

The Problem of Teaching for Transfer: Taking the Low Road or the High Road?

In our teaching sojourns, it is essential that we take the high road toward student understanding and independence. The low road beckons, but is not the route that leads to our most important goals for student transfer and application of their learning.

The articles in this issue resonate powerfully with my own interests as a teacher and researcher: the use of think-alouds as a way to metacognitive awareness and control (Wilhelm, 2001); teacher research and co-researching with students as ways to reflective teaching and learning (Wilhelm, 2008); starting with student capacity and developing new interests and abilities using these resources; moving students from the factual to the interpretive and applicative (i.e., from the low road to the high road); and always, *always* situating learning in meaningful contexts of use that are necessarily complex and often messy (Wilhelm, 2007). When we try to make things clean and simple, we work against transfer. As my friend, the cognitive scientist Rich Lehrer, used to proclaim: the only clean and well-formed problems are found in school. In the world, problems are ill-formed, and there is always a remainder!

The Low Road or the High Road?

In a series of teacher-research studies, I found that students could often correctly define grammatical terms and then fail to use these terms as concepts in their reading and writing. My students could identify mistakes in standardized formats, and then fail to identify and correct these same

kinds of mistakes in their own writing. Helping them learn how to proofread for correctness and to manipulate language conventions in various ways for different effects was an entirely different and more complicated matter than relaying definitions and providing decontextualized mistakes to correct (see Smith and Wilhelm, 2007). This dilemma highlights the difference between “low-road” and “high-road” transfer of learning (Salomon and Perkins, 1988).

Low-road transfer is learning that becomes automatic, that can be recalled and repeated and performed without conscious thought. High-road transfer is learning that is applied flexibly and creatively with mindfulness and wide-awakeness. Low-road transfer just “pops up,” while high-road transfer must be “dug out.” The low road can be achieved through memorization and rote performance; the high road requires personal engagement and commitment, searching for and seeing new connections and patterns that can be used to create new meanings, to extrapolate and interpolate, and to apply what is known in a new way (Wilhelm, 2007).

For example, if you drive a manual Honda Civic and I throw you the keys to my Toyota Corolla, you will drive away without a thought. This is low-road transfer. The tasks of driving the two cars are essentially the same, so driving the new car can be done with automaticity. But if I throw you the keys to my Massey-Ferguson tractor that has three clutches, all of a sudden your thinking about driving will have to become principled and conscious. You will have to see the connections from what you already know about driving to this new situation and creatively apply that knowledge. To drive the tractor, you will have to achieve high-

road transfer. Another example might be using knowledge of chess to understand battlefield tactics.

One of my greatest worries about American schooling is that we work so hard to achieve coverage of factual information that we never move from the low to the high, or from mere recall to true understanding, the latter requiring the constructing of new meanings and applications.

What Is Understanding?

The idea of understanding can hardly be overemphasized. If we are not teaching for understanding, then what can we be said to be teaching for?

The notions of low- and high-road transfer apply nicely to a consideration of “understanding” and to the difference between information and skills on one hand and knowledge and understanding on the other (see Wilhelm, 2004, for a full discussion). When students can readily provide *information*, on tap, as it were, we would hardly call this understanding. We can be assured that students have achieved low-road transfer when they can define a noun, point to Iowa on a map, repeat Newton’s First Law, or tell us the names of the major characters in *The Giver*. Likewise, *skills* are routine performances that can be called on. If students can complete a set of problems or correct language agreement errors on a worksheet, we can believe that they possess a skill set. But this kind of low-road transfer does not mean that they understand or use what they have learned.

Knowledge and understanding are much more subtle and complex. Conceptual knowledge of nouns or Newton’s First Law means much more than just reproducing a definition. Understanding is also more than performing a routine skill, whether it is producing topic sentences, five-paragraph formula essays, or solving algebraic equations.

Cognitive scientists consider “understanding” to be the ability to think and act flexibly and creatively with what one knows to solve new problems and create new performances. Possessing factual information and basic skills are essential to understanding, but they are insufficient to under-

standing and do not in any way constitute understanding, which must be evidenced by high-road transfer. Understanding is therefore using what you know about musicality to improvise a jazz solo, or using facts about presidential history to argue for a ranking of our greatest presidents and a definition of leadership. A profound issue in education today is the tacit acceptance that the learning of facts and skills is sufficient for our students. Standardized tests encourage us to think in this impoverished way since they cannot test for nor reward the flexible and creative thinking that constitutes understanding and high-road transfer. Understanding is also marked by the ability to represent and use what has been learned in multiple ways, and by the perception of interconnections, both across the learned material and from the material to one’s personal experience, the world, and disciplinary work (Wilhelm, 2004, 2007).

In *Engaging Readers and Writers with Inquiry* (Wilhelm, 2007, p. 27), I explore three conditions for achieving understanding based on the work of Brian Cambourne (2002): 1) The learner’s background, current understandings, immediate purposes, and eventual goals are central to what is learned; 2) Learning necessarily occurs in a context and cannot be separated from or achieved apart from a meaningful context in which that learning is developed and deployed; 3) Knowledge is constructed socially through interaction that includes questions, problem solving, negotiation, dialogue, evaluation, and ultimately, transformation of the learner from being more novice to more expert in understanding and practice.

An obstacle in working toward understanding is that educators underarticulate and underappreciate what is required to achieve it. For example, reading is often understood as the capacity to decode words. Though decoding is necessary to reading, it is insufficient to achieving engagement, comprehension, interpretation, application, and many other aspects that are necessary to the kinds of reading that lead to understanding (Smagorinsky and Smith, 1992). Even when teachers do teach predicting, inferencing,

summarizing, and the like, rarely do we teach the task- or text-specific strategies that are essential to reading particular kinds of texts, like those that use irony or structures of classification or argument. When we accept the low road, we miss the high road that leads to deep knowledge and masterful application.

Teaching for Understanding

Here are three implications of the research in cognitive science that can help us to teach for understanding:

1. Make learning matter by asking the questions or posing the problems that led to the development of the taught knowledge in the first place.
2. Provide real and varied situations for students to learn in, and provide repeated practice in contexts of actual use. Web resources, drama, simulations, labs, and workshops all help in this regard.
3. Refocus from retention of content to using content to do real work, thereby developing strategic capacity instead of just factual recall and skills. This moves learning from the schoolish to the toolish (Smith and Wilhelm, 2002).
4. Focus—do less to achieve more.

These steps can help us to travel the high road with our students and to reach the El Dorado of true understanding.

References

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