

Teaching Philosophy

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A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man.

Joseph Campbell, *The hero with a thousand faces*

I see a student's journey as similar to the heroic quest that is synthesized in the epigraph. Similarly to the hero, the student leaves a zone of comfort, faces the challenge of mastering new concepts and returns empowered by knowledge. I defend this analogy because it emphasizes that the student is the protagonist of the story of teaching. No other character can substitute the student in facing the trials of her journey.

Nevertheless, the complexity of the trials make it difficult for our hero to complete her journey alone. Indeed, Campbell [2008] identifies a variety of supporting characters in each stage of the heroic journey. These characters aid the hero and provide her the necessary tools to move ahead. In my opinion, teaching is analogous to playing many of these supporting roles.

In the next paragraphs I inspect the above analogy more closely. Campbell [2008] divides the heroic journey in many stages. I select some of these stages and, for each one, indicate a supporting role identified by Campbell and compare it to an aspect of teaching. I complete each stage by providing concrete examples of how I tried to play the respective supporting role in the classes I taught.

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1. **The Call to Adventure:** The hero begins with a common life. Here, she is often in a comfortable position and resists to leave. In this case, she is visited by the **herald**, a mysterious person or creature that motivates her to embark in adventure. An illustration of such a figure is found in the following myth:

“An Arapaho girl...spied a porcupine near a cottonwood tree. She tried to hit the animal, but it ran behind the tree and began to climb... She said, ‘I am climbing to catch the porcupine, for I want those quills, and

if necessary I will go to the top'... She continued to mount the tree, until she became the merest speck to those looking from below, and with the porcupine she finally reached the sky." [Campbell, 2008][p.45-46]

Similarly to the Arapaho girl who required the porcupine to initiate her journey towards the sky, a student requires motivation to actively engage in a course. Such activities require both time and effort. Before either the hero or the student commit to such a sacrifice, they must see the benefit of doing so.

Each person requires different types of motivation. For some, it might be the curiosity about what lies beyond the sky. Others might enjoy the challenge of the journey. Some might initiate the climb lured by the porcupine's quills. As an instructor, I try to learn and apply a variety of effective motivators. For example,

- A student can get motivated when she believes that the skills seen in class are useful. In order to develop this belief, I prepare simplified versions of real applications that are based on these skills. The version should be simple enough so that the students can directly relate it to the skills seen in class, but complex enough to seem useful. For example, in an advanced undergraduate course in Statistics, I showed the students how to build a basic recommender system. They later used this recommender system to find out which on-campus restaurants were best suited for them. A collection of different types of applications can be found, for example, in Gelman and Nolan [2002].
 - A student can get motivated when in contact with problems just above her current skill level. Similarly, she can get demotivated by being forced to solve problems that are either too easy or too hard. For each lecture, I provide a list of problems labeled from "basic" to "challenge". While I taught an introductory course in Probability, I observed that different students worked on these exercises in different ways. Some students started from the "challenge" problems. These problems often motivated them to go back and also work on the basic problems.
 - A student can get motivated by the prospect of obtaining a good grade in a course. Similarly, a student can get demotivated if she observes during a course that, given her past performance, she will get a bad grade no matter how well she performs in the future. I believe a student should be given possibilities to prove she mastered past content and, if so, improve her past grades. For example, in an introductory course in Probability, I frequently added bonus questions about past content.
2. **Meeting the mentor:** Once the hero decides to face her quest, she meets a **mentor**. This figure, often depicted as a little old man or woman, trains the hero so that she will be able to face the dangers ahead. The mentor often provides the hero with artifacts and advice that will aid her on the journey. For example,

"Ariadne turned for help, then, to the crafty Daedalus, by whose art the labyrinth had been constructed... Daedalus simply presented her

with a skein of linen thread, which the visiting hero might fix to the entrance and unwind as he went into the maze. It is, indeed, very little that we need! But lacking that, the adventure into the labyrinth is without hope.” [Campbell, 2008][p.18]

Analogously to Daedalus who provides the linen thread as a tool to complete the labyrinth, an instructor provides guidance towards mastering the course’s skills. The labyrinth represents the confusing variety of connections between the course’s contents. The linen thread represents the intuitions, relations and material provided by the instructor. The thread allows the student to follow, one step at a time, a simple and cohesive path towards the course’s goals. Some examples of how I try to build this thread are:

