

## In the Classroom 131

# Employing the Thayer Method: An Active Teaching Strategy

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**Stan Skrabut:** Well, welcome back. Thanks ever so much for taking time to listen to this podcast, it certainly means a lot. I know you could be doing other things, perhaps you are, you're still hanging out with me, and I really appreciate it. Since its beginnings in 1802, the United States Military Academy, better known as West Point, has been developing officers who could solve undefined problems. One of the methods they use is called the Thayer method of instruction.

Colonel Sylvanus Thayer, the father of the Military Academy developed this method in 1817. It is an active learning strategy that has been used for over 200 years and is still being used at the United States Military Academy, or I should say academies because when I was a cadet candidate at the United States Air Force Academy Prep School, I was subject to this method of instruction. I didn't know what the name of it was at that time, but I did know that it had a pronounced impact on me and my learning and my ideas of lifetime learning.

I talked about it in Episode 84, ITC: 84. It was perhaps the best instruction I ever received, if not the most memorable. I was under this instruction back in '81, '82, and I'm still talking about it. It has shaped my idea of learning ever since. It is led to my passion for lifelong learning, and I think a lot of it is baked right into why they have chosen this strategy. As I noted, the purpose of instruction at West Point and the other service academies is to develop officers who can be used during warfighting times and warfighting is very much undefined, it keeps changing, it keeps evolving, there's new problems.

The Thayer method, which was primarily used to teach math and science, was a way to teach logical thinking and analysis rather than just focus on computation. It was a way to think about problems and develop solutions. Students had to recognize problems, think logically, define solutions using resources they possessed or those that they could acquire, and finally, they had to be able to communicate clearly and logically. In essence, students were responsible for their own learning, and this is the heart of the Thayer method is students had to go out ahead of time do learning on their own, and then come back and demonstrate that learning.

This is really what we want from those military officers, to be able to go in identify problems, identify solutions, be able to execute on those solutions. There are at least how I experienced and how others have described it, components to the Thayer method. What I'm sharing comes from an article, *The Thayer Method: Student Active Learning with Positive Results*.

The first aspect of the Thayer or first component of the Thayer method is a lesson is assigned for each class, not a topic for the week, but each specific class has readings assigned and assignment sets to work, and the syllabus clearly defines each class period and the work to be completed, and this work was to be completed before the so-called lecture or before the specific class period.

You had to do your homework ahead of time. You had to figure it out. You had to go in and go through the material, try to understand the material, try to work the problem sets, not always successful. I certainly wasn't successful at all times, more times than not, but not always, and had to prepare ahead of time. Another aspect of this is one learns mathematics by doing mathematics and so because we had to do these assignments sets, we started to understand what our gaps were, what we didn't understand, and we can come to class a lot more prepared. We had better questions.

In a typical class, you receive the lecture and the instructor shows on the board how to solve the problem and everybody understands, there's no questions you get home, and then you have no clue what you're doing. Well, in this case, they've reversed it where you go work the problems ahead of time, you come up with your questions, you get those clarified, and you then leave in a better situation.

Another aspect of the Thayer method or another component is you have to be able to explain what you learned, be able to demonstrate this learning, and furthermore, apply this learning to new problems. When you walk into class every day, you turned in your homework before class started, and every day that homework was graded. Once you took your seats, you had a brief Q&A session with your instructor. This was a time to go and ask questions about the homework problems that you didn't understand or had difficulty in solving. After that, brief Q&A, the instructor would then send students to the boards, to work problems while students at the seat would work all the problems.

You were given a problem to solve at the board, you would solve it and then you would recite back to the class, your solution. You would basically walk through the problem and explain every step of the problem and how you came to the solution. If everything was good, the next student would do the same thing. If you were not correct, then you would get help from your fellow students in solving the problem.

If no one knew how to do it, then the instructor would basically give a mini-lecture. Once the group was done, then the next group went to the boards and you repeated this process. It was a quick and effective strategy, and it was very much active learning. Everyone worked new sets of problems constantly. In a typical class, we had four rows of seven, and we would go in there with those 28 students. We would have 28 new problems on top of the homework that we did the night before, and we would work through those problems.

Now, this wasn't just for mathematics. The example I'm providing is mathematics, but we also did it for sciences that we would go in and work chemistry problems. We did this also in English, and we had different problems that we would work in terms of English. It can be done regardless of the discipline. Some are more challenging than

others, but there are ways to do this. At all times, you could ask questions for clarification, and the instructor was more of a facilitator. If all the students were unclear about a concept, the instructor would step in with a mini-lecture, but the instructors did not by nature a lecturer, and as a matter of fact, West Point instructors really were not allowed to lecture.

If I think back to my days at the prep school, I don't remember a lot of lecturing. I remember us doing a lot of work, a lot of learning among the students, but I don't remember the instructors specifically giving lectures. The other thing I want to add is that we had a quiz every other day. These quizzes were comprehensive and that we would see questions from previous weeks throughout the term, but they mostly focused on questions that happened within the past couple of days of instruction. The instructors were really good about identifying questions that tripped up students on previous quizzes and making sure that they got back into the mix so that those lessons would take hold.

There was a lot of repetitiveness. You saw a lot of the same concepts over and over and over again, and this recall type of instruction is really powerful. The fact that they use quizzes all the time, that is something that I have talked about and how they do it. You would also have midterm and final exams for those final assessments, but the quizzes were really there to as formative assessments that they were helping you build upon that knowledge.

There is also different places are experimenting with the Thayer method. There's not a lot of folks that are doing it because it can be challenging. Students have mixed reviews on it. Some students really like it, some students really don't. Some students have difficulty with this idea of learning ahead of time, other students are absolutely fine with it. As I noted, it helped shape me and my ideas of learning, so I am a huge fan of it, but there's also other strategies you can tie into this.

I've talked about recall techniques that they use in conjunction with this, the testing methods, but one research that I read, one study, by Major Francisco Gonzalez Nunez and Captain John Goodwill, they created these short instructor made videos to summarize upcoming lessons and made them available to students so this was a supplement to what students had to read but the instructors also helped in summarizing those things.

They provide a mini-lecture, and the students who watch these videos had an increase in quiz grades, but they wanted to note that the keys to creating these videos and make sure that they were instructor generated, so not just something that you picked up on YouTube. It was very specific to what the instructor was trying to carry out for that particular class that they were short in length, and they were mobile device compatible, meaning that students could review these mini-lectures or mini summaries while they were in between classes or doing other things that they could consume these videos.

If they were traveling to a sporting event or something of that nature. There has also been research where at different colleges they were using the Thayer method and reporting out what the students thought of it and the mixed results there, but also

different success rates. All I can say is, it's been very good to the military academies and it's helped develop some outstanding officers who are able to solve problems that they've not seen before and that's what you really want from a lifelong learner. Speaking of resources to help solve problems, here's a quick plug for my book.