

Gray Box Technology

We have all encountered “black boxes”, where a key is pressed, a number (or some other object) appears on a screen, and it is assumed to be the solution to a problem. On the other hand a “white box” approach will allow no tools beyond a paper and pencil (or the equivalent). Both of these seem to me to be misuses of technology; one a complete and uncritical acceptance of anything that the technology produces, and the other a total refusal to use any technology at all. No one will acknowledge that they are teaching with “black boxes”; nevertheless, many students seem to have adopted that view of the technology that they use. “White box” teaching is an over reaction to that perception of the students. In between “black boxes” and “white boxes” are “gray boxes.” In a “gray box” problem the calculator (or computer) either cannot produce a solution, or will generate an incorrect solution, unless it is competently and properly used. “Gray box” solutions to problems require a symbiosis of human understanding and the enormous calculating potential of modern machines. In this talk I will explore some of the pedagogical strengths and weaknesses of modern technology and will discuss the “gray box” approach to teaching.