

Livescribe Pulse SmartPen: Reflections of College Students with Learning Disabilities After Use of this Assistive Technology

Introduction

- Note taking continues to be challenging for many students with disabilities and accommodations for this task are often provided in the postsecondary setting (Hughes & Suritsky, 1994; Hadley, 2007).
- Students often struggle to keep up with lectures and are not sure what to record in their notes. Many do not want to ask peers for notes for fear that it will draw attention to their disability (Hadley, 2007).
- Livescribe, designed for note takers and marketed to college students, became available in the spring of 2008.
- This tool captures lecture data which can later be accessed in a non-linear way (Hannon, 2008).
- Livescribe smartpens use microphones and a camera to capture class audio that is paired to the student's written notes for later retrieval.
- Students are able to choose to review all or only the desired parts of a lecture when studying.
- Livescribe paper, with unique dots as well as start and stop features, allows users to initiate and end recordings (Schreiner, 2008).
- Electronic notes and audio can be downloaded via USB port providing the option for typed notes that are linked to the audio (Parton & Hancock, 2009).
- Initial reviews of Livescribe smartpens are favorable and suggest they are innovative and useful tools (Hastings, 2008; Moynihan, 2008). While this device may be helpful for students with learning disabilities, it has the potential to benefit all students.
- The Livescribe has a number of other applications including calculator features, language translation, and music applications (Schreiner, 2008).
- Concerns exist regarding intellectual property of faculty and regarding student comments in class being recorded when these verbatim transcripts are shared with others or posted on Internet sites such as Facebook (Hannon, 2008).

Method & Participants

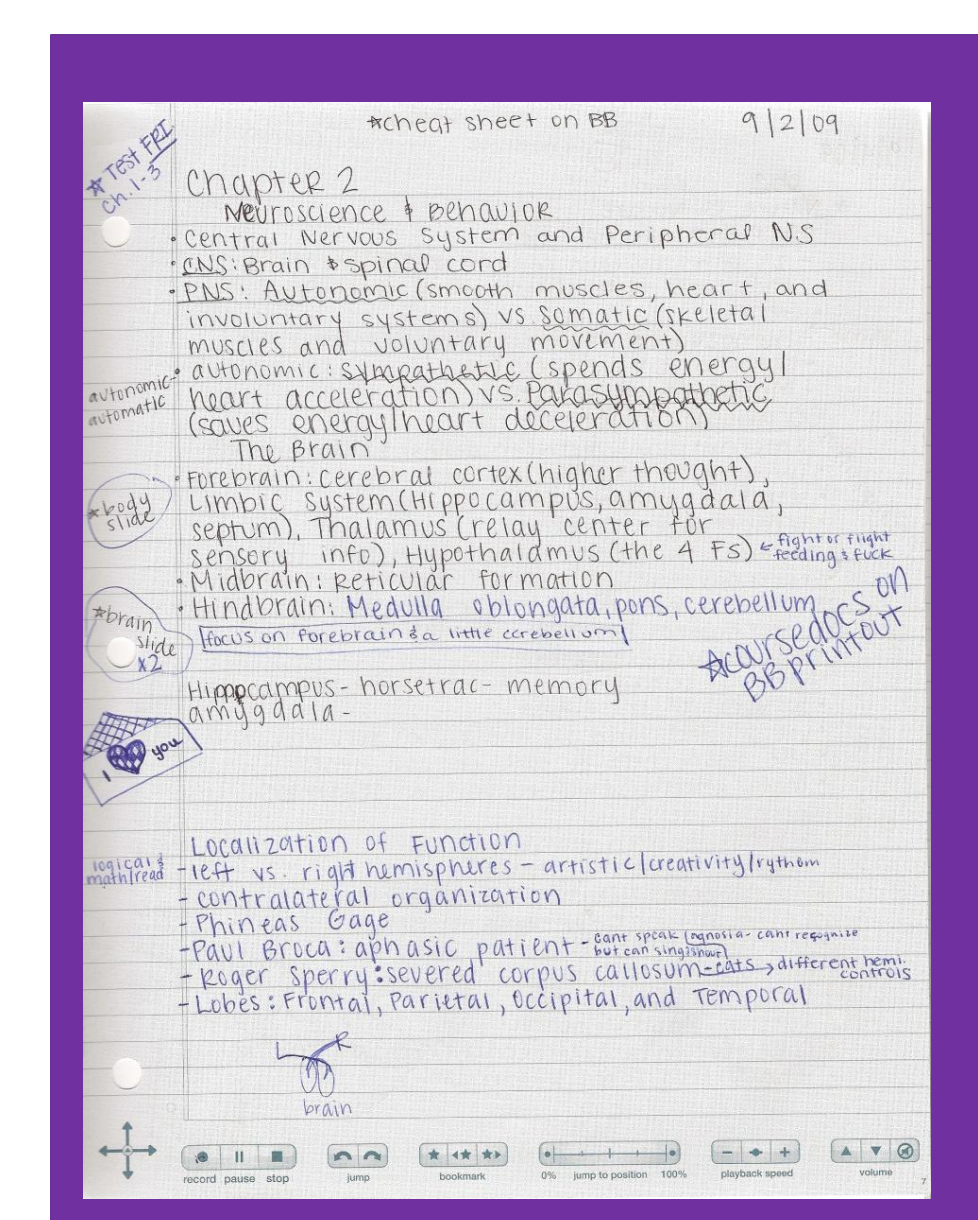
Information for this poster was obtained by interviewing 14 students with identified Learning Disabilities who are attending East Carolina University. The students have had access to the Livescribe Pulse Smartpen for two semesters. Students could borrow the pens for a variety of uses such as taking notes in class or recording interviews. The students were asked to provide the following:

