so in the long haul it really helps me. – VIVIAN

Jacob's English teacher asked students to read a poem carefully in preparation for a class discussion.

When we first read it, many people didn't even know what the poem was about. It was so complicated. But we practiced breaking it down, stanza by stanza, and then in class it all came together. We looked deep into the meaning of each stanza, and that way people start understanding it. – JACOB

Repetition. Just repeating something again and again did not make it come back to them automatically, students said. They also had to be paying attention to what they were repeating, and how. Like hitting a tennis ball again and again over the net, their most effective homework asked students to practice new skills and knowledge as problems came at them in different ways.

My economics teacher gave us three or four worksheets a night. It was a bit much, but I know the stuff really well now. I did the graphs so many times, I know them backwards and forwards. I think with those kind of subjects, economics and math, you need the repetition to really understand it, to be able to do it any which way it's given to you. – BRIDGET

Students often had the hardest time engaging when teachers asked them to learn information by heart. The memorization task got somewhat better, they said, if they could manage to connect the material to something that had meaning to them. When Christian had to learn to identify paintings for an art history test, for example, he imagined the paintbrush in his own hand:

I try to place myself in the period. Like: “What’s the typical thing I would see in the Renaissance time?” I’ll see the line-up of the figures, the little things that a person would know in that period. I start thinking of paintings I could have done—I have my own opinions, like, “This should’ve been here, this should’ve been there.” – CHRISTIAN

Often, however, students could not come up with a meaningful connection to even those things they recognized as important: verb tenses, or the elements of the periodic table, or important names and dates.

In your mind, it’s kind of harder to remember, because you’re not actually seeing it, and you’re not actually doing it. – DYLAN

In cases like this, Bridget said, it helped to have the class and the teacher come up with a bag of memory tricks from which individual students could choose.

I think you know what works and what doesn’t for you. You have proven strategies that you can apply to learning any material. Maybe you know that making flash cards works for you, so you use that for anything. – BRIDGET

Review. Even while learning new skills, students realized, they also needed to keep practicing the ones they had learned before. Christina compared some homework to her warm-ups in dance:

Every day, we do the same things at the barre that we've been doing since we were little. Even when you're getting better as a dancer, you still have to keep up that practice. Otherwise it's easy to get lazy about little things, and you can mess up how the dance looks. –

CHRISTINA

For Claude, reviewing the basics of algebra outside of class helped him keep up as the class moved into new territory.

At an early age, I had a difficult time, and I didn't get those basic math skills that most kids have. So now I struggle with certain things, like algebraic equations. I have to constantly go over them at home, to remember the steps on how to do them. – CLAUDE

Revision. From the out-of-school activities they cared about, students already had experience with revising their work. If something wasn't coming out right in knitting, or in a building project, they were used to going back and trying again. When her teacher made the class revise an essay, Christina said, she thought of it as the same thing:

When I write, I tend to just throw in every single little detail that I possibly can. All my essays have so many run-on sentences, and sentences that don't even make sense! So I go back, like: "Well, this doesn't make any sense so I'm not going to put this in there," or, "Maybe I can change this up so it's more relevant to what I'm supposed to be writing about." – CHRISTINA

HOMEWORK WE ACTUALLY WANT TO DO

Occasionally, my students said, something they did in school inspired and energized them to the point that they wanted to go home and keep working on it. "If it's really strong and exciting and hands-on stuff, then I'll do it!" said Nicholas, reflecting on his chemistry class:

When she's talking about atoms and ions, she writes words! We copy from an overhead projector into a notebook, and then she says that it's all trends and stuff like that. I'm, like, "This is so boring." I need to see the trend, I need to really understand what is an atom, an ion. If I don't, then nothing's going to work out in my head! But some of the demos that we do, I love that. I can actually see what's going on, and that's the kind of homework that works for me. — NICHOLAS

Christina and Nicholas both remembered a global studies unit on the French Revolution, in which students acted out a courtroom trial of the king and queen. The project brought even routine homework assignments to life, they said:

I was the queen. So of course I wanted to do my homework all the time, so I could know the facts of what happened and what didn't happen, know what I wanted to say when someone tried to say I did this or that thing. I could say, "Oh no, I didn't!"—because I'd read my homework. — CHRISTINA

It required a lot of question answering, and I loved to do it because it was so interesting. He gave us different packets of questions, and you had to go back to find the answers in the passages. When a teacher gives you the answer, you can't go anywhere to find it—you know it already, which makes it a lot less fun. — NICHOLAS

When school curriculum was framed in such active and involving ways, these students began to see that academic subjects, too, could elicit the same absorbed attention that they gave to their favorite activities outside school. In the next chapter, they will tell us more about how projects, in particular, brought them into that new relationship with their learning, and began to turn school into a workplace that fostered the habits of experts that we have been studying throughout this book.

Alternatives to Traditional Homework

The situation	Instead of this homework	Try this	When and where
You introduced new material to us in class	Assigning a question set so we will remember the material	Ask us to think up a homework task that follows up on this class. What would our task look like? Why are we assigning it?	Model this in class, then have us come up with ideas. Use our best ideas as subsequent assignments.
You want us to read an article before a class discussion	Making us answer questions that prove we have read it	Ask us to write down two or three questions we have after reading it.	We can text or email you the questions before discussing the article in class.
You want to see if we understand a key concept (e.g., literary irony; checks and balances in government; the turn of seasons; mathematical functions)	Making us complete a worksheet	Ask us to demonstrate the concept for the class in small groups, using any medium we choose (drama, art, writing, games).	Not a final assessment but a quick activity in class, so we can review the concept together and you can tell if we understand.
You have demonstrated a mathematical procedure and you want us to see how it applies in various situations	Assigning us ten word problems that involve this procedure	Ask small groups to choose from your examples <i>one</i> word problem where this procedure applies in the real world, then solve it and present it to the class	In class, so you can coach us as we work through the problem and help clarify any confusions when we present.
You want us to memorize facts (e.g., dates in history; spelling or grammar; vocabulary; elements of the periodic table)s	Handing out a list that we will be tested on later	Ask each of us to create and share with the class a memorization trick (e.g., music, acronym, visual cue, gesture; cognate) that works for us with at least one item on this list.	In class or outside school, by ourselves or in small groups.
You want us to remember what you taught us last month	Assigning a review sheet at the end of the unit	Give us frequent <i>short</i> pop quizzes about earlier material. Go over the quiz with us right afterward, but don't count the grade.	In class, so every few days you see and can address what we have forgotten.

Homework Advice from Students

- Make sure we know what purpose the homework serves. Write it at the top of the assignment, so we remember it!
- Use our homework! Look at it, answer our questions, and show us why it matters.
- Don't take off points for wrong answers on homework. It's practice!
- Cooperate with other teachers so our total homework load is reasonable.
- Give us time to start our homework in class, so you can help if we have trouble. When appropriate, assign different tasks to match what each of us needs.
- Match homework to the time we have available. Let us know how long you expect us to spend on it, and don't penalize us if we can't finish.
- Don't give us homework every day. Having several days to do it helps us learn to manage our time.
- Create places in school for sustained academic support: tutoring time, study halls, hours when you are always available for help.