

Homework: Myths, Realities and Student Views

Purpose of this Document

Everyone is familiar with homework. By the time students arrive at college, they have adopted certain attitudes about homework and certain approaches to doing it. Unfortunately, these attitudes and approaches are likely to be carry-overs from high school or even earlier academic experiences when homework had a different nature and purpose.

This document discusses some myths surrounding homework as well as the realities (benefits that can be derived from diligently working homework according to prescribed methods). Lastly, there is a section of comments contributed by chemical engineering students about their changing attitudes about homework.

There is also a section discussing academic honesty since that issue frequently needs to be considered when turning in homework.

Homework Myths

The purpose of homework is simple. You do it because it's a fact of life. There's always been homework. There always will be. (Too bad about that!)

You are supposed to learn what you need to know by doing homework. (Hmmmm... sounds pretty reasonable!)

Homework should definitely be done and turned in for credit. After all, that's the point of homework. (Too idealistic!)

Homework probably should be done as soon as possible but as a practical matter, you might have to do it right before class. (More realistic!)

Homework really doesn't matter. How your homework looks really doesn't matter. Whether you do the homework yourself or get help doing the homework or copy someone else's homework really doesn't matter. (Now were getting practical!)

Homework Realities

There is not a single simple reason why faculty assign homework nor is there a single benefit which can be derived from properly doing homework. Homework may be a fact of life, but its true purpose and benefits are often never realized by most students.

The classroom is the place where much of the learning activity begins. However, real understanding and the ability to apply what has been learned is achieved when, outside the classroom and some time later, students review the work introduced in class, test their understanding, extend their reasoning, and summarize their thoughts or apply the new information and techniques to solve

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problems. This additional work comes under the heading of **homework**. Thus, the purpose of homework is twofold: it involves the completion of work assigned in class and also the systematic revision and learning of work previously covered to demonstrate mastery and the ability to apply the knowledge to new situations.

In professions like the medical profession, students learn to apply what they have learned in lecture by internships where they practice and employ skills under the direct supervision of a doctor who evaluates their performance. In engineering we do not generally have internships but homework serves the purpose of bringing to the professor a sample of your work to be evaluated. This points to one of the most overlooked aspects of homework. Homework is a written communication of a technical nature directed to a specific audience. The key concept is that homework should be done in a fashion which will communicate information to an informed audience for their evaluation.

Homework should serve to help the student identify whether or not the material germane to the problem has been learned. This is quite contrary to the fashion in which most students "do homework", namely read the problem, and hunt around in the chapter until you find an example or some theory which seems to "match up" to the problem being worked and then kind of read around in that example until you sort of see what equations to use and then pretty much do the same thing. To get the benefit from doing homework which will confirm and evaluation your learning the required skills and techniques you should transfer the problem information to a new blank sheet of paper and then, **without the use of the book**, set up the solution of the problem. What is implied is that you should **already know** what you need to know to do the homework rather than rely on the homework teaching you what you are supposed to learn.

To make the above a little more concrete, return to an earlier point in your education where you were learning to perform the multiplication of two and three digit numbers. If your homework problem was 345×173 , the point was to see whether or not you had learned all the one digit by one digit multiplication facts as well as how to align and add the intermediate results. You didn't start at that point to learn what 5×3 is (hopefully). You simply couldn't do the problem if you didn't. And in engineering homework, the "message" should be exactly the same. If you are sitting and staring at a problem and don't know how to get started or have gotten started but you are now "stuck" then you really shouldn't be doing the homework yet, you should be **learning** the material. When you can't do the homework without looking in the book, then you haven't learned the material you should have and all the "matching up" of problem wordings and equations doesn't teach you the material, it only short circuits the learning process. One of the most important skills is to **self-evaluate** your learning. Homework provides you a unique opportunity to test the effectiveness of your preparation for class, your in-class note-taking skills, and your review of notes to master new material. If you can't do the homework without looking in the book, there is a significant failure at one or more of these points.

Returning to the issue of "communications", when you first learn to speak we speak as children do (without a great appreciate of the richness of an adult vocabulary or the awareness of proper grammar). Similarly, when you first start to develop technical communications, you will appear to an engineering audience as a "child" if you have not yet mastered the "vocabulary" and "grammar" of engineering. Engineers have a unique "style" of communicating with other engineers which employs assumptions, problem basis, sketching conventions, nomenclature, control volume designation, accuracy and significant figure information, equation ordering and manipulation, answer presentation, results interpretation, recommendations, references, etc. Homework provides a valuable opportunity to "practice" the grammar and develop the vocabulary. Your ability to organize complex ideas, to intersperse mathematical notation and verbal explanations, to show a solution methodology, to cite chemical and physical principles, is only learned with much practice.

