

TWELVE TIPS

Twelve Tips for use of a white board in clinical teaching: Reviving the Chalk Talk

JAY D. ORLANDER

Medical Service, VA Boston HealthCare System, Boston University School of Medicine, Boston, MA, USA

Abstract

‘You cannot depend on your eyes when your imagination is out of focus’
Mark Twain – *A Connecticut Yankee in King Arthur’s Court*

Little has been written on the art of using a board in clinical teaching. The technological development of the white board appears to have coincided with that of the laptop computer and accompanying LCD projector, so that fewer and fewer teaching sessions appear to utilize the board as an efficient teaching tool. I have observed this most commonly among younger faculty who are most comfortable with technology and who may lack training and experience with a blank board. This paper offers suggestions on using the board in clinical teaching in order to enhance the educational process through better engagement of the learners.

Introduction

A chalk board or white board is a teaching tool. It can dramatically enhance and compliment one’s teaching efforts when used effectively, and detract from such activity when used poorly. Despite a long history of use, and the presence of such boards in most rooms used for teaching, I have found nothing in the literature that discusses how to use them most effectively. Used properly, boards promote shared ownership of the teaching session between teacher and learners. This facilitates more interaction, which in turn allows better targeted and more effective learning. Boards used poorly, however, can distract or inhibit the learning process.

In this paper, I offer suggestions on how best to use the board which I have developed through reflection on discussions with both colleagues and students over several years (Orlander et al. 2000). Boards are regularly used as tools in various teaching encounters, from brief spontaneous teaching, to case discussions, to formal, scheduled ‘talks’ on pre-selected topics to nearly any size group. The ideas below will first address generally applicable concepts in selecting and using a board when teaching, with application to specific situations to follow.

Tip 1: White boards versus PowerPoint

A discussion of the use of a blank board should consider the available alternatives. Though white boards have been used for years, they have become supplanted for some purposes, and in some hands, by the use of computer-generated slides or multi-media PowerPoint presentations. The emergence and ubiquitous use of PowerPoint has led

to discussion in the literature of its strengths and weaknesses (Voss et al. 2004). PowerPoint presentations are prepared in advance, making it difficult to improvise during the course of a teaching session, and limiting the presenter’s capacity to engage an audience. Slide talks, either Kodachrome or computer generated, are formal, closed, and less participatory. They often lock the speaker to a physical spot in a room which may in turn limit interaction. Slide talks are not well suited to recording ideas from the audience while discussing medical conditions that should be considered in the differential diagnosis of a patient’s problem. They are better suited for storing large and complex data and graphics, for projecting to very large audiences and for use in instances where transportability and rapid presentation are important. In common classroom size sessions and small group learning that defines many clinical teaching encounters, however, using a board can have many advantages over these other methods.

General principles for using the white board

Tip 2: Use the space wisely

The board has limited space. It cannot be scrolled like a computer screen, or torn off and taped off to the side like flip chart paper. Too many details are often a distraction and fail in the goal to assist learners in the thinking process. Copying verbatim all of the audience’s contributions generally results in too much information to be useful. Depending on the situation, selective adding of information or the intentional

Correspondence: Jay D. Orlander, VA Boston Health Care System, 150 S. Huntington Ave, MAV-111, Jamaica Plain, MA 02130. Tel: 857-364-4171; fax: 857-364-4424; email: Jay.Orlander@med.va.gov

erasing of it, allows the visual aspects of the information on the board to dynamically reinforce teaching points.

Tip 3: Avoid dead time

Long lists, complex formulas, equations, chemical structures and complicated tables take time to write on the board. This is dead time with the instructor's back to audience and little or no interaction. If the information is best represented on a board, the instructor should arrive early and write it out beforehand, placing the information off to the side or on a second board that may be present. Many small conference rooms have more than one board mounted and this is a good use of a second slate. If having the information already viewable is undesirable, this is an ideal use of a handout with copies of the more complex figures, tables etc that can be distributed and discussed at the proper time during the lesson.

Tip 4: Mix media when needed

There is no benefit to be derived from limiting the presentation to a single format. If photos or video clips are relevant and useful aids to the discussion are available then they should be used. PowerPoint is not inherently undesirable and is a great tool. Overhead projectors used with transparencies and paper handouts are also quite valuable, so they should be used in situations in which they are the most effective device. One of the more creative ways to mix media may be projecting an image onto a white board and writing upon the image. Such a use has been described by plastic surgeons planning surgical procedures (Demirseren et al. 2003).

Tip 5: Write large, legibly and with an easily visible colour

It seems self-evident but too often presentations are written in a manner such that only those closest to the board can read them. After or during a session, it can be helpful for the instructor to walk to the back of the room to make sure that the writing is large enough. It is also useful to check with the audience to see if there are issues regarding legibility; it may be that the presenter's handwriting is difficult to decipher on the board. While a formal structure applied to the written presentation is not always a necessity, neatness is always important. Strong contrast should be the goal in choosing a colour. A dark marker on a white board and a light colour on a chalk board are the best choices as they are the most visible from any distance and in any light. Tools should be kept in good working order. The board should be cleaned often, as lots of marker or chalk residue wash out the contrast of the writing, making it hard to see.

