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### Using online tools for learning, not copying

Noah Cox

ncox847@live.kutztown.edu

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## Using online tools for learning, not copying.

By: Noah Cox

### Proposal:

Students use tools such as photomath and Chegg to cheat on homework assignments all the time especially for classes such as physics and math. These tools are fine to use as long as they are used in the right way. I think the problem is partially on the teachers and the students. The problem with the students is that students use these tools to copy down answers to problems without working it out themselves. The problem with teachers is that they demonize these websites as if they're not educational and bring nothing useful to learning and understanding content. These websites need to be used correctly. These websites are useful for students in learning content. If students actually do the work and solve the problem, it's good having access to the answer so they know that whatever they're doing is correct. Doing that is much better for learning than interpreting the solution to a problem one way and realizing that it's wrong much later. It's harder to change your mindset of a physics or mathematical concept after you've been thinking of it a certain way for so long. It's better to realize right away that you're thinking is wrong and that you need to change before you get used to thinking the wrong way. Also, the fact that these websites show the solution and the steps to get to the solution is great. If students are not simply glossing over the steps, they can be very useful to learning because they do not just provide an answer to the problem, they provide an explanation. I think what needs to happen is that homework needs to be followed up by short quizzes or presentations in the following class to make sure students understood the homework and didn't just complete it.

## Project:

Teachers cannot prevent students from using online websites anymore to complete homework. Too many students have access to the internet and there are too many websites up nowadays that provide the content necessary to give students what they need to complete homework assignments. In 2015 94% of children had access to a computer at home and 61% of them had internet access (National Center for Educational Statistics). So as teachers, you need to stop fighting these websites and trying to prevent students from using them. Instead, accept these websites and figure out ways to use them to you and the student's advantage. These websites are actually valuable resources and can provide valuable content for learning. If students use these websites correctly, it will benefit them and they will be better off in the class. However, if students use these websites incorrectly, it will harm their learning. The trick is to force students to use these websites in good ways that promote their learning.

The big underlying concept here is working the brain. The brain is like any other muscle. When it is working, it gets stronger and you get smarter. If students are working the brain, it'll only make them smarter.

These online websites provide good content for learning. Most of them will not only provide an answer to whatever question is being asked on the homework but will also provide a step-by-step explanation as to why that answer is the way that it is. This is useful to student learning because the students can now know the "why"? This is crucial to truly understand a concept, especially in a physics or math class.

In order for teachers to ensure that students are using these sites this way, they need to do a conceptual review of homework problems after the homework is completed. This works especially well for physics or math classes. Homeworks in those classes require calculating things and crunching numbers. After homework is turned in, the class should be given a little conceptual in-class quiz that asks a few questions that are essentially the entire underlying concept behind the homework that was just turned in. If kids understood what they were doing on the homework, these questions will take them 30 seconds. If kids didn't understand what they were doing, they will not be able to complete it.

The bottom line is that this gives the teacher a way to tell who

used online websites to copy down the answers to the homework, and who used online websites to help them understand why the answer is the way that it is. Learning is enhanced when students discover the details themselves. Our brains are evolved to learn from trial-and-error exploration (Cozolino).

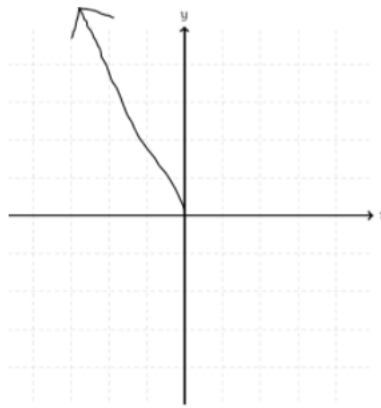
An example of how this could be used is giving a sample lesson. Let's say we learn about gravity and homework is assigned asking students to calculate what the force of gravity is acting on different objects. The equation for force is (mass x acceleration). The acceleration is always the same for gravity on Earth so the only things students need to worry about here is mass. A good follow up to that homework would be a question like "If all objects fall at the same acceleration on Earth, why is the force of gravity not always the same for all objects?" The answer to this is very simple, the acceleration might be the same, but the mass varies and both the mass and the acceleration need to be taken into account to find the force. Or a question like "since a bowling ball and a tennis ball, fall at the same rate here on Earth, should the force of these objects be the same if I drop one on Mars and the other on Pluto?" If the students understood the homework they would realize that there's not enough information to give a definitive answer. A good answer would be "not necessarily since Mars and Pluto have different masses to each other and to Earth, the gravitation acceleration is not going to be the same as it is on Earth. Also, the gravitation acceleration on the two planets will be different from each other. So, since the acceleration is not the same and the mass is not the same, the force isn't necessarily going to be the same."

These questions are purely conceptual and do not require any calculations. They are just given so students who understand it can smile and realize they got an easy 100% on this assignment and are given so the students who don't understand it can realize that simply copying down answers to homework is not going to work for this class.

If students are using these online websites to better understand something, than what's the harm? That's the whole point of school, so you can learn and if students are learning, then good for them. If these websites are helping students learn, that's a good thing and shouldn't be frowned upon. It should actually be encouraged.

In-class Assessment: Velocity and Vectors

1. Since you can have negative velocity, can you have a negative speed? Explain
2. What does it mean to have a negative velocity?
3. Describe what the x and y components are for the following vector. Explain the magnitude and sign of the vectors. No calculations or numbers for this answer.



4. If the magnitude of the vector was given and the angle between the y-axis and the vector were given, write the equations you would use to figure out the x and y components of the vector. Use “V” for vector and for the angle use  $\theta$ . You are welcome to write on the graph above to show your work.

## Bibliography:

“Computer and internet use” *National Center for Education Statistics*, <https://nces.ed.gov/fastfacts/display.asp?id=46>, 3 December 2019

Cozolino, Louis, “Nine Things Educators Need to Know About the Brain” *Greater Good Magazine*, March 19, 2013, [https://greatergood.berkeley.edu/article/item/nine\\_things\\_educators\\_need\\_to\\_know\\_about\\_the\\_brain](https://greatergood.berkeley.edu/article/item/nine_things_educators_need_to_know_about_the_brain), 3 December 2019