

TEACHING AS AN INVITATION TO REASONING

LUCA F. TUNINETTI

Pontificia Università Urbaniana, Roma

l.tuninetti@urbaniana.edu

ABSTRACT

One aim of education is the transmission of knowledge. The present paper argues that in order to achieve this aim teachers should be exemplars of reasoning for their students. The contents of education are typically propositions or theories that cannot be accepted without understanding how the related beliefs are justified through inferences from given premises. If a belief is inferentially justified, however, in order to understand how it is justified, one has to follow the reasoning that leads to a particular conclusion. For this reason, in their classes, teachers should not be expected to provide a kind of testimony but rather a kind of argumentation. The students cannot simply believe what they are told because the teacher said it; rather, they have to understand the arguments that support the teacher's claim. When a teacher presents an argument to them, the students will follow it with the attention required to grasp it themselves if they see the teacher's reasoning as a successful practice in which they want to be involved.

KEYWORDS

Education, exemplarism, testimony, argumentation, authority

Along with parents, teachers are, for many people, the most likely instances of exemplars. If you ask somebody to mention a person who played a significant role in their growth and maturation, often they will recall the name of a beloved teacher. The notion of an exemplar can be used to explain what happens, or to state what should happen, in the relationship between teachers and students. It can be argued that teachers have a role in the moral education by presenting narratives of moral exemplars to their students and by being moral exemplars themselves (*Croce forthcoming*). This is obviously most important. In my paper, however, I would like to consider how the notion of an exemplar may shed light on another dimension of the relationship between teachers and students, that of knowledge acquisition. Even though education may have different aims, it would seem correct to assume that, at school, students must acquire and do usually acquire some knowledge. If we consider

how knowledge is acquired by students, I think we can better appreciate the decisive role exemplarity plays in the education process.

It has been debated to what extent knowledge transmission should be regarded as the proper aim of education. Even philosophers who have different views on the overall aim of education agree on the importance of knowledge acquisition (Goldman 1999; Adler 2003; Siegel 2017). Certainly, the very idea that teaching must convey knowledge has been challenged from different points of view (Elgin 1999; Hager 2005; Baehr 2013). In this paper, I am not trying to make a point about knowledge acquisition as an aim of education. I rather assume that knowledge transmission is an important aim of education, and I am interested in asking how that aim might be pursued in the relationship between teachers and students.

The knowledge that students acquire by listening to their teachers could be seen as a kind of testimonial knowledge. In the contemporary epistemological debate, the notion of testimony has been construed very broadly. However, I do not think that it is helpful to speak of testimony whenever the words of a person exert some influence on the beliefs of another person. A condition for speaking of testimony in a strict sense is that the speaker's words lead the listener to form their belief because of the act (or fact) of listening to those words. There is an instance of testimonial knowledge in the strict sense only if people believe something *because* they believe someone else who tells them something.

If we construe testimonial knowledge in this narrower sense, I think that we can easily realize that the scope of this form of knowledge is not unlimited. It has been suggested that truths of a certain kind cannot be transmitted via testimony (Gelfert 2014, 20-25). Mathematical truths feature prominently among these (Williams 1972, 9). In fact, those unable to grasp the proof of a theorem do possibly know something about the theorem, but could not be said to know the theorem. On the other hand, if somebody is able to prove the theorem, it does not seem relevant whether somebody else told them how to do it. I will argue that the inability of being transmitted via testimony is not a special feature of mathematical truths, but affects them, insofar as their transmission requires a conscious inference.

Epistemologists have debated for a long time whether justification through testimony requires an inference on the part of those who listen to a putative testifier. The question that I am addressing here is different. I am not asking what is required to justify a belief based on testimony on the part of the listeners; rather, I am considering whether all beliefs of a certain speaker can be passed to others by simply telling them. I will claim that it is impossible for

a belief to be transmitted in this way if the hearer cannot accept what is told without understanding the inference that justifies the speaker's belief.

