[**Science report card**](https://www.dawn.com/news/1635345/science-report-card)

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SCIENCE is all around us. Kitchens, kitchen gardens, lawns etc. become a child’s first laboratories. They are never tired of exploring them. The fact that children as young as three or five have a natural and uninhibited ability to observe scientific phenomena around them is not only supported by research but is also an observation we must all have made at one point or another.

General science is a subject that the Punjab Curriculum and Textbook Board (PCTB) introduces from Grade 4. The Waqfiyat-i-Aama (WA) Books 1-3 do include some topics on science but they seem to be deficient as the selection of topics is random, without any scheme. Also, they do very little to challenge young minds’ natural curiosity.

One wonders whether the authors of the general science textbooks have had any experience teaching in early childhood programmes. Most chapters resemble ‘all-in-one’ ads for a kitchen food factory — juicer, chopper, grinder and blender. It’s extremely important to enable students to methodically create logical tracks in their minds. But they fail to do so, as the information they receive comes in a very unsystematic manner — akin to jumping from the first to the seventh rung of a ladder and then back to the third.

**Read**: [*Grade 7 book seized in Punjab for printing Malala’s picture*](https://www.dawn.com/news/1634778/grade-7-book-seized-in-punjab-for-printing-malalas-picture)

There is no order to the topics. This will only lead to confusion and anarchy in the minds of young students who will fail to connect the dots due to the missing links. We cannot afford to choose topics by rolling dice. The ‘shoulds’ in the PCTB science books should go beyond the ‘Newton in a dupatta’ syndrome.

Young students will fail to connect the dots due to the missing links in the science textbooks.

Take the example of life sciences in the Single National Curriculum (SNC) to see how the bits of information given in the related chapters of General Science 4 and 5 connect with each other and the prior knowledge gained in the WA Books 1-3.

In the first two chapters of Book 4, the authors frantically jump from animals to plants, then back to animals and then to plants again. The SNC stipulates that students should know how energy is transferred through living things in the form of food. The word ‘energy’, however, is mentioned just once in both books combined and has not been defined. And without the concept of photosynthesis, pollination, seed dispersal etc., it’s impossible to understand the flow of energy in an ecosystem.

Furthermore, several facts given in both books are either incorrect or too basic. For example, page 10 labels the bones in the human body. The humerus is the “bone of arm”, the backbone the “bone of spine”, the metacarpals the “bone of hand”, the femur the “bone of leg”, etc. For this information, the only key word the students need to know is ‘bone’, the rest would be easy to figure out.

The ‘Interesting Information’ box on page 13 says that 14 muscles are needed to smile whereas different numbers are cited by different sources, somewhere between 10 and 15. It also says that there are 600 muscles in the human body which is not right. The correct figure is over 650.

**Read**: [*Single curriculum to eliminate class-based education system, says education ministry*](https://www.dawn.com/news/1630913)

The ‘For Your Information’ box on page 21 says that the Sahara is the largest desert in the world. This is incorrect. The Sahara is the largest hot desert in the world. The world’s largest desert is Antarctica.

On page 22, one of the pictures linked to ecosystems is labelled ‘snow region’. The correct term is ‘tundra’. The tundra-biome does not necessarily comprise snowy regions; the ridgelines in Alpine-Tundra-biomes remain snow-free due to wind distribution.

In Book 5, the ‘Do you know?’ box on page 2 introduces the cell. It says, “As a wall is built of bricks stuck together … the body of organisms is built of cells stuck together”. A diagram of a brick wall and cells is also given where the cells are shown to be bigger than the bricks. The students have come across the word ‘cell’ for the first time in the book and yet this is the only information they get; there is nothing about the size, structure or function of the organelles of a cell.

Next is the classification of organisms into five kingdoms. Out of these, Monera and Protista are unicellular organisms, some fungi are also unicellular. Here, a new term chlorophyll is used but the students know nothing about a cell’s organelles to understand chlorophyll.

The division should have been from known to unknown from visible to invisible.

Page 5’s ‘Point to Ponder!’ asks the students to ponder over the question, “What is the difference between the paws [not feet or claws] of hen and duck?” This may challenge the intellect of a six-year-old but not that of a fifth grader. Page 5 asks students to observe cotyledons and dicotyledons in seeds. The problem is that the students don’t know these terms as they haven’t yet studied the parts of a seed let alone two types of seeds.

Students are also informed that “Vertebrates’ bodies have three main parts: head, abdomen and tail”. This is not correct; several are without tails and have limbs. The authors describe fish as having boat-shaped bodies with pointed ends. This may be true for most fish but not all as they come in a variety of shapes.

The ‘Interesting Information’ box on page 10 defines an aviary and gives information about the Islamabad Aviary. This could have been omitted as it doesn’t add much to the scientific knowledge of students. Also, it is extremely important to create awareness of the effects of keeping animals captive.

Such discrepancies between a single strand of SNC-Outcomes and the related PTCB book content gives one a good idea of what to expect in the other strands. Producing scientific minds doesn’t seem to be an outcome of the SNC.

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*Published in Dawn, July 16th, 2021*