A COMPARISON OF INFORMATION ACCESS RATES
BETWEEN THE APPLE IPOD AND THE LIVESCRIBE PULSE SMARTPEN

Andy Van Schaack, Ph.D., Vanderbilt University

Background: It has become increasingly common for teachers to provide their students asynchronous access to instructional content in the form of audio recordings. Although there are a variety of audio formats and playback devices, the most popular form, called "podcasting," is an audio recording optimized for Apple's iPod media player. Livescribe, Inc. has developed a digital pen that captures handwritten notes synchronized to an audio recording.

Purpose: To compare the rates of information access in an audio recording of a university-level lecture between the Apple iPod and the Livescribe Pulse smartpen, and to determine which technology students preferred for this task.
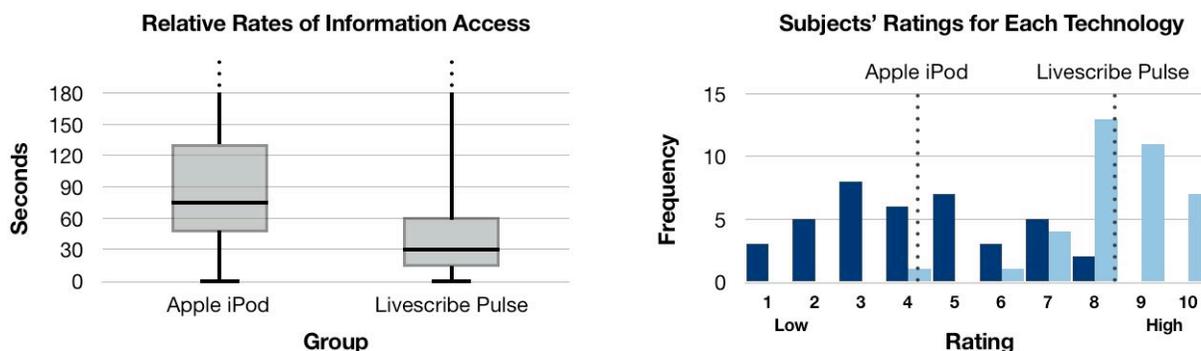
Setting: A 125-seat classroom at Vanderbilt—a highly-selective university in Nashville, Tennessee.

Subjects: 41 male and 100 female undergraduate students enrolled in a social science research methods course in the spring of 2010. Self–reported SAT (and ACT equivalent) scores ranged from 1,150 to 1,600 (M = 1,365, SD = 121).

Methods: The instructional content for the study was a 35 minute lecture on primatology delivered by Dr. Robert Sapolsky of Stanford University [http://www.youtube.com/watch?v=hrCVu25wQ5s]. Subjects were randomly assigned to one of four treatment conditions: Group A viewed the video lecture, taking handwritten notes synchronized with recorded audio using the Livescribe Pulse; Group B viewed the video lecture and took handwritten notes with a standard pen; Group C viewed the video lecture but took no notes; and Group D did not view the video lecture. (There were no statistically significant differences in SAT/ACT scores between the groups.)

All subjects were administered a 10-item, open-note, recall test covering factual information presented in the lecture. Half of the subjects in Group A answered odd-numbered questions using the Apple iPod and even-numbered questions using the Livescribe Pulse. This order was counterbalanced for the other half of Group A to reduce learning and testing effects. (Outcomes data for Groups B, C, and D were used for a different experiment.)

Results: On average, subjects accessed information two and a half times more quickly using the Livescribe Pulse (Mdn = 30.0s) than the Apple iPod (Mdn = 77.0s). On a scale of 1 (lowest) to 10 (highest), the average ease-of-use rating for this task for the Apple iPod was 4.2, and for the Livescribe Pulse, 8.4. Overall, 39 out of 40 subjects preferred using the Livescribe Pulse for accessing recorded audio rather than the Apple iPod.

Conclusion: Despite the fact that none of the subjects had ever used the Livescribe Pulse before, and were only provided 2 minutes of training, they were able to access important moments in an audio recording of a previously viewed lecture two and a half times more quickly than when they used an Apple iPod—a device that all of the subjects had extensive experience with. Subjects reported that they preferred using the Livescribe Pulse for this task rather than the Apple iPod because their handwritten notes served as a detailed index into the audio recording that facilitated rapid access. The Apple iPod, on the other hand, required students to scroll forward and backward through the recording in a linear fashion. One student wrote, *"The iPod is useful for listening to the whole lecture, but when searching for one particular moment, it is almost impossible unless you already have the lecture memorized. I was able to use the iPod to get a few answers by chance. The smartpen, though, made it incredibly easy to find whatever I wanted in a very short time."*