Certainly, beliefs based on an inference can be passed via testimony to other people like any other beliefs. Simon tells Mary that Pete is spending the day in the lab. In the proper context, Mary could believe what Simon asserts even if she does not know how he has formed his belief. However, it may happen that Mary asks Simon how his belief is justified: "Really? How do you know?". In different circumstances, Simon could reply differently. For example, he could say: "I saw him there a few minutes ago", or: "Yesterday he told me that today he would stay there all day long". However, Simon could also say: "Pete must collect some data to discuss them with his supervisor tomorrow". In the latter case, Simon mentions the premise from which one can easily infer that Pete must spend much time in the lab today. Mary would probably accept Simon's reply to her request for justification without any further question. This could not be case if Simon says for example: "Mike is in town". Mary may not see how Mike's being there could be relevant to Pete's spending the day in the lab. Therefore Mary could ask: "So what?". Simon could reply: "Pete does not want to meet Mike after he had a row with him last week". Mary can accept the justification presented to her by Simon only if she is able to follow his reasoning. When inferentially justified beliefs are transmitted from a person to another person, the latter must be able to understand how the inference works in case the question of justification arises.

While stressing the role of an inference for justification, we are not left with the thorny issue of how drawing a line between inferentially justified beliefs and non-inferentially justified beliefs. What is truly relevant is not whether an inference actually took place, but, rather, whether a statement is presented by the speaker and (essentially) is received by the hearer as a conclusion arrived at by reasoning. In this case, the hearer should be able to test the link between this conclusion and the premises from which it can be inferred in case the speaker's assertion cannot be accepted without any further question. The hearer can believe the speaker's assertion and consider any further inquiry as superfluous. If this is not the case, however, the hearer cannot completely rely on the speaker for justification. In other words, inferential justification cannot be transmitted from one person to another as easily as beliefs. One can accept a belief because of another person's assertion, but one cannot know how it is justified if the belief in question appears to be the conclusion of a reasoning that the person is not able to follow. The hearer cannot expect to be replaced in reasoning by the speaker as one is replaced in perception.

If it is the case that reasons for a conclusion cannot be learned by listeners by simply accepting the speaker's testimony, one could ask what is the role of an educator who teaches a class on a scientific subject, and must present theories that typically require complex reasoning to be understood and made plausible. Take for instance a teacher who tells the students that $E=mc^2$. I would claim that the students cannot properly gain any knowledge of Einstein's equation by simply believing the teacher.

Some could object that, on the contrary, it is the case that the students can gain knowledge of the equation by believing the teacher. What the students would have difficulty reaching is not knowledge, but understanding.

In the present paper, I am not able to further discuss the distinction that has been drawn between knowledge and understanding, and the relevance that it may have for a philosophy of education (Grimm and Hannon 2015; Gordon 2017). Neither do I think that I need to settle the question I have just addressed, provided that one agrees (at least partially) on the aim of teaching I am referring to and on the way it can (or cannot) be achieved.

Still, I can try to clarify why I maintain that the students who simply believe what the teacher tells them do not know that $E=mc^2$. It might be objected that it is certainly good if the students have some understanding of the reasons backing Einstein's assertion, but it is not correct, therefore, to deny that they possess some propositional knowledge in that area if they simply accept the teacher's words. Just as Mary knows that Pete is in the lab simply because she believes what Simon tells her without asking for further justification, the students could know that $E=mc^2$ even if they are not interested in the reasoning that leads to that equation. I think, however, that the students must be in some sense interested in Einstein's reasoning to be able to know that $E=mc^2$.

In fact, the hearer cannot believe the speaker's words if they do not understand what these words mean. I am not claiming that the hearer must understand the meaning of the speaker's words as the latter does. It also seems indisputable that the meaning of an utterance may be understood more or less adequately. What I am suggesting is that the meaning of a sentence like " $E=mc^2$ " cannot be properly understood without knowing how it is justified. Mary understands what Simon is saying, namely that Pete is in the lab, even if she does not know how his belief might be justified. While a sentence like «Pete is in the lab» may be justified by an inference or in another way, a sentence like « $E=mc^2$ » must be understood as the conclusion of an inference and cannot be understood otherwise.

