FROM THE OUTSIDE LOOKING IN

Computing "Fluency" and Productivity

By Carl Binder

If you're a manager or trainer, what you'd undoubtedly like to see is "second nature" performance. You'd like the members or your organization to be so skilled and so knowledgeable that they operate like clockwork and continue to get better at their jobs. Recent developments in instructional design have provided insights into how to achieve such "second nature" knowledge and skilled, efficient performance. To understand the concept behind this new approach, consider the example of a person who speaks fluently in a foreign language.

How do fluent speakers differ from beginning language students? Beginners may be able to speak the language more or less correctly, and their grammar and vocabulary may be appropriate under most circumstances. However, compared to expert or native speakers, beginners tend to hesitate and speak slowly, forget the meanings of common words, and have a hard time keeping up in brisk conversations.

When experts in any field combine accuracy with speed, it is called *fluent performance.* They exhibit fluency—the ability to think, speak, and act correctly and quickly, without hesitation and almost automatically. It is this speed and relative ease, not merely accuracy or correctness, that separates them from beginners.

Because experts know their stuff so well, they seldom forget. Because they can perform at an appropriate speed, they can usually apply what they know to new situations, learning new skills and information based on existing knowledge. Having achieved a level of performance that is relatively automatic, they can work for longer periods without tiring and are less susceptible to distraction than are beginners.

How does this idea apply to computers? When new users begin working with a word processor or spreadsheet program, they learn a basic set of functions and may be able to use them fairly accurately. But when they try to apply their new learning to real work, they often have a hard time, quickly forgetting what they have learned. Because use of the program is slow and uncertain, they tire quickly and experience frustration, irritation, even hatred of computers! Like "dysfluent" speakers, they are neither very productive not satisfied.

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On the other hand, fluent users are productive and satisfied, capable of applying what they know, working with relative ease, and learning more based on what they already know. In short, real productivity with computers means fluent computing: accuracy plus speed. Therefore, training and support must emphasize fluency as an essential outcome, not merely accuracy or correctness. The following guidelines can help put these ideas about fluency info effect.

1. Provide sufficient practice opportunities. Fluency only comes with practice. Few training programs in any field (besides music or athletics) provide sufficient practice opportunities to attain fluency. It's important that your training design includes enough examples and exercises on critical skills and functions for trainees to practice to the point of fluency.

2. Build fluency in small chunks. Until one is fluent, it's better to work in brief practice sessions than for extended, tiring periods. Likewise, it's far easier to build fluency on a small set of commands or functions than to try to become fluent on a larger number at once. Therefore, it's advisable to design brief repeated practice activities (one to five minutes each) with short breaks in between. Try to define small sets of skills that can by themselves accomplish real tasks or subtasks; then let users become good at them before adding more. Dysfluent skills or information create weak foundations for further learning.

3. Establish fluency goals. Because fluency is accuracy plus speed, you can set time criteria for any skill or information process. For each practice task, measure how long it takes five or six experts to complete and provide trainees with practice goals based on that information (e.g., duplicating a simple spreadsheet or memo format in less than four minutes).

4. Encourage learners to measure their performance. It's easy to time brief practice activities

and count errors afterwards—users can do it for themselves. Self-monitoring provides continuous feedback and lets learners compete with themselves. Lack of measured progress signals them to seek more help.

5. Let trainees grow at their own pace. We can define fluency objectively, in terms of time limits plus accuracy levels. But we can't predict how long it will take a given individual to reach fluency. Invariably, some attain fluency faster than others, so individualized practice is best. Self-paced learning with explicit fluency goals at each step gives users the best shot at motivated, satisfying growth.

6. Encourage users to develop fluent "tool" skills. For example, slow typing can retard computer learning and prevent fluency. Encourage dysfluent typists to practice a few minutes per day with a good typing tutorial until they achieve fluent touch typing.

There are many refinements that can increase the effectiveness of these guidelines. However, attention to these basics will ensure more fluent, productive, and satisfied computer users.▲

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