

Philosophy of teaching Essay

(The format follows the requirement for course EDSC 172A, SJSU)

Part I : My top 10-values to keep as a teacher

Below are my top 10 values to keep as a teacher. Those are not ordered in terms of their significance or priority, as I believe those are all important. However, those are ordered from values which are subject-matter centered, to those which are more character-virtues related. In a similar sense, these values are ordered from things which are more concrete (and can be evaluated in a quantitative test), to those which are more abstract. Last but not the least, the same order is in accordance with those items which I feel strongly about passing on to my students, to things which I will merely try to give as an option, something to think about.

1. **Subject matter proficiency** – Students should know the material that was covered in the course. In this context, knowing has a deeper meaning than merely recalling information. This is the reason these students were entrusted to me during their lesson time, and it is my professional commitment to the school, the students, and their parents.
2. **Able to think logically, clearly, and critically** – Clear thinking is a key to many desired virtues in life. For example, being able to communicate effectively depends on one's own ability to see the subject clearly in her/his mind. Math lessons can serve as a fertile ground to show ways to think methodically, logically, and clearly about subjects, and view critically people's work.

3. **Be a life-long learner** – Learning does not end with a grade, or with a course exit-exam. Learning is a continuous process. I want my students to embrace new problems and challenges, and know that there is always more to learn.
4. **Trust oneself** – Students should trust their judgment and ability, and not be afraid to make mistakes and wild guesses. This of course has a direct consequence in the class and in their approach to new problems (and thus is very important also for subject-matter ability), but lingers to areas out of class as well.
5. **Be an honest person** – Being honest with oneself and with others. For example, being aware of what you know and what you have problems with, and being honest about it. This again has direct implications to their ability to digest the material studied and to study effectively, but will certainly impact their life outside of class.
6. **Practice kindness** – Being kind to your fellow students, teacher, and classroom environment. There is a lot of benefit in giving out to others, and team-projects and other class-settings are a fertile ground to discuss this issue.
7. **Be respectful** – to yourself, classmates, teachers, property, and other people. Don't downgrade yourself ("I will never be good in math"), don't put down others ("That's a stupid answer!"), and be respectful to every person.
8. **Choose happiness** – Everyday, and almost every moment, we make choices. In class we are dealing with a bad result in a test, with tough material in class, and with a teacher and peers, just to name a few. In each encounter we can decide to be angry, grumpy, accepting, or happy, or many other forms. The choice is ours. I would encourage students to choose the positive attitude.
9. **Be a caring and loving friend** – Be willing and happy in helping others in class, caring for their well being, and caring for the class environment. This definitely helps set the class atmosphere, and a relevant idea to adopt for life.

10. **Find the joy within** – Do not compare yourself to others: to what they have or have not; to what grade they got; or to what they know. You are a whole person, and you should do things because you believe in them, not because of others. Don't seek fairness outside: Do your best to be just in your own dealings, and accept differences in others.

These were the top 10 virtues I would like my students to leave my class with. If not embracing those, at least be aware about those, and make their own choices as to which one they intend to adopt, and to what level.

====End of Part I=====

Part II : Able to think logically, clearly, and critically

Section A : *Clarify and justify your value. Explain what it means. Explain how it is translated into a general classroom and yours in particular.*

I chose to elaborate on this value, as it connects directly to the content area (Math), as well as to life outside the classroom. Possessing the above qualities can take students far in their academic life, as well as in their daily interactions with other people. It will carry on to whatever they will do.

In what follows I will dissect this value into its individual parts, explain the significance of each part, and how it fits to the others. I will then discuss (for each part) its role in the classroom in my content area, Math. Then, putting all those parts again into a whole, I will explain why this value is so important, and will contribute to the life of my students as educated people in the society. We will close with a discussion of the obstacles to implement this value in the classroom, and ways to mitigate it.

Starting our dissection of the value with the first part, **logical thinking**. Logical thinking is the base underneath our thinking process. In one aspect, relating to how we express ourselves, it means basing our reasoning, ideas, arguments and thoughts on a logic basis. Then, by logical processes we can arrive at our position. It is important to note that this basis DOES-NOT have to be composed of 'scientific facts'. It can also be composed of assumptions, or even mere beliefs. As long as the basis is well defined (at least well enough for the sake of our own satisfaction), it can be anything we want. We need to be clear about what it is, and then build upon it. Another way to understand this concept is by considering non-logical thinking, in which assertions and opinions are made out of thin-air, with no connection to any basic assumption, fact, or belief. Thus, logical thinking is the base to serve the other two components: Clear and Critical thinking. The second aspect of logical thinking is its ability to help us consider and reflect on information given to us. As we will see, it helps us in critically reviewing other works, and when examining

to see if the arguments are logically constructed. Before we head on to the application of logical thinking in the classroom, I want to emphasize that this concept is by no means in contradiction to creative thinking. Creative thinking, in which ideas may be brought into the discussion just because we 'feel' they might be good, is welcome in the class and will be an integral part of the problem-solving process. However, beyond the first exciting stage, handling a creative idea should be along the lines of logical thinking.

