Role Play: A Glimpse into the Process of Creating Learning Goals
(developed Oct 2008, Beth Simon and Steve Wolfman for the UBC CWSEI)

Below is the script of a role-play discussion between Steve Wolfman and STLF Beth Simon. It attempts to re-enact and give the feel for the process used in the UBC Computer Science Department to create learning goals for their courses. They often started by looking at an exam question previously used in the class – and used this to stimulate discussion and refinement of the actual goals faculty had for students taking the course. The discussion below is modeled from an exam question used in CPSC 101 (a course for non-majors) in Summer 2006.

Original Exam Question:
If the colour of a pixel is a shade of gray, what constraints must the three colour intensities satisfy?

Revised Viewpoint of Instructor on Learning Goal (after discussion with STLF Beth):
By the end of the course students can recognize that different data representations fit different tasks and can compare and contrast selected representations and their fit for certain tasks.

Transcript of the kind of discussion and process used:

Beth: [[reads question and..]] so a student gets this correct on the exam; what do you feel confident that they know?

Steve: Well, first of all, they need to know that those colour components are the red, green, and blue intensities and that they vary between 0 and 255 (or 8 bits). Once they've got that, it's gray if those three intensities are the same.

Beth: OK. So, you mentioned a lot of very specific facts in that answer. Is knowing those specific things what you really want students to do? Is that the most important thing for students to know if they get a right answer?

Steve: Well, the really key part is that the intensities be equal.

Beth: Then an answer like "they all have to be equal" would be a perfect answer?

Steve: The thing is that it's not really even about the intensities being equal. What do I really want students to get? The critical issue, if they had all the time in the world to make a perfect answer? It's that this red/green/blue representation, which is great for making simple colours, makes it hard to dial up different shades of one colour, like gray for example. So, you have to balance all these intensities. I want them to recognize that these other representations we've talked about can make some things that RGB makes easy harder, but other things like dialing up a different shade of gray easier.

Beth: Would a student have to understand that idea, representations, to get a correct answer to this question?

Steve: Well, no. Actually, it would be pretty unlikely for them to get into that sort of detail on a real exam, at least for this question. In fact, a student might just remember that light gray was something like 196,196,196 and dark gray was something like 64,64,64 and put down "all equal".

Beth: So, what kind of question or task would get at what you're looking for?

Steve: Well, I'd like them to compare these representations. Like, they could tell me for some particular task which representations would be best (or worst) and argue their case. Or, I could lay out a new representation for them and they could discuss its strengths and weaknesses compared to the representations they already know.

Steve: In that sense, it's not even really about colour. It's about recognizing that different data representations fit different tasks and comparing and contrasting those representations.

Beth: Great! Let's write that down as one or two learning goals and then see how it fits with your higher-level objectives.

COMMENTARY: Exam questions make an excellent starting point for exploring learning goals because both faculty and students have already invested significant value in them, by virtue of creating/offering and answering them (respectively) in a high stakes environment. Often, however, we find that exam questions skirt what faculty consider the core issues in the class. Having a faculty member consider what a poor, good, and perfect response would be -- and forcing them to look for the real kernel of those responses -- can clarify the goals that were implicit in the choice of question.

In this case, once the faculty member sets aside the voluminous detail that he (as an expert) naturally associates with this question, he realizes that a correct student response might not touch on the ideas that he says as really central to this unit of the course. With a bit of guidance, he explores the answer he WANTS to see and then transforms the question into a learning goal that addresses that desired outcome.

Notice that in her role as facilitator, the STLF isn't diving into the course content but is instead watching for "traps" that the instructor might fall into: superfluous but shallow detail at first (when he discusses various features of RGB) and later drifting away from the anchoring context (when he gets drawn deeply into thinking about "dialing up" colours with different representations). In each case, the STLF uses the faculty member's own words and the mechanism of working around an exam question to bring the discussion back on track.