

Senteo Interactive Response System Usability - I

by Nancy Knowlton

Let me share some of the thinking behind the elements of our student response system. We worked hard to put ourselves in the shoes of our users – both teachers and students. We considered all aspects of the product's usage from the physical design of the clicker through to the software interface.



Personal Versus Shared

Some response systems require students to always select the same clicker at the start of each class, because a specific unit has been coded to that student's name and record. While this can work, we started from the premise that this would be a limitation that could be easily overcome through a sign-on procedure that would allow the selection and use of any clicker.

The benefit of this usability choice quickly becomes apparent when one considers that a battery may

fail during class. With our approach, a student simply selects a new clicker and signs on to get right back on track with the rest of the class.

To Have and to Hold...Or Not

Sometimes a student will want to hold the clicker in her hand. Sometimes she will want to lay it on the desk and punch in an answer. The design of the device should allow each student the choice as to how she uses the clicker.

Additionally, users have all sizes of hands – from kindergarten children through to high school seniors. While older students can handle almost anything, younger students or those with weaker fine motor skills also need to have something that is comfortable for them to hold and use.

We designed our clicker to be equally usable for all of these students and more. The bottom of the unit sports a gently curved shape so that it can fit easily and comfortably into either a left or right hand. The slightly raised points at each of the bottom four corners mean that the clicker can be used lying on a desk.

And if a student wants to hold the clicker, the slightly rough texture means that it doesn't easily slip out of a sweaty hand.

Blue and Yellow

Some students suffer from color blindness. Others have slight visual impairments. The two colors with the greatest contrast are blue and yellow, helping students see the button choices clearly. Not only is the combination visually appealing, it has a real practical application as well.

We have also used black on white and white on black on many of the physical buttons to provide a high level of contrast. Yes/no and true/false buttons are grouped with a color wrapper.

LCD Screen

The LCD screen is a great source of information for the student. It provides instructions and feedback to both guide the student and confirm that responses sent have been received. This feedback provides confidence that all is well before proceeding to the next question.

Batteries and Battery Access

Commercially available AA batteries power the clicker. Access to the batteries is only available with a screwdriver, removing the temptation to play with that part of the device.

Battery Life

The low-power LCD screen and the device itself draw only a small amount of power. Teachers can turn off all clickers within the software, preserving battery life. With more than 1,000 hours of useful life, the batteries in the clickers should last more than a school year through normal use on just one charge.

RF Technology

The clickers are based on radio frequency (RF) technology which means that no direct line of sight between the clicker and the receiver is required. Students can use the unit in a natural way without worrying about pointing the clicker at the receiver. The type of RF technology that we employ, namely Zigbee, was designed for wireless data. Although it uses the same unlicensed band as Bluetooth, Zigbee devices do not suffer interference from Bluetooth devices.

The Big Deal about Usability

The way that people interact with a product has everything to do with the success that they will enjoy with its use. That's why we are so fanatical about usability – no detail is too small to escape our attention. The physical choices that we have made in its design make this system an ideal choice for primary and secondary education.

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