In Math, a lot of emphasis is put on developing logical thinking. In many AP classrooms logic is taught as a unit per-se. The clearest examples are the two-column proofs practiced in geometry. Those proofs follow a clear path from axioms, to derived facts, and then to the subject of the proof. This reflects logical thinking in its purest form. There are many other areas in Math where logical thinking is practiced and demonstrated: Following the route from a given question to a desired solution, one follows a trail based on developed rules, which manifests another aspect of logical thinking. All in all, not only logical thinking is being required and demonstrated in the Math classroom, but it is also practiced daily by the students.

The immediate way for me to implement this in the classroom is through constant reliance on the basic facts and axioms, rather than on developed theorems and formulas. For example, rather than expect my students to memorize certain differential or integral relations, I will always keep developing things from basic facts. Implementing this concept in my classroom comes naturally to me, as due to my personal (limited) memory I always develop things from basic concepts. Relying on basic concepts helps students see the basis of the tower, and enforces them to see the connection to the foundation. It is definitely acceptable if at some stage, after a student is so comfortable with some level of developed theory, the basis can start a little higher. We do not expect every student to develop all his work from pure '+' and '-' rules. However, recognizing the fact that there is a basis, and one develops from there, is the important lesson in all this.

The second item in the value statement is **clear thinking**. In this part, we strive to describe a thought process which is not clouded by extraneous arguments and details, but is rather concise and contains only the elements needed for the specific argument or process. Being able to recognize the essential ingredients of an idea or an argument is the most important step for clear thinking. One then only needs to discern which are the minimal elements needed to serve as clothing to this skeleton. Clear thinking manifests itself immediately in many communication patterns we have in our daily life. Rather than going around the subject, providing superfluous and irrelevant details, clear thinker can describe things in a concise and relevant way. As before, clear thinking is not only essential in communicating out one's thoughts, but also in internalizing information given to one. It helps discern the key elements of an idea, and focusing on those in order to accommodate this new information, and see where it fits within our conception of things.

As for the previous case of logical thinking, the Math classroom encourages and promotes clear thinking. Students are encouraged to be concise in their proofs, and keep their work clean and short. In many cases, students are explicitly discouraged from having a meandering proof by reducing credit points for the question.

As I hope my classroom would be full of problem-solving opportunities, I can see a clear way to incorporate this value. When facing a problem in a 'problem-solving' setting, students are expected to find their own way to a solution (either as a group or as an individual). In many cases students will get to the right answer through many different ways. In those settings, once different paths to the solution were found by different people, it is important to reflect on the results, and find how they all converge to the correct solution from different aspects. More often than not, this reflection helps distill the paths to their core differences, and allows students to describe their solution in a cleaner and more concise way. It is a very educating step, though often skipped in the classroom, to reflect on the solution and to

understand how and why it is different from another one. It is an activity I cherish, and will try to instill in my class.

The third item in the value statement is **critical thinking**, which builds on the previous two concepts. Again, it has two aspects: One relates to voicing our opinions and thoughts, and one relates to the way we view others' work. With regard to expressing our own ideas, one needs to be able to explain an idea. This means describing it in one own words so that others can understand it. In addition to explaining it, one needs to be able to produce convincing reasons for this belief. Just saying 'because I said so', or 'because I believe so', does not count as critical thinking. Indeed, what counts as good reasons, or effective evidence, is at the corner stone of a mathematical proof process. As for the second aspect, that of viewing others' work critically, one has to develop an opinion about information being presented, and base this opinion on some justifiable grounds.

Critical thinking, with its two facets, will be practiced daily in the Math class room. The aspect of being able to describe an idea and reason for it is an obvious one, since one needs to communicate the solution, and to justify it. As for the second aspect of critically reviewing other works, its place in the classroom is evident in a problem-solving based setting. As mentioned before, reflecting on the various solutions is a key component of the process. Not only does it help us distill our own idea, but it helps us critically review other ideas. Understanding a different way for solution, looking for holes in it, and seeing how it relates to our own solution, all promote critical thinking.

Section B : *Explain why this value is so important to you as an educator who wants to make a difference in the lives of your students.*

I hope that by now we established how the three elements of these value fit together. Logical-thinking is the basis for the whole structure, giving us directions as to how to construct our understanding or

reasoning; Clear-thinking enables us to see the skeleton, or the house posts and beams. It prevents us from being distracted by non-essential artifacts; Critical-thinking is the final cloth on the previous two, allows us to consider our own, and others', ideas.

