

## The Puzzle of Knowledge

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Consider the common jigsaw puzzle. Sometime around 1760, an Englishman made a map of the world and cut out all the countries so that it could be more easily carted around. It was to be used as an educational tool for geographers. Today, these puzzles can be thousands of pieces, and the artwork on the front is often designed to be confusing and frustrating.

Professional puzzlers engage in contests for prizes and notoriety. The puzzler of today has developed several different techniques designed to conquer the puzzle with a minimum of frustration.

Some begin by finding all the pieces with one or two flat sides. These are the edges and corners, and they define the boundaries of the work to be done. Some begin by sorting the pieces into ones that have similar colors. In this way, a pond, which might be central to the image can be put together and then fitted into place later. Putting together the 'pond' reduces the number of pieces remaining. Other puzzlers pick up pieces which have distinctive markings, examine the picture on the cover of the box, and place the piece in the approximate location without regard to any attempt to fit it together with the next piece. Some puzzlers do all of these in a specific order, which may or may not be the same as the next person's technique. The common trait of these strategies is that each step in putting together the puzzle builds upon the work of the previous step. Once edges are in place, interiors can be filled in. Once ponds or houses, or barns or people are constructed, they can be put into place. Connecting pieces are more easily found because the number of pieces in the remaining pile is reduced. One very interesting fact about puzzling is that each puzzle may not be best solved with only one technique. The true professional puzzler will study the image to be created and apply the most appropriate strategy.

Despite the complexities, or perhaps because of them, today's puzzle remains an excellent educational tool. People, especially the younger ones, can learn patience, spatial orientation, pattern recognition, and occasionally even teamwork. Once the puzzle is complete, there is often a near ecstatic sense of pride and accomplishment, followed often too quickly by the destruction of the work as it is taken apart and stowed away for next time.

In an odd coincidence, today's educational procedures may have borrowed too much from the puzzler in some ways and not enough in others. Educational techniques have changed with technology; there is no denying that. At one time, there were strong parallels between the puzzle and the classroom. Teachers might start a class with setting the boundaries of what was to be learned, or they might begin with an anecdote about the topic. The anecdotal story is analogous to putting the pond together. In each, the core points of what is at hand are made and context is added later.

But education has changed. When children read a digital book, and come across a word that they don't know, they can hover the mouse-pointer over the word and a definition pops up. If a math problem is encountered, the calculator comes out faster than a sneeze. Google will tell you all the answers. The trade-off is that while these answers are most often correct, there is no-one guiding the way that the information is gathered. There is little sequence to how it is stored in the brain. In a classroom or in a book, ideas are presented in a manner that each new fact builds upon the one learned previously, just as in the puzzle. Learning in the digital world exposes the student to correct information, but in no particular order.

In contrast to the puzzle, in education, some snippets of information, or puzzle pieces, have two sides. Again, there is no-one there to help the student decide which piece to put into his personal puzzle of knowledge, and, more importantly, why.

Where the puzzler now has a great advantage over the digitally-instructed student is that when the puzzle is complete there is a picture. For the digital student, there are only the individual pieces. There was no one to show him how to put them together.

In puzzling, pieces are placed in order using a specific technique. In education, when the same fundamentals of strategy are applied, the dedicated student will experience a progression from fact to context, understanding, knowledge, wisdom, and ultimately philosophy.