Use of the chalk board for particular purposes

Tip 6: Case based discussions – limit transcription

Clinical cases are regularly presented for group discussion at designated teaching conferences such as on inpatient

attending rounds, resident morning report, or clinic conferences. Even with the luxury of time, such as a full hour conference where a single or small number of cases are to be reviewed, the components transcribed on the board should be kept to a manageable number. Only those major and pertinent historical elements and facts from the past history, physical findings and laboratory data that will be reflected upon in the discussion should be written. Scribing selected details of a case will direct the learners towards the facts to be pondered. Red herrings can be included if the goal is to challenge a differential diagnosis or make a relevant, but tangential teaching point. Thus, the space should be used efficiently in order to be effective. Frequently, a lot of extraneous information is written down, taking up valuable space. With so much data the board gets crowded, the writing too small, and with many irrelevant details it is difficult to read, interpret and identify the important data amidst the extraneous. At its worst, entire cases are immediately erased upon the completion of the presentation because there is no space for the teacher to use the board in further discussion. This is frustrating to the audience members and distracts them from the following topic to be presented.

Selectively limiting the elements that are written on the board to those to be used in the discussion can avoid these problems. After a portion of the information has been presented, the relevant details should be put on the board. In this manner, the instructor's thought processes are implicitly shared with the class. Selective scribing is really a form of highlighting relevant data covertly. Ideas may be made explicit as the session develops. Posting only the key elements of the history and physical exam along with past medical history, medications and labs frequently uses only half of the board space, leaving the rest free for use in discussion. This allows the case to remain on the board for the audience to dwell upon as it thinks about the questions posed. It also allows those who may arrive late, or those whose mind has wandered, to catch up quickly and become full participants.

Lastly, having vital elements of the case remain on the board for the entire presentation allows the teacher to make connections to concepts in assessment or management that will come out later in the discussion (see Arrows, circles, lines and lists below).

Tip 7: Write on the board yourself

A particularly common issue in case discussions is when an audience member volunteers or is delegated the task of scribe. Since writing is generally slower than speaking, the writer frequently asks the presenter to pause in order to catch up with all of the detail. This is distracting, slows the presentation of data and delays discussion. This is particularly true when a trainee has volunteered to be the scribe; they do not have the experience to anticipate where the discussion is likely to lead and are less comfortable editing as they go, so they feel compelled to be complete. The instructor should have control of the marker. It is a largely false belief that having a student volunteer writing on the board allows people to 'be involved in the presentation'. The teacher should take the liberty to edit on the fly, scribing only such information that will contribute

to discussion. By doing so, the presenter controls the space in which he or she works and has a better opportunity to build toward the teaching points already considered in a more efficient way.

Arrows, circles, lines and lists

Tip 8: Show your reasoning process

The board is an excellent tool to help learners organize thought processes. If the instructor carefully chooses where each idea is placed on the board, it helps the audience attach structure to the ideas, concepts or facts that are generated from a discussion. In reviewing details of a case, going back and connecting symptoms and findings with one another by circling related items (perhaps with a different colour for added emphasis) or connecting them with lines, helps to visually reinforce the cognitive connections that the teacher wishes to highlight. Arrows can help delineate a progression of disease much in the way they are used in text figures and diagrams. By drawing these in real time, the presenter is building and reinforcing the relationships for the learners.

Tip 9: Build structure into lists

The context, teaching goals and available time are all factors that should go into the decision on how best to use the tool of the board to facilitate teaching. Being creative and varying the presentation approach will assist in maximizing the usefulness of this tool in a wide variety of teaching scenarios. Lists can be a bit problematic. If a long list is simply transcribed, the group will not think much on the relationships between the data points in any organized manner. But if the data are arranged in a particular way, it can help teach an important concept of classification. This can be illustrated in the context of differential diagnosis. A good start is to place the diagnoses suggested ordered by some organizing principle, such as most to least likely, most to least prevalent, or highest to lowest severity. For example, one approach when creating an exhaustive differential diagnosis, (an important skill to be reinforced for second year residents) is to place the diagnoses suggested by the group on the board in a non-random order, such as putting the more likely diagnoses on the top of the list and less likely ones towards the bottom. Large gaps may initially appear as the list is filled in, but the rank ordering of likely diagnoses generally becomes apparent (or the instructor may make it apparent) as the discussion unfolds. Different approaches may be more appropriate in other contexts, such as that of a group of third year clerks who need to learn how to focus their case presentations along the lines of developing the skills of relevancy or 'pertinentness'. A useful and engaging exercise is to put up the exhaustive review of systems and then, as a group, use the eraser to narrow things down to those elements that would fit into the ideal five minute post-call case presentation to an attending. In these examples, the board is used in different, but equally thoughtful manners in order to achieve a certain goal.