Therefore, there is a difference between, on the one hand, the students who do not have a sufficient understanding of Einstein's theory and of the evidence

that supports it, and, on the other, those who are able to grasp the meaning of the equation in Einstein's theory and know how it can be justified. I would not say that the students who do not grasp Einstein's reasoning possess the same knowledge as those students who do. While the latter really know that $E=mc^2$, the former can only come to know that Einstein *asserted* that $E=mc^2$. They do not really *know physics*, but they know something *about* physics, at best.

It is important to see the difference between knowing *that* $E=mc^2$, and knowing *that Einstein asserted that* $E=mc^2$. Knowing that Einstein asserted that $E=mc^2$ requires that one understands the meaning of the equation. But the understanding that might be sufficient to possess some knowledge about Einstein's monumental achievement would not be sufficient for claiming to know how energy is related to matter. If one knows Einstein's equation without having any idea of the arguments backing it, that person does not have a limited knowledge of the same thing one knows while following Einstein's reasoning. Knowing that somebody has asserted that p differs from knowing that p since there are different objects, and, consequently, the truth claims should be verified in different ways in one case and in the other. It would be a serious mistake to believe that one knows that $E=mc^2$, when, in fact, what they know is that Einstein asserted that $E=mc^2$. Teachers should help students to avoid such a mistake. It is important to tell the difference between what one knows and what one does not know. Learning this difference should be an essential aim of education.

However one prefers to denominate the cognitive accomplishment of those who are able to understand the real meaning of Einstein's equation, my argument only requires that one agrees that this achievement is at least an aim worth pursuing. On the other hand, one should also agree that the students cannot arrive at that accomplishment by simply believing the teacher.

When the speaker is perceived as proposing the conclusion of a process of reasoning, the listeners could not claim to know (or to understand) the truth of what has been asserted if they are not able to follow the reasoning that lead to it, at least to some extent. In our example, the students could not claim to know that $E=mc^2$, if they do not have any idea of the reasoning that leads to that equation. The students need to understand the meaning of Einstein's claim and grasp the reasons that support it.

As a matter of fact, the teacher presenting a lesson of physics would probably not simply state the equation, but will explain what it means and present some arguments to support it. In this case, teaching is not a kind of *testimony*, but it is a kind of *argumentation*. People may present arguments for a number of different reasons. The teacher does it in order to enable the

students to understand the reasons for the claim that has been advanced and, thereby, to improve their knowledge of the subject at hand.

The teacher succeeds if the students grasp the reasons they were presented with and are convinced by them. However, in order to understand the reasons presented and to arrive at the conclusion that they support, the students must first of all listen to the teacher's arguments. They will listen to the arguments if they see the teacher as somebody who speaks with authority.

When speaking of epistemic authority, I think we should distinguish between informational authority and magisterial authority. Whereas the former enables one to replace others in their own epistemic work, the latter, rather, makes one able to move others to perform their own work as reasoning subjects. A "purely positional advantage" may confer informational authority on somebody (Williams 2002, 42), but magisterial authority depends on permanent qualities of a person.

When a speaker presents an argument, it can be properly considered by those listening only if they acknowledge the speaker as somebody who has some magisterial authority in the related matter. If one has magisterial authority, others listen to their arguments, and they do this because they see the speaker as an exemplar of good reasoning.

The students listen to the arguments with which they are presented because they see the teacher who presents them as an exemplar of good reasoning. It is true that the students could pay attention to what the teacher says even if they are not able to appreciate the exemplar of reasoning with which they are confronted. The students could listen to the teacher's words because they believe that it is helpful to do it in order to pass a test or to improve their professional chances. They can believe that it is helpful to do it simply because of the teacher's institutional role. One could wonder, however, whether this kind of attention to the teacher's words would suffice to enable the students to grasp the reasons presented to them, as would be necessary in order for them to arrive at knowledge of what they are taught. Obviously, there are differences to be considered according to the age of the students and the kind of educational context. But these differences depend on the fact that in different circumstances the educator is expected to teach content that requires a more or less articulated argumentation. The students must acknowledge that it is worthwhile doing what is required to follow the teacher's argumentation. Thinking that it must be done is not enough to motivate the students to do it. The motivation for trying one's best to understand an argumentation is generated by the anticipation that there is something to understand. The proposed arguments need not be invented by the teacher, but they must be

proposed to the students so that they understand that the teacher has command of the argumentation and that it is desirable to be involved in this effort of arguing for a certain conclusion.

