

Expanding Instructional Spaces for Biology: The Role of "Talking Walls"

Joseph Karanja Thuo

Abstract

Illustrations or diagrams form an integral part of learning biology. They help learners to relate biological concepts to structures and their functions. 'Talking walls' or Murals are a form of illustrations typical in many schools. However, research shows that most Talking walls remain "pretty pictures" and are forgotten or underutilised in teaching. It is against this background that whenever I see 'Talking walls', my concern has always been on how teachers and students use them to improve learning outcomes. In this article, I describe two of the pictures from 'Talking walls' depicting ideas in biology I obtained from two different schools. I discuss the importance of having 'Talking walls' that accurately communicate ideas to avoid introducing misconceptions. I conclude the article by emphasising the role of the teacher in ensuring that students reap maximum benefits from 'Talking walls' in their schools.

Keywords

Instructional spaces; Murals; Talking walls

Introduction

The art of drawing is age-old. Early humans filled their prehistoric homes, mostly caves, with illustrations of their hunter-gatherer lifestyle. Most of the illustrations depicted animals, such as the one shown in Figure 1. While the purpose has not been clearly understood, these illustrations give insights into the development of the human mind and the hominids' ways of life. Most primary and secondary schools have 'talking walls' or murals. These are drawings or paintings on walls outside the classrooms conveying educational information. While visiting schools to conduct training, collect data for research, or support teachers to implement ideas they learn during teacher professional development (TPD), I always take notice of the Talking walls in several schools. As a biology teacher, my attention is always drawn to murals representing concepts in biology. I take pictures of those murals, and while doing so, one question that constantly runs in my mind concerns how the Talking walls are used to support learning. This paper describes my reflections about my observations regarding murals, in this case, two examples, and how teachers and students can put them to use to improve learning outcomes.

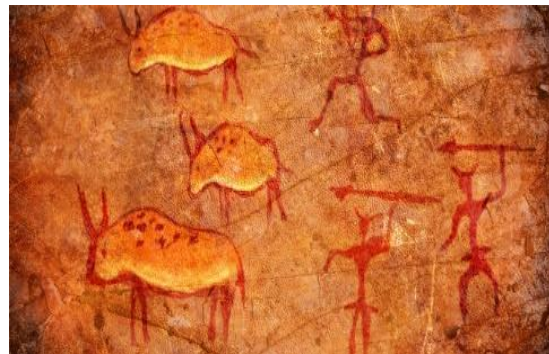


Figure 1: A wall from a pre-historic home
Source: Royal Academy of Chemistry (2021)

Illustrations in Biology

Biology is a subject that has many illustrations or diagrams. From the topics 'Cell and Cell Physiology', in Form One to the Topic 'Support and Movement', in Form Four, the learner is taken

through several illustrations that include simple diagrams such as the 'simple cell' to complex ones such that of the 'heart' and 'nephron'. Illustrations form an integral part of the learning process, and most textbooks contain illustrations to aid in visualising concepts and, by extension, learning. Illustrations and biological drawings help learners relate biological structures and their functions. For example, a learner may not fully understand the heart's pumping mechanism if they had not interacted with its diagrammatic representation and understands its general structure and functions. For some concepts, learners need to know the structure and function of specific parts of a biological structure or system. This may not happen if they are not given opportunities to interact with these structures through realia, modelling, or use of Information Communication Technology (ICT) that include pictures, videos, and illustrations.

“Talking Walls” Illustrating Concepts in Biology

Whenever I come across 'Talking walls' representing biology ideas in the schools I visit, I take their snapshots. From most photographs, it is clear that great effort and thinking go into developing ideas for “Talking walls” in schools. From my assessment, most of the “Talking walls” are excellently done and are also educational. Furthermore, they are located at strategic positions in the school to enable students to interact with the content easily. Among the ones I have captured illustrating biology content, the majority are proportionate and representative of the different ideas in various topics in the biology syllabus being depicted. They include labelled parts of the biological structures they represent, with the majority having been done in colour. An example of a well-done mural is shown in Figure 2. The mural, which depicts man's digestive system, shows clearly labelled, curriculum-relevant parts of the digestive system.



