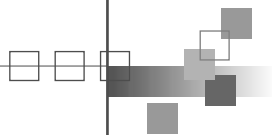


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# General introduction

Optical illusions are not exactly common, but most of us have seen one. For example, a famous visual illusion is the one that asks: Is it a vase or is it a face? Now, you see it, now, you don't. First, you see the vase, then, shift your eyes and you see the face. After you have seen both of them, the images shift quickly from one to the other. Although the two images appear discernibly different, they are, of course, only altered perceptions of a single picture.

The concept of teaching/learning is as elusive as that familiar optical illusion of the vase and the face. Teaching and learning go hand in hand as teaching/learning; yet each piece is distinguishable in its own right. Teachers teach. Students learn. To fully understand this conceptual illusion, the professional teacher at first must shift deliberately from one concept to the other ... from a focus on teaching to a focus on learning and then back to teaching. When familiar with with these two seemingly separate concepts, teachers may shift from one to the other automatically. It becomes almost impossible for teachers in the know to think about teaching without thinking about learning, that is, thinking about teaching/learning.

There is a story that illuminates this somewhat ambiguous representation of the complementary link between teaching and learning.

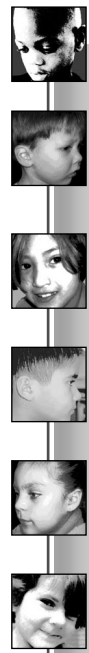
A young boy points to his pet dog, as he brags to his friend, 'I taught my dog, Stripe, how to whistle'.  
Looking expectantly at the motionless dog sitting nearby, the friend challenges the young boy by stating the obvious. 'I don't hear him whistling'.  
Without skipping a beat, the young boy boasts, 'I said I taught him. I didn't say he learned it'.

And, therein lies the rub, as they say! Therein lies the conundrum of teaching/learning. In essence, educators teach, but students learn. In fact, many a teacher has been heard to say to students, 'I can't learn it for you. You have to make sense of this in your own heads, in your own time and in your own ways.'

This is the challenge that haunts teaching. Teachers present information gingerly but earnestly, anticipating that students will grasp and, subsequently, use that information in relevant and meaningful ways. In fact, teachers regularly and conscientiously 'tell' students what they think students need to know. Teachers routinely and consciously flag important facts to demonstrate key learning. They revisit, they review and they repeat information for the students in their classrooms and in their academic care.

Yet, the painful truth is that no matter how many times teachers say something, it is each learner who eventually must capture the ideas in ways that make sense to each of them. It is each individual learner who must make meaning within the framework of their own schema. Each must connect the new, incoming information to their existing schema of prior knowledge and background experiences. Each must make the critical connections that hook the new to the old.

Even though teachers try to teach in ways that help all students know and understand, ultimately, each learner must take those ideas and make them make sense. This is the phenomenon of dual responsibility – the teacher teaches in



rigorous and rich ways and the learner attempts to make sense of what is taught through various student-like techniques.

In essence, teaching/learning embodies a concept of shifting responsibilities: the teacher must relinquish responsibility *gradually* during teaching to allow the learner to assume responsibility *gradually* during learning. By entrusting learners with the learning, teachers do not rob them of the sense of accomplishment and joy that comes from learning something well. By not doing everything for the learner and by offering essential practice, rehearsal and repetition, over time the teacher encourages reciprocity from the learner.

## Zone of proximal development

This gradual releasing of responsibility by the teacher to the student is a hallmark of the constructivist classroom (Brooks & Brooks 1999).<sup>1</sup> This tandem act is predicated on Vygotsky's concept of proximal development (1978),<sup>2</sup> which is that state in which the child follows the adult's example and gradually develops the ability to do certain tasks without help or assistance. Vygotsky called the difference between what children can do with help and what they can do without guidance the *zone of proximal development* (ZPD). The zone of proximal development is the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers (Vygotsky 1978). What children can do with the assistance of others is even more indicative of their mental development than what they can do alone (Vygotsky 1978, p. 85). The zone of proximal development embodies a concept of readiness to learn that emphasises upper levels of competence.

This concept of ZPD is closely related to the concept of teaching and learning. Basically, when teachers prepare a complex lesson, more often than not they introduce the lesson to the students with full and explicit directions – a guided activity. As students revisit the lesson concepts, the teacher continues to 'scaffold' step-by-step supports at various stages throughout the lesson. Over time and after students have sufficient practice, rehearsal and repetition, the teacher removes the scaffolding methodically and appropriately, gradually releasing more responsibility for learning tasks to the students. As learners move from competence to proficiency, they assume more and more responsibility for the task as their zone of proximal development moves forward.

Real-world examples of this entwined teaching/learning process are plentiful. For instance, teachers walk through a directed-reading and thinking activity (DRTA) with a high-interest narrative text, cuing students exactly when and where to stop and think. They scaffold the stop-and-think skill with cuing questions such as 'What do you think will happen next? Why? What is the character thinking? Why do you think that?'. Then, as students become familiar with interacting with narrative text during reading, the teacher introduces the very same strategies with content-specific informational text, which is a somewhat more difficult reading task. With appropriate and explicit scaffolding of known



procedures that now are being moved to a new context, teachers guide students through a DRTA as the students interact with the nonfiction or informational text.

Gradually, as students become familiar with this guided process of reading interactively and thinking to comprehend more as they read, teachers remove the explicit cues to stop and think. At this point, teachers simply may instruct students to stop at least three times during their reading to think and to make predictions. Finally, after much time and practice with both narrative and informational text, students are expected to automatically read with anticipation cues that deepen their comprehension. At this stage of development, the learner, reading skilfully with obvious comprehension, is in charge of their own learning.

This process of gradually releasing responsibility to the students is a concrete example of how teaching and learning are inextricably linked. Teaching is integral to learning, with the two intertwined so that they deliberately and systematically shift the lead from teacher to learner.

## An art and a science

When the entwined concepts of teaching and learning are separated, a clear bifurcation emerges between the art of teaching and the science of learning. The art and craft of teaching involve intricate methodologies of instruction, ranging from lectures to experiments. The science and anatomy of learning, on the other hand, involve illuminating principles of the mind and brain, ranging from emotions to cognition. In this anthology, both the art of teaching and the science of learning are centre stage.

In this book, a series of 'In a Nutshell' publications present the dual concepts of teaching and learning. The art of teaching is delineated through three selections that concentrate on teaching and the science of learning is embodied in three selections that focus on learning. The concentration on teaching covers the attributes of quality teaching (*Teachers make a difference: A framework for quality teaching* by Robin Fogarty); a three-phase process for developing instruction based on data-driven decisions (*Data! Dialogue! Decisions! The data difference* by Brian M. Pete and Catherine A. Sambo) and a look at best practices for the classroom teacher (*Nine best practices that make the difference* by Robin J. Fogarty and Brian M. Pete). The focus on learning deals with the underlying brain principles for learning (*Twelve brain principles that make the difference* by Brian M. Pete and Robin J. Fogarty); the concept of transfer for adult learners (*A look at transfer: Seven strategies that work* by Robin J. Fogarty and Brian M. Pete); and a professional development model that provides sustained coaching and mentoring opportunities for the continued learning of all staff (*A model for mentoring our teachers: Centres of pedagogy* by Robin Fogarty). These complementary selections weave the twin concepts of teaching and learning into the tight bond of a single tapestry, called teaching/learning.

