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FEATURE

Transfer of Learning: Where Have We Failed?

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Introduction

Good teaching entails a variety of factors working together, interdependently, to ensure and enhance the learning of students. It is also true that good teachers make good students. Teachers who take the time and effort to deliberately effect positive changes in the classroom to maximize learning experiences will eventually realize and experience the difference their teaching has made in the lives of students. This difference is felt while learning is taking place, and in time, affects the future of the person.

Psychology has suggested that *transfer of learning* is one of the major indicators of successful education. Teachers desire to incorporate the elements of this principle in their lessons and day-to-day teaching/learning activities. In spite of this, little has been done, if anything, to provide sufficient opportunities for the practice of the principles of learning transfer in the classroom itself.

This realization struck my mind like a thunder-bolt when I experienced an embarrassing defeat by a much superior badminton player on the court a few days ago. I have always been under the impression that I am a good badminton player. And, to a certain extent, I am. I have reasons for believing so. I have been playing badminton ever since I was three years old. I have been playing with different kinds of people. I have also played badminton in many tournaments. Unfortunately, I was victorious only once.

I often sit down to contemplate the reasons for my doing so poorly on the court. I never got an answer until just a few days ago. I was badly beaten, defeated, and exhausted. I did not feel so bad about losing because my opponent was indeed a much superior player. However, the defeat opened my eyes to a startling reality that I had never seen before. I finally got the answer that I have been looking for all these years. I know why I am not doing so well on the court!

The answer relates directly to the psychological principle of *transfer of learning*. Although I have been playing this sport for many years, with different

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kinds of people, on a variety of occasions, I did not do so on the *court*. I did it outside of the court. Much of my badminton playing from childhood was out on the streets, on the playground, in the house (I was responsible for breaking many of the glass things at home!), and sometimes, in the cemented space between two houses separated by a fence (we used this fence as our net).

I finally understood that I *can* play badminton, but I *cannot* play professional badminton! Why? Simply because it is impossible to transfer the skills of the game played outside of the court to playing the game more professionally on the court. They are altogether different. One does not need or use professional badminton skills when playing the game outside of the court. But if I want to be successful in playing efficiently on a court, it is imperative that my learning to play the sport take place in the *right place* (the right context).

The Problem

In applying this experience to teaching, it is clear that although teachers have the desire to see their students transfer learning to actual situations in real life, they are forced to admit that this desire remains an aspiration. Why is this so?

Teachers have a great deal to accomplish in the classroom. They are pressed for time and resources. They are expected to do *many* things for *many* students within a limited time-span, and usually, with scarce resources. It seems as though teachers are expected to perform magic and miracles. Probably, these and many other accompanying problems contribute to their failure to provide a more holistic learning experience in the classroom where opportunities for transfer have been explored extensively. In the end, teachers are often satisfied when their students perform well in the classroom, whether or not this leads to good performance in real life.

In order to improve this situation, we need to examine the underlying assumption that governs our thinking about education itself. It is commonly believed that to broadly “educate” people is better than to simply “train” them to execute specific tasks in a specific situation (Broudy, 1977). This is the very thought that has led to many educational catastrophe. Consider the analogy of throwing darts. Anyone can pick up a dart and throw it toward any specific target (a tree, a wooden wall, a hanging frame, etc.). One can almost rely on instinct to be successful at this task. However, consider throwing the same dart toward a dart board. Can one rely on his/her own instinct or prior learning (throwing the dart toward any random target) to be successful in throwing the dart toward a dart board and expect to hit the bull’s-eye or anywhere close to it? The answer is obvious.

If you know anything about dart throwing (at the dart board), you will also realize that there is a whole lot of physics behind the skill of throwing a dart. It

is not as simple as taking a dart and deciding to throw it toward random objects in front of you. One has to know how a dart flies. In this case, the dart travels along a parabolic curve. One also has to know that the curve can be higher or lower and this depends on how powerfully the dart is thrown. A decent throwing technique must guide the dart exactly along this parabolic curve when accelerating the dart, and must guarantee that the dart can continue this curve when it has left the hand. That is something demanding, isn't it?

The analogy presented above clarifies the limitations, complexities, and complications of "providing ONLY broad education" to students. The problem is that broad education will not help students in a real-life setting. Although the term "training" connotes simplistic acquisition of skills (almost always equated with the ways animals are trained in circuses), it is nevertheless, a more powerful and practical tool in terms of "preparing" students to face the future!