Figure 2: A mural showing the digestive system of man

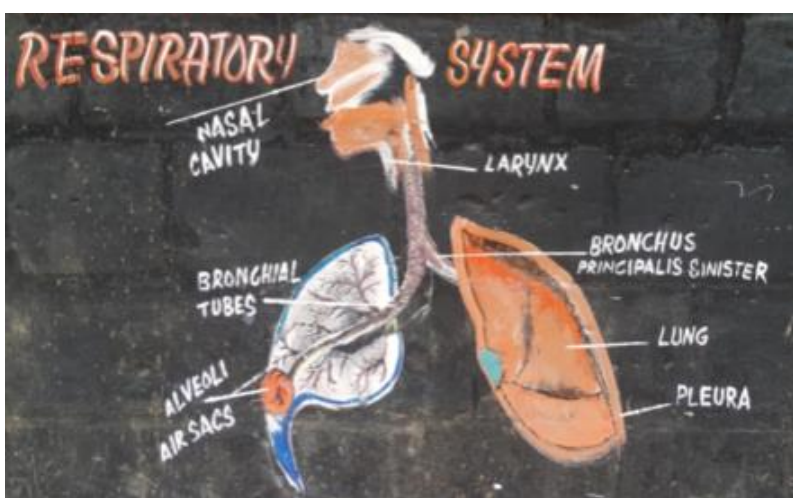


Figure 3: A mural showing the respiratory system of man

However, there are 'Talking walls' or biological illustrations that are poorly done and present misleading information that can result in misconceptions. Figure 3 shows an example of such a mural. The figure is a mural representing the respiratory system in man. Although it is done in colour, which helps to catch the eye, it shows several aspects that misrepresent the respiratory system's content.

For example, the lungs are slanted towards the left with apparent differences in the symmetry of the two lungs (e.g., the left lung, which shows a cross-section of the lung, looks like a leaf with a network venation with a pointed lower bottom end while the right lung is curved at the bottom).

Furthermore, the alveoli air sacs appear like they are an independent structure on or beside the lungs. Equally, the labels are done poorly. For example, the larynx and the nasal cavity labels are pointed at the voice box and nose, respectively, instead of the actual structures. In addition, it is not clear why the label '*principalis sinister*' is included in this drawing. This is because the content involving this terminology is above the level of secondary biology. Overall, this mural is misleading and, therefore, unlikely to help enhance the understanding of ideas involved in the respiratory system.

"Talking Walls" as Instructional Spaces

As I take pictures of 'talking walls', my concern has always been their use as a resource to enhance learning. Teachers should always endeavour to select instructional materials and activities that stimulate students' thinking and facilitate effective learning. Furthermore, learning should be interactive and fun. The starting point for such fun could be schools' 'talking walls'. 'Talking walls' can enhance learners' interest in a given subject because they provide a visually stimulating environment. As a result, the walls are likely to promote positive learner attitudes toward learning. For the 'talking walls' to effectively facilitate meaningful learning, they need to be designed well and organised. They should also be accurate representations of the ideas being conveyed. According to Catapult Learning (2018), the walls should be designed and organised to provide crucial instructional information for students with multiple learning, thinking, and writing opportunities. Bennett (2019) noted that the educational value of many wall paintings remains underutilised since most of them are forgotten "pretty pictures" on the walls. This means that teachers have a role to play in this process.

Teachers should ensure that 'talking walls' are designed to arouse students' interest provoke their thinking in the subject, and effectively communicate the ideas being conveyed. In addition, the teacher must be selective about the number of wall paintings, types, kinds and sizes, quantity and quality of labels, and explanatory texts. Further, the positioning of murals in the school compound for students to reap maximum benefit should be at a location with a more learner footprint. The teachers should also play an active role in guiding students to use the 'talking walls'. Where possible, teachers should make deliberate efforts to conduct lessons involving ideas depicted by murals near such murals and guide the students in understanding the concepts involved. Assessment could also be based on the murals.

Conclusion

Many primary and secondary schools have 'Talking walls' intended to enhance the understanding of biological concepts depicted. While some of the 'Talking walls' are professionally done and therefore can effectively aid in meaningful learning, others can propagate misconceptions of the ideas they are supposed to illustrate. Talking walls' that aid the teaching and learning should be easy to use, colourful with clear and large labels, and without the clutter of explanations. Talking walls that are well-designed help capture and retain students' attention and motivate them to learn. To encourage learners to use the wall paintings for study, teachers can employ a place-based

learning instructional strategy and implement their lessons where the murals are. They also can set quizzes based on these illustrations.

References

- Bennett, C. (2019). Stop classroom clutter: Think before you paint or hang that poster. Retrieved July 31, 2021, from <https://www.thoughtco.com/decorating-your-classroom-4077035>
- Catapult Learning (2018). Building classroom walls that teach. Retrieved December 11, 2021, from <https://catapultlearning.com/2016/08/29/building-classroom-walls-teach/>
- Royal Academy of Chemistry (2021). Style in cave paintings Retrieved 5 December 2021 from Education, inspiring your teaching and learning at <https://edu.rsc.org/resources/style-in-cave-paintings/1541.article>

Author Information

Joseph Karanja Thuo
Centre for Mathematics, Science and Technology Education in
Africa (CEMASTE A)
P. O. Box 24214 00502
Nairobi, Kenya
Email: jthuo@cemastea.ac.ke