Following the line of reasoning in the arguments presented by the teacher, the students can grasp these reasons and, more generally, increase their ability to reason. In the case we have sketched of a physics class, the students may come to grasp how Einstein's assertion is grounded by following the example given to them by the teacher. The teacher plays an essential role in providing the students with a model of successful reasoning.

This suggestion may be judged inappropriate by those who think that education should follow a Socratic method. The teacher should not inculcate truths that students must believe. Instead, the teacher should foster inquiry by raising questions. It is not possible in the present paper to discuss the merits of a Socratic method of education (Brickhouse and Smith 2009). I would only stress that a teachers who back their views with arguments most effectively achieves the goal of fostering the habit of reasoning in students. One could doubt that the habit of inquiry may be cultivated by raising questions in areas where there are well established theories or about things on which the teacher has already taken a definite position. Teachers should not claim to know what they ignore. But neither should they pretend to have only questions where, in fact, they have a number of more or less founded answers. In fact, real questions require a background of shared assumptions. On the other hand, the teacher's arguments do not replace the students' own reasoning, but they anticipate it and, by anticipating it, they make it possible.

A teacher is for his or her students an exemplar of reasoning in a given field of research, and students can learn complex theories in that area by becoming involved in the teacher's own reasoning. Teachers can only invite students to take part in their own reasoning; they cannot do any more, and, at the same time, they should not do any less than this.

REFERENCES

- Adler, Jonathan. 2003. "Knowledge, Truth and Learning." In *A Companion to the Philosophy of Education*, edited by Randall Curren, 285–304. Malden, Mass.: Blackwell.
- Baehr, Jason. 2013. "Educating for Intellectual Virtues: From Theory to Practice." *Journal of Philosophy of Education* 47,2: 248–262.
- Brickhouse, Thomas C., and Smith, Nicholas D. 2009. "Socratic Teaching and Socratic Method." In *The Oxford Handbook of Philosophy of Education*, edited by Harvey Siegel, 177-194. Oxford: Oxford University Press.
- Croce, Michel. Forthcoming. "Per un modello esemplarista di educazione alle virtù." In *Teoria*. Special Issue on Virtue Ethics edited by Angelo Campodonico and Maria Silvia Vaccarezza.
- Elgin, Catherine Z. 1999. "Education and the Advancement of Understanding." In *Proceedings of the 20th World Congress of Philosophy*, Volume 3, edited by David M. Steiner, 131-140. Philosophy Documentation Center.
- Gelfert, Axel. 2014. *A Critical Introduction to Testimony*. Bloomsbury Critical Introductions to Contemporary Epistemology. New York: Bloomsbury.
- Goldman, Alvin. 1999. *Knowledge in a Social World*. Oxford: Oxford University Press.
- Gordon, Emma. 2017. "Understanding in Epistemology." In *The Internet Encyclopedia of Philosophy*, ISSN 2161-0002, <http://www.iep.utm.edu/>, 24 May 2018.
- Grimm, Stephen, and Hannon, Michael. 2014. "Understanding." In *Oxford Bibliographies: Philosophy*, edited by D. H. Pritchard, DOI: 10.1093/OBO/9780195396577-0121.
- Siegel, Harvey. 2017. *Education's Epistemology: Rationality, Diversity, and Critical Thinking*. Oxford: Oxford University Press.
- Williams, Bernard. 1972. "Knowledge and Reasons." In *Problems in the Theory of Knowledge*, edited by Georg Henrik von Wright, 1-11. The Hague: Martinus Nijhoff.
- Williams, Bernard. 2002. *Truth and Truthfulness: An essay in Genealogy*. Princeton: Princeton University Press.