Are there other benefits to doing homework properly? Definitely. You also learn independence, organization, and self-pacing. You learn how to explore your own interests. You can follow-up on

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questions which arise during solving a particular problem. You get practice doing research, finding out facts, using resources, making judgements . Doing homework is **your opportunity** to go beyond the minimum of what is required.

Student Comments

The following comments about homework were provided by a recent CHEN2100 class. Specifically they were asked to comment on how their attitudes about homework had changed as a result of taking CHEN2100.

My attitudes toward homework have changed in this course in two ways. Homework is no longer a time to just get things done, but a time to show perfection of the skills. I care more about the presentation of the work than I did before. Also I care that I have the fundamental understanding of the issues covered. Homework is a presentation to someone else of what knowledge I have. Homework is also no longer a review session. I review the work then try to do the assignment without books or any other tools to help me. The homework is the tool I use to access my knowledge of a skill and be sure that I have acquired the skills necessary.

As a result of this class my feelings towards homework have swayed a little bit. I have always used homework as a measuring stick for how well I know the material that I am working on. If I could do the problem without having to look back in the chapter, then I was good. If I ever had to look back then that was a sign that I needed to brush up. I also use homework in a different sense after this summer. Now I also use it to set up a distinct style or strategy for my problems. It gives me a chance to refine certain rough spots that I have. This allows me to move faster & get more points on a test. I never did this before now.

Before taking this course homework was something that I "had" to do because it was part of my grade or counted as a participation grade. Because of that, I viewed homework as a necessary evil to earning my grade. After taking this course I realized that homework has nothing to do with the teacher and everything to do with me as a student. Homework is now used as a personal test to see how well I understand the material and where my weaknesses are.

Before taking this class I thought homework was ridiculous. All I would do is take the assigned problems and compare them to example problems in a test. This was a waste of my time and I knew it. I wasn't benefiting myself by doing homework in this fashion. Now, I know a proper way to do homework. First I must read the book and learn how to do the material. After, I understand what I am studying, then I can do homework, without the help of a book or notes. I have done homework this way this summer, and on at least one of my classes, it has helped tremendously. It is like taking a practice exam before the test. This gives me the opportunity to ask the instructor for help before exams.

Honestly, before taking this class I did homework simply because I had to. I did not see any other purpose of homework rather than just do it because it was required. However, as a result of both the lab and lecture classes of this course, my ideas and views of homework have changed. I no longer do homework just because the teacher assigns it, but because I truly want to learn the material. The professor said several times that homework is an opportunity for me to assess my mastery of a subject and I completely agree. Homework gives me the opportunity to perfect the tools that I learned in class; therefore, I fully understand the material and can show the professor my understanding on the test. Furthermore, I no longer rush through homework just to get it done. I really take the time to

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understand what I am doing and why. Homework is NOT busy work, but is there for my benefit. As a result of this class, I have tried to make it the biggest benefit possible to me. However, I am not completely there yet. I still need to stay focused and maintain my improvements on homework. I am very glad that I had this class to lead me down the right path to improving my views and reasons for doing homework.

My attitudes toward homework have changed. I used to just listen in class and then go home and try to do the homework immediately. If I had trouble, I would look for the closest example and change the numbers. I wasn't learning things as well this way. Now, I try to get the most out of my homework as possible. I learn the material and then do the problems. I have really applied this idea to this class and I in turn don't really have to study for the tests. I know when I get the test back, not only did I get a good grade, but I understand the material. I am not really even planning to study for the final, because I already know all of the material. I now use homework as testing myself.

Any attitude toward homework has changed for the better. When I used to do homework I would have in my mind that if I get good grades on my homework then it can bring up my final grade in the end. Now I look at homework in a totally different way. I look at homework as a way to master my skills in solving problems and learning the techniques to solving problems. This has really helped me this semester because when I am doing my homework I am learning the material and not having to study so hard for the test when it comes up. I already have learned the techniques & the right way to work the problems and I don't have to cram for the test before hand. I believe that this outlook on homework will help me all the way through the end of my college career.