

Conception or Misconception?

Rawatee Maharaj-Sharma

“What is meant by the temperature of a body?” This is an example of a typical science question. The answer is that the temperature of a body is a measure of how hot or cold a body is. The concept of temperature is one that comes up in the science curriculum at all educational levels because it is a fundamental concept in science learning. This question is quite different from “What is the temperature of the human body?” The answer is 37°C or 37.4°C. Everyone who has ever studied any science will know that these are two fundamentally different questions with two different answers, so when a child is asked what is the temperature of a body and responds by saying 37°C, it is clear that either the child did not grasp the concept during the teaching/learning process or cannot make the distinction between what each question is asking.

There is, however, a third possibility, one that is seldom ever considered. Is it possible that the teacher taught the concept incorrectly? Within the local context, teachers are viewed as the all-knowing dispensers of knowledge, and students very often take what teachers say and write as “gospel.” However, it is not uncommon to find that these all-knowing dispensers of knowledge are sometimes guilty of dispensing incorrect information in their classrooms.

So what can be done? Well, if no intervention takes place, teachers will continue to pass incorrect information to students. But what might be the outcome of an intervention? There may be two possible outcomes. Firstly, if a teacher is guilty of providing incorrect information, the teacher might agree that perhaps there was oversight, ambiguity, or even personal misconception on his or her part. The teacher may then choose to take steps to seek additional knowledge and clarification on the particular topic to ensure that subsequent classroom science would not be conceptually flawed. The second outcome, and perhaps the one that is more likely, is that a teacher, perhaps wanting to maintain pride or control in the classroom, may want to dismiss any such suggestion and attempt to point the finger of blame elsewhere—the textbook, the student, incorrect note taking, or even parents.

The temperature example is not an isolated case. Ozone depletion and global warming provide similar examples. It is not uncommon to find students leaving a classroom in which these concepts are taught with the idea that they are either the same thing or that global warming is caused by ozone depletion. While they may be related, these are two different phenomena.

The extent to which such occurrences take place speaks volumes about the science content base of teachers, and even hints at the possibility that some teachers

themselves may have developed or incorrectly interpreted certain concepts, perhaps in their own science learning experience. The immediate question might be: What mechanisms are in place to detect and address such occurrences?

In the local context, curriculum facilitators in each subject area are assigned to schools in the different educational districts in Trinidad and Tobago. Part of their job includes periodic visits to schools to collaborate with teachers in various ways to ensure that teachers are solid in the content they deliver to students. This is particularly crucial in the primary school system, because for many students, concepts developed at this level are often carried throughout life. Therefore, when a brilliant literature student in Form Four says that magnets attract all metals instead of saying that magnets attract most metals, it may be that this is what the student was taught at the primary or lower secondary level.

Generally speaking, there is absolutely nothing wrong with a teacher not knowing or having a misconception. However, it is rather disappointing when teachers who evidently do not know insist that they are guilty of no wrongdoing, and do not seek to enlighten themselves. Against this background, I ask: Who are losers in all of this...not the teachers, the principals, or even the parents; it is the children who are innocent victims in the war of pride who inevitably suffer.

This serves therefore to signal that while there is urgent need to revisit the content capability of those hired into the teaching service, that it is perhaps more critical to review the attitudes and personality attributes of these individuals. Because when a teacher teaches a concept incorrectly and insists that it is correct, with no regret or apology, it is a sad indictment of our education system.

School of Education, UWI, St. Augustine