Since we have acquired and become comfortable with providing broad education and require students to figure out ways to transfer their learning to new situations on their own, we have actually negated our responsibility as educators. We have, in effect, failed to PREPARE students to face the challenges of life. Isn't that what we are hired to do? Preparing students for life? Although providing broad education should not be ruled out in the process of teaching and learning, equal emphasis should be given to "training" as well. Training becomes meaningful and more profitable when it is done in the context of meeting the learner's needs and responding to his/her characteristics (e.g., motivation, intelligence, interest, attention). Thus, effective education necessitates providing broad principles and knowledge, as well as specific training in the use of those principles and knowledge in the classroom.

It is crucial that teachers deliberately structure opportunities for students to engage in transfer of learning in the classroom. This should be done while a particular topic is taught and discussed—not later! Waiting for transfer of learning to take place on its own is not a realistic expectation. It is sad to see teachers taking things for granted and continuing, imagining that students will somehow intelligently transfer the principles and knowledge accumulated in the classroom to different real-life situations.

Transfer of learning is said to be significantly enhanced when elements of the actual situation are brought into the learning environment. In other words, elements that are identical in both learning situations bridge the gap between abstract conceptualization of new knowledge and the application of that knowledge in a meaningful manner. This is even true when teaching a child who is mentally challenged. As much as possible, teachers should bring elements of real-life situations into the classroom. This can be done by utilizing simple strategies like simulation, role-plays, demonstration-in-person and on TV. Field

trips (taking the class to the actual learning situation) are also appropriate whenever possible.

It is not an understatement to assert that operational transfer of learning is affected by the context of original learning. Students who are given an opportunity to learn something in its actual or original context (like learning to play badminton on a badminton *court*, or learning to throw a dart toward a *dart board*, etc.) are likely to engage in more successful transfer compared to those who learn and practice the knowledge or skill in random and unrelated contexts. If the latter takes place, students will learn in one context, yet may fail to transfer that learning to other contexts.

Research evidence in this area is conspicuous. For example, a group of people in a particular community did very well at making supermarket best-buy calculations despite doing poorly on equivalent school-like paper-and-pencil mathematics problems (Lave, 1988). Similarly, some Brazilian street children could perform mathematics when making sales on the street but were unable to answer similar problems presented in a school context (Carragher, 1986; Carragher, Carragher, & Schliemann, 1985).

How tightly learning is tied to contexts depends on how the knowledge is acquired (Eich, 1985). Research has indicated that transfer across contexts is especially difficult when a subject is taught only in a single context rather than in multiple contexts (Bjork & Richardson-Klavhen, 1989). One frequently used teaching technique is to get learners to elaborate on the examples used during learning in order to facilitate retrieval at a later time. In any case, increasing the variety of contexts experienced *in* the classroom is likely to increase the likelihood of transfer *outside* the classroom.

The Solution

Training and practice expand the capacity for transfer of learning in a significant manner. This is because knowledge tends to be especially context-bound when learners elaborate the new material with details of the context in which the material is learned (Eich, 1985). When a subject is taught in multiple contexts, and students include examples that demonstrate wide application of what is being taught, they are more likely to conceptualize the relevant features of concepts and develop a flexible representation of knowledge (Gick & Holyoak, 1983).

One way to deal with lack of flexibility is to ask learners to solve a specific case and then provide them with an additional similar case; the goal is to help them conceptualize general principles that lead to more flexible transfer (Gick & Holyoak, 1983).

A second way to improve flexibility is to let students learn in a specific context and then help them engage in “what-if” problem solving designed to increase the flexibility of their understanding. They might be asked: “What if this part of the problem were changed, or this part?” (Cognition and Technology Group at Vanderbilt, 1997).

A third way is to generalize the case so that learners are asked to create a solution that applies not simply to a single problem but to a whole class of related problems. For example, instead of planning a single boat trip, students might run a trip-planning-company that has to advise people on travel times for different regions of the country. Learners are asked to adopt the goal of learning to “work smarter” by creating mathematical models that characterize a variety of travel problems and using these models to create tools, ranging from simple tables and graphs to computer programs. Under these conditions, transfer to novel problems is enhanced (Bransford, et al., 1988).

Conclusion

If the ultimate purpose of school-based learning is to help students transfer what they have learned from the classroom to everyday environments, it is important for teachers to analyze real life and integrate the components of these environments into classroom activity structures and learning experiences. Teachers must re-think their instructional practices in order to bring them into alignment with the requirements of the actual contexts in which knowledge and skills learned in the classroom would be eventually transferred. Playing badminton over the back fence is enjoyable. But I cannot deny that playing professional badminton would be more deeply satisfying and rewarding!

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