

## Optimizing the SOP: Subtleties of Kinesthetic Performance

by Laura Flanagan, Barb Spice, and Joe Wessel

*Tales from the Field, a monthly column, consists of reports of evidence-based performance improvement practice and advice, presented by graduate students, alumni, and faculty of Boise State University's Instructional and Performance Technology department.*

### The Problem

Field Application Specialists (FASs) working for Acme Tech (a pseudonym), a company that manufactures biotech laboratory equipment, are responsible for selling DNA extraction instruments. They demonstrate the instruments in customers' laboratories as part of the selling process. Gaining customer buy-in and protecting the instruments from damage requires a functional and seamless demonstration.

The Director of Sales Operations noticed that the instruments were often damaged during customer demonstrations and believed that the FASs were not following the established standard operating procedure (SOP). He requested a training program.

### Every Move Counts

The instructional design team, made up of graduate students at Boise State University, conducted a performance and cause analysis and found that the FASs regularly followed the SOP but that they often had difficulty with certain steps. This was mainly because the FAS had not mastered the subtle kinesthetic skills required for a successful demonstration but that were not adequately captured by the SOP.

Our solution was to conduct a procedural task analysis that identified "performance cues" that would help ensure that the FASs performed the steps in a way that would provide an effective demonstration and avoid damaging the instrument. Table 1 shows two examples of these performance cues.

Table 1. Procedural Steps and Performance Cues

Step in the SOP	Sub-step and Relevant Performance Cue
Set box on lab bench with DNA robot logo facing toward you.	<p>Tip box on side slowly such that no noise is heard when setting on bench.</p> <p>Performance Cue: When lowering the box to the bench, you should not hear it contact the bench. If the instrument is set down too quickly or dropped, it will be heard as a 'thud' and there is a potential for damage to the instrument.</p>
Move shipping anchor B to the top of the linear slide.	<p>Insert the 1.5mm hex wrench into the shipping anchor. Slowly and carefully turn hex wrench one quarter turn counter clockwise to loosen.</p> <p>Performance cue: Be careful not to fully loosen the anchor such that the anchor slips down the linear slide into the bottom of the instrument.</p>

## Applying Merrill's First Principles

Once we identified the performance cues, we used Merrill's (2002) "first principles of instruction" to ensure that the FASs mastered the subtle kinesthetic skills required for a successful demonstration. Table 2 shows Merrill's first principles and what we did to implement them in this training program. The demonstration and application principles are the heart of this training program, helping the FASs to see, hear, and feel the subtleties of the performance cues.

Table 2. Merrill's First Principles Applied to Learning Kinesthetic Skills

Principle	Implementation
<b>Problem Centered</b> – engagement in solving real-world problems	Proper demonstrations would result in undamaged equipment as well as smooth transactions in front of the customer.
<b>Activation</b> – recall of relevant previous experience	Group discussion was used to identify problems FASs encountered during previous customer demonstrations.
<b>Demonstration</b> – instruction shows what is to be learned rather than merely telling what is to be learned	Demonstrations of each part of the SOP were provided using a "describe/perform" method: <ul style="list-style-type: none"> <li>• Instructor describes the step, and instructor performs the step.</li> <li>• Instructor describes, and a subject matter expert performs.</li> </ul> The demonstrators included explicit references to the performance cues during each demonstration.
<b>Application</b> – opportunities to use new skills to solve problems	The instruction included multiple practice exercises using the same "describe/perform" method as in the demonstration. FASs worked in pairs to perform each part of the SOP: <ul style="list-style-type: none"> <li>• FAS#1 describes the step, and FAS#2 performs the step.</li> <li>• FAS#2 describes, and FAS#1 performs.</li> </ul> This allowed the FASs to coach one another during the practice exercises. <p>A behaviorally anchored rating scale (BARS) was then used to assess the performance of each FAS.</p>
<b>Integration</b> – help in transferring new skills to on-the-job performance	Group discussion was used to encourage the FASs to identify key points that would distinguish their next customer demonstration from their previous demonstrations.

## Conclusion

A pilot test of the training program indicated that including performance cues improved the FAS's performance. The participating FASs achieved an average score on the assessment of 54 out of 56. In addition, results of a survey given to the participants indicated that they felt more confident in their ability to demonstrate the DNA extraction instrument.

## References

Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research & Development*, 50(3), 43-59.

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