Tip 10: Organize concepts by orchestrating the board

Approaches to patient care are often best addressed not by differential diagnoses but rather by other organizing principles. For example, many discussions of hyponatremia begin with an assessment of the volume status of a patient: hypovolemic, euvolemic, or hypervolemic. A discussion that identifies this organizing principle would then list these as categories or headings on the board in a manner that leaves space for the clinical facts, diagnostic tests or diagnoses that the teacher plans to discuss under or adjacent to each grouping.

Challenging a group to generate information exactly in the order that the presenter has conceived to teach it, can be a slow and plodding process resulting in a more PowerPoint-like presentation. Consider the board as shared space, one in which the entire group shares ownership. Soliciting ideas and collecting them in non-structured manner does not preclude the instructor's ability to organize the information at hand into a form that is more useful. Placing ideas on the board in a way that is considered in advance, but of which the audience members are not explicitly aware, is like completing a puzzle before their eyes. Consider the scenario of brainstorming a differential diagnosis for renal failure. Listing diagnoses sequentially in the order in which they are volunteered leads to a disorganized listing, even when comprehensive. But creating multiple columns without stating explicitly why this is being done challenges the group to figure out why the columns are there to begin with. The label for each column slowly becomes apparent for members of the group at different times during the session, or later at time when the teacher turns to consider the way of thinking about renal failure, arriving at the headings of pre-renal, intra-renal and post-renal causes. In this instance diagnoses are organized into a structure. By organizing data in such a manner, learners are assisted in developing knowledge structures that they can reflect upon when confronted with a similar patient in the future. The knowledge structure in this example is *built* upon the board together with the group, and offers a visual representation of the cognitive links to be developed in the learners.

Tip 11: Giving talks on prepared topics

Planning a session in which a blank board will be used as a teaching aid does not automatically indicate an entirely free form session. A 'Chalk Talk' requires the same preparation and thoughtfulness as a presentation developed with more advanced audio and visual aids. It is still paramount to know the teaching objectives, the main 'take home' points for the audience and which concepts are likely to be most challenging to communicate. Only after these have been well established should the instructor consider how the board will help facilitate these goals. The presenter should have his or her notes at hand in class. A board talk does not equate solely with unplanned, completely spontaneous teaching, but in most instances should be a conscious choice of technology for a specific learning session.

For planned talks, the presenter can write on the board in advance which is, in this aspect, like PowerPoint but

involving less work. Simple graphical representations, algorithms, and other items can be placed on the board quickly and directly. When teaching on a specific topic, there is little to be gained from copying lists of suspect medications, long verbose definitions, or complex formulae that the group will not need to reconstruct. The board is often best used as a highlighter. Jotting down the key words, phrases or headings, categories of illnesses with an example or two are best. Complete lists are rarely useful unless each item in the list will be addressed. Points should be left on the board that the audience is intended to linger upon, or that will be returned to later in the discussion, but not a comprehensive exposition of details which will only distract from the key points.

Tip 12: Do calculations and draw figures in advance

The application of formulas and calculations are frequently important parts of clinical science. When using these as illustrative examples in teaching it is common to make simple calculation mistakes at the board. While attempting to be efficient and accurate and considering where next to lead the teaching session, mathematical errors seem to occur reasonably often which slows the session down. These have an even more deleterious effect when they are not noticed until later in the presentation and there is a need to recalculate. It is extremely important for the instructor to come prepared with pre-calculated examples, or to assign someone in the room a calculator to do the computations while the instructor is writing or speaking. During topic discussions, the board is a useful place to store key points, terms, and simple diagrams that highlight associations between ideas that the group is intended to understand. The board is not a locale to store a comprehensive collection of facts, but rather a stage to display the harvested jewels from a fruitful discussion.

Conclusion

A blank board can be simultaneously a daunting and a creative venue for artistic teaching. It is a tool and as such, it is inherently neither good nor bad, but needs to be matched to the task at hand. Compared to other teaching aids, a board can be more personal and inviting to a group of learners than a session led with fully prepared slides, transparencies or handouts. Hopefully a few hints on its use will persuade some teachers to eschew more advanced technology when the situation would be better served by the use of a board. Successful use of this method can be self-reinforcing in that instructors may find its use progressively more enjoyable and productive once they have honed their skills and gotten past the initial and quite natural apprehension of being faced with a large blank, white page.

Acknowledgements

The author wishes to thank Dr. B. Graeme Fincke, Dr. Alex Walley, and Mr. Seth Cohen for insightful comments and inspiration in preparation of this paper.

Notes on contributor

JAY D. ORLANDER is Associate Chief of the Medical Service at VA Boston Healthcare System, and Associate Director for Medical Education of the General Internal Medicine Fellowship program at Boston University School of Medicine.

References

- Demirseren ME, Otsuka T, Satoh K, Hosaka Y. 2003. Training of plastic surgery on the white board. *Plast Reconstr Surg* 111:1757-1758.
- Orlander JD, Gupta M, Fincke BG, Manning ME, Hershman W. 2000. Co-teaching: a faculty development strategy. *Med Educ* 34:257-265.
- Voss D, Keefe DD, Willett JD, Lanius C, McDonald K. 2004. Points of view: PowerPoint in the classroom. *Cell Biol Educ* 3:155-161.

Copyright of *Medical Teacher* is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.