These values are important not only for the academic person, who tries to write an academic paper, but also for any educated person who wishes to communicate with its' surroundings. Every day we interact with people, and need to either convey information or receive information: the above tools will enable us to do it effectively. But this usage is not limited to interaction with people: How about making sense out of all the information coming at us from the media (TV, Radio, Newspaper)? Critical thinking is essential to an educated person in our media-information rich environment.

Section C : *Explain two or three constraints you may face implementing this value ; Explain how you will deal with these constraints.*

The two main constraints I want to focus on are **test-structured evaluations**, and the cultural tendency to value **presentation over content**.

Let us start by clarifying the first constraint, that of **test-structured evaluations**. In many content areas, and especially in Math, students are often evaluated only according to their final answer, or the final result of their work. The most obvious case is in multiple-choice questions, where the only relevant part is ones' result, and not the way it was derived. This approach is often justified by noting that in engineering, and math, there is only one correct answer, and your arguments to it or the way you arrived at the answer do not really matter. In addition, it can be argued that this is the only fair way to quantitatively evaluate a large population. The main problem with the test-structured evaluations is that it also drives the way students (and supporting community) wish to learn: If the goal is to succeed in the evaluation, and the evaluation is through a test, than we should merely focus in our studies on what's

important for the test. Thus, we shouldn't worry about refining our thinking process, nor should we worry about making our answers clear: the final answer is all that matter. This issue is so prevalent in our society, that this is far from a theoretical issue, and I have encountered it already many times when trying to promote problem-solving and emphasizing thinking in the classroom. This is especially true in high-school AP classes, but it definitely lingers down to all placement tests and classes.

When facing with these arguments, I try to empathize with the wish to succeed in the test, and I point to the basic flaw that assumes we should practice *exactly* what we will be tested on in order to achieve that goal. One has to have many other qualities and good basis in order to succeed in the test. For example, when an artist prepares for a solo-recital, the worst thing he (or she) can do is to play again and again only this specific piece. The artist should play some pieces that emphasize technique, and others which emphasize interpretation, and so on. Only this ability will enable the artist to make the solo piece a special one. And this goes not only for art, but also to all other fields. We are here to raise students which are not only good in technique, but can take the steps beyond that. Results in the test will follow from being enriched with all the important auxiliary knowledge, and they will be better than just exercising technique. As always, there is a balance to find between practicing and aiming for a specific task, and enriching ones general knowledge and repertoire. Finding this right balance is the difficult thing, and I hope that as an experienced student (in Engineering, Music, Chess) I will be able to strike the right balance with my students as well.

Just as an anecdote, I would like to mention that usually this argument (study just for the test) comes with the statement that 'if my son/daughter fails in the test, he/she won't be able to get into the college, and his life would be ruined'. I strongly do not believe in the 'his life would be ruined' part, but usually this is not the time to argue with this. I would simply put things in perspective, and address the real concern for the test-results.

The second constraint I envision is the cultural tendency to value **presentation over content**. It is seen all around us, in media and in our immediate life. In media, commercials are built around this principle. In politics, a lot of attention is paid to the way things are presented rather than to the content itself. In schools, we give grades for how well things are presented (usually in addition to content). People who can speak well in front of an audience are well valued in school and college. This is mixed blessing for values like clear thinking: On one hand, some students may think they can talk-their-way out using their presentation skills. However, on the other hand, the things that make for good presentations are exactly the things we are talking about here: Clear and logical thinking!

The way I will address this in my class, and try and deal with it, is by pointing out the fact that clear thinking (and the other elements) are critical for good presentations! This can be done by supplying examples (like sharing talks from TED with the class), and by commenting on students' presentation using the above elements as a rubric. Rather than comment on a presentation as 'not fluent description', one can comment as 'not clear thinking', and explain what was obscuring and why. Thus, rather than fighting with the tendency to emphasize presentation, one can explain that good presentation follows from clear thinking. This method is much more effective.

Another obvious way is to practice those in the class in our daily interactions. Pointing to the key-points, being organized in your thoughts and clear explanations, is crucial to conveying those values. At the same time, summarizing and distilling student's statements may also help them see how to express those in a clearer fashion.

====End of Part II=====

To conclude, I hope this work conveyed my values and gave an impression of the way I intend to apply those in the classroom. I strongly agree with the point of view that 'we teach who we are'. In that regard, I try to apply these values in my daily life to the best I can, and hope it will come through in my teaching.

==== End of Essay=====