- Examples of when they had used the Livescribe
- Strengths and limitations of the device
- Notetaking strategies and note review techniques

Livescribe Pens

"The mobile-computing platform consists of: the Smartpen, a fountain-pen-sized computer with audio/visual feedback and memory for handwriting capture, audio recording and applications; paper with Dot Positioning System technology that creates interactive documents using plain paper printed with microdots; software applications, including audio/ink capture and handwriting recognition. Notes can be stored on a computer using a USB connection." (Jim Margraff, founder of Livescribe)

<http://d5.allthingsd.com/20070530/d5-livescribe-pen>



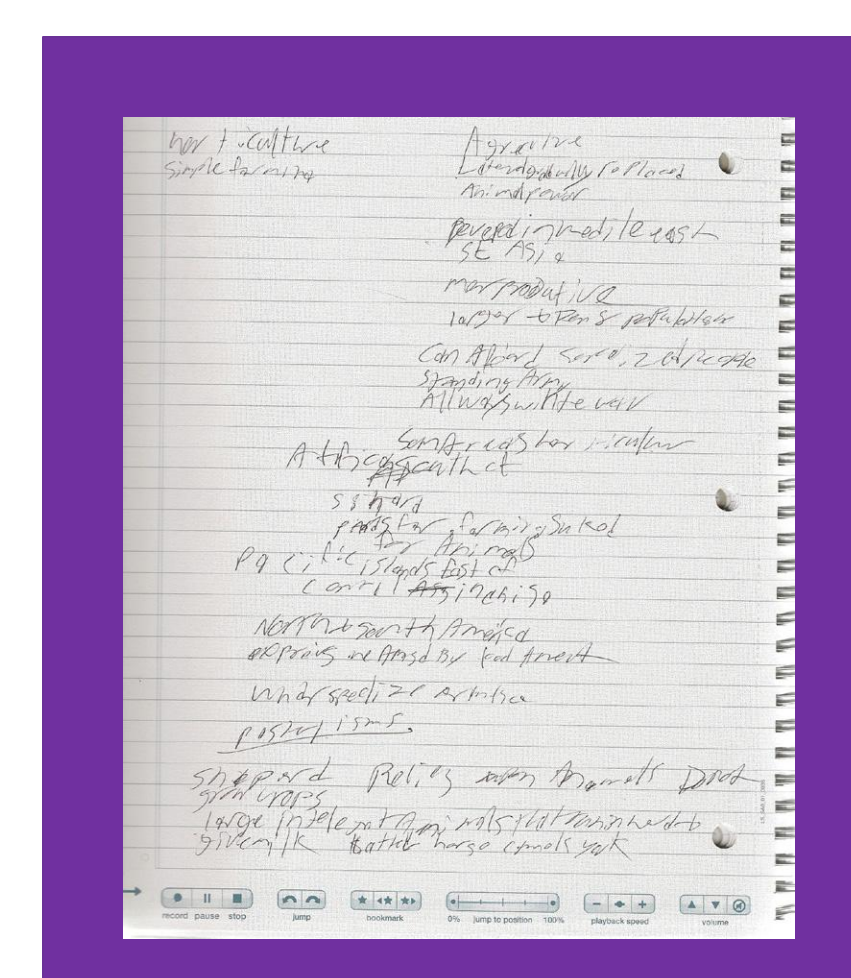
Sample notes page

This student takes notes from the text prior to class and fills in/elaborates during the lecture using the Livescribe pen.

On taking notes:

"It is useful because if I don't hear something she says it's on there and I can put dot dot dot and click on it later to hear."

"Well in most information driven classes I'll take normal notes. But if it's more heavily discussion, I'll use it more to create bookmarks and stuff so I can go back to certain areas of the discussion. I guess it gives more ways of taking notes for different classes - make it easier in that aspect."



Sample Notes Page Before Review with Recording

Sample Notes Page

This student takes notes in class using special notations where he will need to go back and fill in details after listening to the lecture again.



On reviewing audio and/or notes:

"that's the hard part, you know you've got the information so since you've heard it once so you know you need to go back."

"After class I go back and I...like there's usually spots where if he talked too fast you can't get it all. So I usually go back during study hall and I listen to that portion and write whatever the rest of the notes are and study from that. And if I don't get it afterwards then I'll go back and listen to it."

"I like listening to myself answer questions in class. I think it is good to hear what I say. Sometimes I answer it funny or weird and sometimes I wonder why. If I was loud when I said it or if I was kind of quiet when I said it. Sometimes I think about that."

On different uses:

"I used it in math last year in the spring semester, and it was really good because I could write down the problem and then re-listen to what the teacher was saying about the problem. It helped me out especially when I went back to tutors, and I didn't know exactly how to say what was happening here. I just say 'hey listen to this' and then click on it and they say 'oh I understand what you were doing here.' So I use that in tutoring sometimes."

