

Philosophy of Education: What matters most

Critical Review and Analysis of an Article

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2016-03-27

Introduction

Fritz Kubli is a retired physics teacher from the Kantonsschule Enge, a swiss gymnasium offering programs at the secondary school and the Cegep-level. He has published many articles related to the pedagogy of physics education. In his article, “Do we need a philosophy of science education?” [1], Fritz Kubli makes a case for historically-based physics teaching. The approach builds on the personality of the scientists behind the sciences, historical context and a curriculum that corresponds to the historical timeline of the various discoveries. Kubli claims that with this, as he calls it “more humane approach” to teaching, we are able to better connect with the students that are not particularly interested in science and have “emotional obstacles”. He asks us, the teachers, to do this by showing our personal preferences and by “telling stories”.

I find the approach intriguing and the article worth reading. Often, especially in the remedial activity courses, it is very difficult to get the students engaged. Bringing the scientists and the social challenges of their time to the front might indeed allow us catching the interest of the students that otherwise are quickly deterred by formulas and problem-solving techniques. However, Kubli's plea to “tell stories” reminds me of the “banking education” [2] and I think the idea goes in the opposite direction of the thoughts of other authors, such as Paolo Freire, that accuse that “Education is suffering narration sickness” [3]. I would have liked to see the main ideas of historically-based teaching combined with an active learning approach that, instead of the teacher, puts the students at the centre.

The title of the article, as Kubli admits himself, is a bit misleading and probably chosen to catch the readers attention. I would have preferred a title along the lines “Historically-Based Physics – a more humane approach to teaching”.

Detailed summary and analysis of the article

A personal philosophy of education

Kubli starts by clarifying the title of his article. He is convinced that, in addition to the general guidelines on how to teach, a teacher needs a personal philosophy of education. This personal philosophy will then result in what, why and how we teach.

I agree that the personal philosophy, in collaboration with the general guidelines will influence what, why and how we teach. However, I think that not only does every teacher need a personal philosophy, but that every teacher has a personal philosophy. The only question is if we are aware of it. This relates directly to the thought paper at the end of this course at which we will try to type out our personal philosophy.

The problems with the classical approach to science teaching

According to Fritz Kubli, there are many students with absolutely no interest in science in the physics courses, as the swiss education system makes it impossible for them to escape the science classes.

Kubli does not like that most science teachers see the historical context as “unnecessary ornament”. He believes this further deters those students which already have “deeply rooted emotional obstacles” to overcome. He adds that teachers acting as an impersonal transmitter of content amplify the problem.

The critique of the “impersonal content transmitter” resonates with Freire's critiques of the “banking model of education” [2]. The emotional reservations against science which Kubli notes are something everyone can relate to; the science teacher by the numerous student comments about how they hate science, and the non-science teacher with their personal experiences with science. I do not remember that any of the authors I was reading, talking of such an emotional barrier with their subject matter. I am convinced that this issue is not specific to the sciences, but to any subject. How many “anglophones” do “hate” french? What about the struggles of students in technical programs with the general education

courses? I think Kubli is onto something here that is worth further investigation.

The personality of the communicator

Like Palmer [4], Kubli talks about how the personality and the engagement of the teacher influence the students and helps to create a meaningful communication. Kubli however, takes it one step further. He refers to Alexandre Koyré and Thomas Kuhn, saying that “for them, science was no longer an intersection of experiment and abstract logic only, but a kind of thinking embedded into a more general realm of emotions and existential feelings.”. Thus, in order to have the students connect, Kubli argues that it is important to have them learn more about those who discovered the laws, their personalities, their metaphysical ideas and the historical context.

It is true that we rarely talk about those who discovered the laws of nature, except maybe Einstein and Newton. That is probably because science is focused more on the laws and their implications, and less on who discovered it when, where and “why”. But maybe Kubli has a point: The less science interested student might be reached by showing the circumstances of those discoveries. After all, most documentaries on TV spend quite some time talking about the men and women behind the science. - Is it to make the documentary more appealing to the general public? In the context of the sciences at the Cegep level, it might be interesting to let us inspire by the approach of those documentaries, at least in the remedial activity classes, where the majority of students, as Kubli's swiss students, is not really interested in the sciences.

A historically-based curriculum

Kubli cites a discovery made by Jean Piaget: “spontaneous individual development of concept in children follows, to a certain extent, the historical stream of scientific consciousness” and makes the connection to Martin Wagenschein's “genetic-historical method” to support the idea of having a curriculum that follows the historical discovery timeline.

As Kubli admits himself, only limited experimental data (“Lehrstücke”) is available to support the effectiveness of such a curriculum. He can only provide anecdotes from a “colleague that was fond of this method” and was able to develop a “very humane” atmosphere in his classroom.

Most books I have seen as well as our science curriculum do more or less follow the historical storyline. However, I assume it is due to a certain tradition and not through scientific reflection. It would be interesting to see more data on the effect on student learning by purposely organizing the curriculum in a strictly historical manner. I am a bit puzzled to read that Kubli relies on anecdotal evidence of a colleague: Did he not try out the method himself?

A teaching method based on stories

Another argument listed by Kubli is that “narratives are the most important sources of our knowledge”. He hopes that “a teaching method based on stories” will be used in the near future.

As I was not sure if I understood correctly, I contacted Kubli. Convincing the teachers to tell stories is indeed very important to him.

I consider telling stories, at least as long as it is the teacher that is the narrator, as the teaching method of the past, not necessarily of the future. Isn't Kubli argument in direct contrast to Freire's claims that “Education is suffering narration sickness” [3]?

I could see how the students could, as a project, investigate the background of a scientist or discovery and then report back to the class. This way the “storytelling” would be student centred and we could avoid the “narration sickness” caused by a teacher reciting one story after the other. However, I agree that a passionate teacher, every once in a while telling a compelling story, could have a positive impact on the atmosphere in the classroom.

Conclusion

Kubli points out an interesting problem, that of the student with emotional reservations towards science. His suggested solution, the historically-based teaching philosophy, based on historical personalities and events, combined with the personality of the teacher, is, in my opinion, worth a try but should definitely, rather than focusing only on teacher centred narration as the article suggests, be connected with the ideas of active learning.

Unfortunately, the article is mostly based on anecdotes. However, it could be a good starting point for a rigorous scientific study that tests the effectiveness of this teaching philosophy. Further work could also look for other solutions to the important “emotional obstacles”-issue pointed out by the author.

References

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