Sticking It: Becoming an Accomplished Novice

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Introduction

“Expert” level is something that has often seemed out of reach. I always choose the novice character on Guitar Hero, take shortcuts in the kitchen, and am bashful when receiving praise for an effective lesson. By no means am I a master guitar player, chef, or teacher, but the term “expert” has a drastically different meaning to me after reading *How People Learn: Brain, Mind, Experience, and School* by Bransford, Brown, and Cocking (2000). I have realized that my fear of the term “expert” is actually standing in my way of becoming one.

The most notable difference between novice and expert is in the way one learns, recalls information, and approaches problem solving. One should strive to be an “adaptive expert,” still hungry to learn more and reach a higher potential. In fact, one of the key features of being an expert is metacognition, “the ability to monitor one’s current level of understanding and decide when it is not adequate” (Bransford et al., 2000, p. 47). Using expert level thinking to realize one needs to learn more is both freeing and intriguing.

Student Driver to Manual Instructor

Take a sixteen year old me, for example. A novice in many ways at that age, driving was one of them. Classroom time had ended and I needed to log hours on the road. I was handed down a stick shift Jeep Wrangler, so my patient, expert father got in the passenger’s seat with me, nervous novice, behind the wheel. After many tears, shuttering stalls, and circles in a parking lot, I was ready to take on the streets without being a danger to others.

Bransford et al. (2000) also provide an example of driving to illustrate their point about fluent retrieval in experts. They explain how student drivers cannot converse when they are first learning how to operate a vehicle and abide by the rules of the road. As they are able to more easily process the information from their surroundings and navigate the streets, talking becomes no problem. Reflecting on my experience helped me to connect with and understand the differences in novice versus expert learning.

Once my competence in driving the Jeep increased, so did my confidence in doing so alone. Shifting, using a turn signal, and finding my way to school became effortless and simultaneous; I had fluent retrieval of the skills and information needed. Bransford et al. (2000) also explain that “adaptive experts are able to approach new situations flexibly and to learn throughout their lifetimes” (p. 48). Once able to drive the Jeep, I embarked on transferring those skills to a classic convertible and a manual quadrunner.

Driving a stick goes smoothly now, but I have not forgotten how challenging the task is for beginners. Eventually, I sat in the passenger seat beside my husband guiding him through the delicate balance of clutch and gas. Having struggled through the learning experience myself, I understood how to provide feedback on his progress.

Taking it into the Classroom

I also resonated with Bransford et al. (2000) discussion on the way an expert organizes, contextualizes, and accesses knowledge. Deep understanding means knowing facts *and* developing useful problem solving skills. The authors explain that expert mathematicians try to understand a problem before jumping in to solve it (p. 41). Further, novices can benefit from direct coaching on how to use an expert model and the importance of knowing which information is useful. As a teacher, understanding, modeling, and determining relevance are goals I have for my nine year old mathematicians.

One teaching strategy I use is numberless, questionless word problems, which I discovered in a blog post from *Teaching to the Beat of a Different Drummer* (Bushart, n.d.). Stating information without quantities forces students to step back, think, and model what is given. Next, we add a question. We teach them to ask, “Do I have a total, or am I looking for a total?” and expand their model further. When numbers are finally given, students have already figured out the appropriate operation(s) to solve the problem. Essentially, we are forcing the students to understand the problem before attacking it -- the way experts do. As a model to work through a problem, we teach a four square method (see Figure 1) for organizing information. Bransford et al. (2000) reinforced this as they explained the importance of coaching students to use strategies.

What are you looking for? Read the ENTIRE problem. Rewrite the question in sentence form, leaving a space for the answer.	**What information do you know?** Determine who and/or what is involved in the problem. Record information, including NUMBERS AND LABELS, that we are given.
How can you model the problem? Draw a model to help find the solution.	**How can you solve the problem?** Correctly compute and solve the problem. Write the answer in the sentence and make sure it makes sense. Use a strategy to check your answer!

Figure 1. Four square problem solving model.

Conclusion

As a teacher and learner myself, it was comforting to read that "there is no universal best teaching practice" (Bransford et al., 2000, p. 22), only teachers who are lifelong learners. Knowing how experts effectively think about problems has given me a chance to reflect on my own experiences, and provided guidance in my math and science classroom.

References

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Bushart, Brian. (n.d.). *Numberless word problems*. Retrieved from https://bstockus.wordpress.com/numberless-word-problems/