General Impressions:

"I think it is [helping]. I think if I didn't have it I would miss it so much."

"I use it in my classes where my teachers like to lecture a lot, and I use it when I am doing interviews kind of like what we are doing now, and I use it sometimes when I go into meetings so I can listen longer and not have to write down so much. Mostly I use it because it feels good. I have it for back up and comfort in case I am not getting down everything that is being said."

Notetaking and Review Strategies Reported by Students

Notetaking Strategies

Strategy 1: (1) Take notes from text prior to class on Livescribe dot paper; (2) leave space to fill in with notes in class; (3) use Livescribe to take class notes; (4) review lecture (audio) with text information from notes when studying.

Strategy 2: (1) Take normal notes, but mark flags (e.g. star, blank bullet points, etc) when it is difficult to keep up; (2) skip space in notes and keep on track (listening) with instructor, (3) after class fill in areas of notes that have been missed.

Review Strategies

Strategy 1: Listen to *specific parts* of a lecture again – those flagged in the notes as needing more review/detail.

Strategy 2: Listen to *entire lecture* again in comfort of residence hall or library. Notice when instructor emphasizes key ideas, hear stories again, fill in notes when needed.

Strategy 3: Review audio reflecting on student class participation.

Strategy 4: Use during tutoring sessions so a tutor can hear an instructor's description in association with student questions.

Strategy 5: If systematic review is not required, audio serves as a "back up" if needed when studying for a test.

Strengths & Limitations

Strengths

- Useful for classes that involve extensive lecture
- Beneficial in math classes offering the ability to look at a problem and hear the teacher's explanation again
- Useful in meetings when paired with the earbud recording feature
- Excellent for interviewing providing the ability to look at and respond to the interviewee rather than writing extensive notes
- Helpful calculator feature

Limitations

- Necessity of keeping the pen charged
- Downloaded audio does not sync with computer
- Link to handwriting rather than typing
- Most useful when entire class period is recorded
- Temptation to take limited notes when more active note taking would be beneficial

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