

## electronic learning resources

### Laura Dean

Design is a creative process, but also one that requires rational objective analysis. The field of human-machine interaction provides tools for this objective analysis which can be used to assess the benefits of using metaphors in software design. However, for most educators diligently creating electronic resources, no design expert is employed and so they rely on the techniques that have served them in face-to-face interaction, including metaphors. This article provides a brief overview of the theory of the use of metaphors in designing resources, and so allows teachers to assess impartially whether their metaphors help or hinder learning.

We can all recognise a metaphor, and they are frequently used, along with similes, in formal and informal teaching situations. In face-to-face teaching, they can be highly effective in enabling learners to create mental representations of complex or abstract concepts. Lakoff and Johnson's (1980) seminal book describes how they can be used to extrapolate from our existing knowledge to understand new subjects, and as a tool we employ to provide structure to our thoughts and deepen understanding.

When teaching face to face educators can try out several metaphors until they find one that allows the learner to recognise the key similarities and therefore grasp something new about the concept or idea the teacher is expounding. Metaphors can be highly effective tools in assisting understanding and embedding new concepts. They also have the potential to be misleading, inappropriate and confusing, particularly for international students and first generation entrants to higher education.

The main danger with their use is that learners may make links between inappropriate aspects of the comparison object; for example let us take a well-known metaphor and simile:

*"All the world's a stage and all the men and women merely players"*

(Shakespeare, *As You Like It*)

This metaphor is effective to English speakers in rapidly portraying a complex series of ideas: people are not in control of their destinies; they may 'act' in different roles throughout their lives; people are the same across the world.

In comparison let us take the simile:

*"Life is like a box of chocolates."*

(*Forrest Gump*)

Without this quote's subsequent clarification ("You never know what you're going to get") it is less effective for learning. How is the learner to know which aspect of a box of chocolates is to be compared? There are many aspects of chocolates. Are they similar in that both are fattening? In that both can be presents? That neither lasts long? Each individual may focus on a different property to compare the two objects or ideas, which is not necessarily the one the educator intended.

In teaching, the purpose of metaphor is to increase understanding: as a "bridge enabling passage from one world to another" (Schiff, 1979). If a metaphor does not work for one learner the educator can adapt it. However, when using metaphors for electronic resources, there is less flexibility to switch if it is not effective. Therefore in designing e-resources only metaphors effective for all learners should be used. Ortony (1993) argues that to be effective metaphor must be vivid, compact and also expressible. It is also vital that if metaphors are used they do not cause 'overlearning'. Halasz and Moran (1982) describe the dangers of overlearning, i.e. carrying more information from the comparison item than is required. For example, if we return to our Shakespearean quote "All the world's a stage", a learner may transfer across from the metaphor the idea that the world is like a stage in other ways: made of wood; surrounded by lights; relatively small. We would not want our learners to get mixed up and have to begin to unlearn these aspects of the metaphor.

Anderson, Smyth et al (1994) have developed a step-by-step method to assess whether you should use a metaphor to aid teaching. First, assess what mental effort is saved by the use of metaphor. Second, identify the conceptual baggage associated with the metaphor – which elements aren't relevant and need disassociating. Then compare the two elements to decide if effort is saved or not. Finally, designers should consider whether the metaphor can be extended to support other aspects of learning in the future.

Having chosen one of the world's best writers and best metaphors it is hard to see how one could

really confuse the relevant aspects of stage and world. Therefore we will now consider a simpler fictional example: a Blackboard module which uses the metaphor of the Titanic. The Titanic was widely known as one of the world's most impressive ships owing to its size and luxury prior to its sinking on its maiden voyage.

Anderson et al's first stage is to decide what effort is saved. So we look at the imagery associated with the Titanic module which is helpful. This module is built on a physical resemblance to the ship: the ballroom is an area to socialise and discuss current issues; the library is a repository for resources; the drawing room is an area for more structured debate on a particular issue. The module designer may use images of the deck plan of the ship so that students can see the different areas they can enter. These comparisons are useful: students can easily see they should go to the library area for resources, but what about an area like the kitchen? How does that work in this metaphor?

This takes us to the second stage of analysis: what knowledge of the Titanic do we not want carried over in this metaphor? In this example there are several associations that may confuse the learner. What springs to your mind when you consider the Titanic: size? An awful song? Drowning? Icebergs? None of these aspects of the comparison item is useful for facilitating learning. So in step three we can see that the unhelpful elements outweigh the helpful ones, making this an inappropriate metaphor for aiding learning. While it is easy to build an attractive-looking module based on this metaphor, using deck plans and pictures, the metaphor is not a strong one for this purpose.

In comparison an effective metaphor, assessed by Anderson et al's method, is the recycle bin in Microsoft applications, which carries over all the appropriate knowledge from a real recycle bin: things can be retrieved from it (if done quickly); they are physically removed from the original location; files in here will be deleted eventually; its contents are not immediately removed, so it is not appropriate for confidential documents. However, even with this metaphor some elements do not match. Some users expect the bin to be emptied automatically (as their own recycle bin is). Others expect to have to empty the bin themselves (as they

do their own recycle bin). The learner's current associations with the comparison object are likely to be different from those of other learners and so it is likely their learning will be different because of this: the greatest difficulty may be experienced by those learners from different cultural backgrounds to that of the resource designer.

So does this mean metaphor is too difficult to use with online resources? I hope not, for using a metaphor allows resource designers to use images and structures which can initially draw students into using a resource they might not otherwise be attracted to. By assessing the metaphors you have considered using you should now be able to assess what is and isn't effective in increasing learning by the widest group of students.

## References

- Anderson, B., Smyth, M., Knott, R., Bergan, M., Bergan, J., and Alty, J. (1994) Minimising Conceptual Baggage: making choices about metaphor. In: *Proceedings of People and Computers IX*, HCI '94, Glasgow, UK, August 1994.
- Forrest Gump* (1994) Directed by Robert Zemeckis. London: Paramount Pictures [video: VHS].
- Halasz, F., & Moran, T. P. (1982) Analogy considered harmful. *Proceedings of CHI 82*, 383-386. New York: Association for Computing Machinery.
- Lakoff, G. & Johnson, M. (1980) *Metaphors we live by*. Chicago: University of Chicago Press.
- Ortony, A. (ed) (1993) *Metaphor and Thought* (2nd ed). London: Cambridge University Press.
- Shakespeare, W. (1623). *As You Like It*. London: Jaggard.
- Schiff, R. (1979). Art and life: a metaphoric relationship. In: Sacks, S. (ed) *On Metaphor*. Chicago: University of Chicago Press.
- Laura Dean**  
**Head of Employability**  
**Office of the Pro-Vice-Chancellor: Assessment, Learning and Teaching**