- In introductory math-oriented classes, some students frequently don’t know how to start to solve a problem. One reason for this to happen is that, in order to do so, a student must know both the specific course contents and general heuristics about how to solve problems. When I find students struggling with the latter, I find it helpful to discuss these heuristics in a principled way. For example, Polya [2008] presents a short list of meta-steps to follow in order to solve any (mathematical) problem.
- I post lecture notes as a hyperlinked electronic document (using, e.g. \LaTeX). I believe this document helps the student. For example, whenever a fact from previous classes is used, an hyperlink allows the student to quickly identify where this fact was defined and, if necessary, read that section again. I also add to the lecture notes solutions to many of the questions discussed in class. These solutions often involve following through a chained sequence of simple steps. The student might miss some of these steps in her annotations and, thus, I find it helpful to provide the whole sequence written down.
- Before I start to teach a course, I search for a short list of the most important concepts a student should master. I choose the list that I believe will enable the student to complete other relevant connections on her own. I try to build all the class activities spiraling around this list. For example, when I taught an introductory course to Copyright and Patent Law, I started presenting the students some reasons why these rights are protected. Later, we used these reasons as a key for interpreting the individual components of the law. I believe the following quote conveys the same idea in mathematical courses:

“In a hotel there are many rooms each with its individual key. Each key is made so crooked that it can open only one door lock. Only the hotel manager has the master key that is simple enough to turn inside all the locks. A good proof is such a master key. It is simple and straightforward and can unlock many a mathematical problem.” [Basu]

3. **The Road of Trials:** Having been assisted by the herald and the mentor, the

hero is finally prepared to face the **trials** of her journey. This step is summarized in the following passage:

“The hero is covertly aided by the advice, amulets, and secret agents of the supernatural helper whom he met before . . . The original departure into the land of trials represented only the beginning of the long and really perilous path of initiatory conquests and moments of illumination. Dragons have now to be slain and surprising barriers passed - again, again, and again. Meanwhile there will be a multitude of preliminary victories, unretainable ecstasies and momentary glimpses of the wonderful land.” [Campbell, 2008][p. 163]

This step is the main reason why the hero is the protagonist of the story. Although the hero has collected help from other characters, she is the only person who can face the journey’s trials. Indeed, it is the process of facing and dealing with these trials that makes the hero.

Similarly, I believe that the student constructs her knowledge by actively participating in the course’s activities. Such activities include, for example, asking questions, reading the course’s material, discussing the course’s topics and solving in-class exercises, homeworks and projects. At this stage, the instructor plays the concealed role of planning these activities. I select the activities that I believe will lead the students to incrementally train and master the fundamental concepts of the class. For example,

- For each new concept seen in class, I create three types of exercises that use this concept. The first type consists of a direct application of the concept. This type of exercise is analogous to training a single movement. The second type of exercise consists of combining the concept with others covered in class. This type is analogous to training a sequence of movements. The third type consists of a challenge or an unusual use of the new concept. This type is analogous to obtaining fluid movements.
- I believe it is helpful for students to discuss concepts and exercises in small groups. The students often have different backgrounds and can benefit from sharing ideas. I find that, during each discussion, while some students benefit from organizing their ideas in a pedagogical way, other students benefit from seeing the course’s concepts from a different perspective.

4. **The Crossing of the Return Threshold:** The final stage of the hero’s journey is the return to common life. Before crossing this threshold, the hero often meets a **mirror** or her own reflection on water. Looking into the reflection symbolizes the assimilation of the adventure into oneself. Campbell describes:

“The hero adventures out of the land we know into darkness . . . and his return is described as coming back out of that yonder zone. Nevertheless . . . the two kingdoms are actually one. The realm of the gods is a forgotten dimension of the world we know. And the exploration of

that dimension, either willingly or unwillingly, is the whole sense of the deed of the hero. The values and distinctions that in normal life seem important disappear with the terrifying assimilation of the self into what formerly was only otherness.” [Campbell, 2008][p.188]

Similarly to the gaze of the hero into the mirror, I believe the student can benefit from reflecting upon her completed activities. Retrospectively, the student can, for example, build her own associations and examples, contrast concepts and methods and check the soundness of her intuition. These steps allow the student to transform the knowledge into her own. Examples of how I try to stimulate such reflections are:

- After solving exercises in class, I ask questions that might trigger reflection. For example,
 “**Looking back.** Can you check the result? Can you check the argument? Can you derive the result differently? Can you see it at a glance? Can you use the result, or the method, for some other problem?” [Polya, 2008][p. xvii]
- I try to provide the students with written solutions to all homeworks and quizzes. I believe they can engage in reflection by contrasting the given solutions to their own.



In the above paragraphs, I compared the hero’s journey to that of the student. This comparison allowed me to categorize and reflect on the types of roles I can perform as an instructor. By setting up such a frame, I aimed to better understand the instructor’s roles and keep thinking of ways to better fulfill them. I hope this is one of many crossings of the return threshold in this instructor’s journey.

References

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