Emotional engagement in learning through humor and storytelling

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Early in my career, I spent much of my time as a pediatric trauma radiologist. One of the cases that has stayed with me was a young boy who came in to the hospital with increasing abdominal pain after a handlebar injury. He had taken his older brother's bike without permission and delayed telling his parents about his pain for fear of worse retribution from his brother. The *only* finding on his abdominal CT scan was a 3-mm bubble of gas located anterior to the surface of the liver. After discussing the finding with his surgeon, he was prepped for a laparotomy.

And then ... the surgeon called for me to come to the operating room. This would be either very good or very bad news. He had found a complete transection of the jejunum!

I often include this story when I talk about the role of CT in identifying bowel injury after blunt trauma. To me, it represents so much more than entertainment or a waste of precious minutes. To begin with, it helps me reinforce that it is the presence of pneumoperitoneum and not its amount that is most important in making this diagnosis. It also allows a number of other very important processes to take place. Telling this story engages my audience in the process of being a radiologist on the front lines. Would I have missed this small finding? Would I have dismissed it as unimportant because of its small size? How would I have communicated this finding to the attending surgeon? How would I have reacted when called to the operating room by a senior surgeon?

Another story involves my first weekend on call as a staff radiologist. A 3-day-old infant was brought to the department with abdominal distention and failure to pass meconium. There were signs of distal bowel obstruction on plain radiographs, with no gas seen in the pelvis. A surgical resident

asked whether an enema was indicated. With a great deal of confidence, I told him not to bother, because the child had Hirschsprung disease and needed to go to surgery. A few minutes later, my chairman came by to pick up something in his office. Wanting to impress him with my acumen, I pulled him over to show him the images, and the great diagnosis I had made. He approached and patted me on the shoulder, saying, "Great case ... of meconium ileus!" The baby promptly made it back to the department for the confirmatory enema.

Stories can be a useful tool in a number of ways. They can help cement the key learning points about pediatric diagnosis. They can also create a safe space in which to think about potential challenging scenarios — such as how to handle difficult diagnoses, and how to approach even more difficult conversations with clinicians when we make a mistake. The first story allows for positive social modeling, letting the audience see how a more experienced radiologist dealt with this circumstance. At first glance, the second story deals with the differential diagnosis of distal bowel obstruction in the newborn. I often use it to point out that small bowel and colon cannot be readily distinguished from each other on radiographs in this age period. Equally important, the story is about the frequently awkward transition between life as a trainee and our role as an attending radiologist. It helps to point out how important it is to recognize one's limitations and move forward with (an occasionally large dose of) humility. It does take a certain degree of self-confidence to publicly share your own mistakes. This vulnerability, when used as a teaching tool, permits sharing of mistakes to point out our shared fallibility — everyone makes mistakes.

Why are humor and story-telling so important in education? The link between learning and emotion was first suggested by Plato over 2,000 years ago [1]. More recent research confirms that we learn best when we are emotionally engaged with the subject. One study used recordings of junior physicians describing their experiences of a serious incident or near-miss. It showed that personal stories of medical error were an effective and engaging means of learning about patient safety for medical students [2].

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In the setting of medical education, we want to know what happened with this person who we interacted with. How could we have been more helpful? How could I have avoided this mistake? Three major neural networks have been described in the process of human learning: recognition networks, strategic networks and affective networks — each with specific tasks. The recognition network receives sensory information from the environment, identifies and classifies inputs, and converts them into knowledge. The strategic network is involved in planning and coordinating goal-oriented actions, and the affective network in the emotional aspects of learning such as interest, motivation and stress. Although negative emotions such as fear and stress can hinder the learning experience, positive emotions tend to drive learning by directing actions and enhancing motivation [1].

Humor has been used by instructors as long as there have been teachers and students. Yet, it can be a double-edge sword in education. One of the worst examples of humor gone wrong was at an international meeting, when a presenter tried to joke about his country having been slave masters in the country in which the meeting was held! When humor is used as a positive means of relating to others it is considered adaptive. On the other hand, when humor is used to demean or belittle others, it is maladaptive and self-defeating [3]. Humor is also highly culturally specific [4], so it should be used sparingly, and within a strong degree of cultural context. In other words, know your audience!

How should we incorporate stories effectively? J.D. Schramm, a lecturer on organization behavior at the Stanford Graduate School of Business, developed a formula for successful storytelling in presentations [5]:

- (1) Parachute in, don't preamble — draw the audience immediately into the story and draw out the lesson later.
- (2) Choose first and final words carefully — know the story cold and take advantage of a powerful opening.

- (3) Focus your delivery on “one person with one thought.” As you tell the story, try to focus on one person at a time and make a connection.
- (4) Consider the power of poetry — a few carefully chosen words carry much more meaning than many ill-considered ones.
- (5) Use silence for impact and emphasis. This allows audience members to generate their own interpretations.
- (6) Know your AIM: Who is your audience, what is your intent, and what is your message?

Stories and humor can be compelling and powerful educational tools to deepen the learning experience. Use them mindfully!

Compliance with ethical standards

Conflicts of interest None

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