

"What makes a good Physical Sciences Lecturer?"

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Evaluating what makes a good Physical Sciences Lecturer is in a sense similar to judging whether a painting is of a high standard or not. Is a Picasso better than a Van Gogh? Is an objective answer to this question even possible; if so, who is qualified to make the definitive decision? Like other artists, lecturers will be assessed on the degree to which they are skilled and effective by their audiences – and assessments are certain to vary. However, certain paintings are universally recognised as being of exceptional quality. Similarly, some lecturers are viewed by a vast majority of students as talented. Accordingly, there must exist certain qualities that generally characterise a good Physical Sciences lecturer. Pinpointing these is naturally not easy. However, based on my own experience and on what I have heard from fellow students, I identified the following three areas: presentation, organisation, and knowledge. Mastering these is what most often makes a lecturer successful.

Firstly, the fashion in which a Physical Sciences lecturer presents his or her material usually makes or breaks a lecture course. Deciding on an effective approach is intricate. Studies show no definite results regarding the question whether students learn better through interactive or straightforward teaching. It is crucial to strike a balance between involving students and allowing them to passively digest the information presented. Before coming to university, I expected that lectures would consist exclusively of a professor standing up front and talking about the subject. It would then be up to the students to choose whether they would like to take notes or simply listen. However, I have actually experienced a multitude of approaches so far. At the negative end, I had a lecturer who provided a handout with plain diagrams and, when showing the annotated diagrams during the lecture, proceeded at a pace that left no time to either annotate or understand the material. It was equally irritating when, following each lecture, he would ask the audience whether any questions remained. Of course participants were hesitant to expose their lack of comprehension, so no question was ever asked. This evident obstacle must have been noticed by the lecturer. Still, the dearth of questions regularly prompted a complacent smile on his face since he seemed to misinterpret it as a sign of successful education. On the other hand, I have a chemistry lecturer whose teaching epitomises efficient dissemination of scientific material. Each lecture is carefully planned. Every student gets a detailed handout with a few gaps, and the lecturer is meticulous about showing how to fill these in. Furthermore, halfway through the lecture, there is always a brief break during which he either conducts a relevant experiment or shares an amusing anecdote. This approach fosters students' understanding, allows them to obtain a full set of notes for revision, and keeps them motivated and focused due to the vitalising breaks.

Organisation is another key to giving a good lecture. It is imperative that a lecturer makes it crystal-clear what topics will be looked at during the lecture(s) and how these fit into the bigger picture of the specific course. From my own experience, I can say that nothing is more

frustrating than having a lecturer who spends the entire lecture ploughing through notes but completely omits even a brief introduction or conclusion. Moreover, good organisation implies effective time management too. I had a physics lecturer who nicely illustrated this skill. Each lecture would start at nine o'clock sharp; hence, every student knew being unpunctual meant missing information. The lecturer would then begin by outlining the current topic and would proceed to explain the relevant theory. He provided us with the right level of detail as well. For example, the handouts contained complete derivations of equations but, in the lecture, he would only draw our attention to challenging steps that could cause confusion. Finally he would work through one or two examples to demonstrate how to apply the equations. He would finish each lecture either on time or slightly early. There are other lecturers who regularly digress; as a result, they have to rush toward the end of the lecture and finish late. When it comes to planning a lecture, the empathy that a lecturer has for students – regardless of how small the dose – can make a significant difference. Firstly, key messages are usually underscored at the end. Skipping over that part could preclude a student's comprehension of the topic. Ironic though it may sound, many students are also highly grateful for even two additional minutes of free time, especially when they have up to four consecutive lectures. I myself found that coming late, being quite stressed after rushing from one building to the other, drastically lowered my initial receptiveness to the second lecture.

Finally, a lecturer's knowledge naturally also plays a role in how effective a lecture is. A lecturer will typically have a deeper knowledge of the subject than is required for the course. The deeper this understanding is, the better. This is because a lecturer needs to know how his or her topic fits into the subject's general context. Accordingly, he or she can show students the reasoning in and links between various theories but avoid clouding their minds with excess detail. Moreover, it would be beneficial for a lecturer to be knowledgeable, to some degree, in related disciplines too. Given that the (Physical) Sciences have so many interdisciplinary connections, a lecture can often be made all the more stimulating by occasionally highlighting how the material applies to other areas as well. One of my mathematics lecturers would, even though it was superfluous for the final exams, regularly mention what role certain topics played in the derivation and development of theories in physics. This certainly made the lectures more intellectually inspiring.

Ultimately, characterising a good Physical Sciences Lecturer is, to some degree, a subjective task, and it is most definitely a challenging one. Nevertheless, general attributes of a skilled lecturer include: effective delivery of the material, strong organisational skills, and a thorough knowledge of the Physical Sciences. Furthermore, a lecturer should be able to see the lecture from a student's point of view and be motivated to invest effort and passion into making his or her teaching stimulating as well as intriguing. Just as not every painter can create a masterpiece, not everybody can give impeccable lectures. However, every lecturer can work to make his or her lectures as rewarding as possible for all involved – including him-/herself. This will invariably lead to a mutually beneficial and satisfying learning environment; education is, after all, a cooperative enterprise.