Livescribe® Pulse™ Smartpen - A DIGITAL PEN AND PAPER SOLUTION FOR ONLINE AND TRADITIONAL TEACHING METHODS

T.N. BURCHAM, S.A. MEHLHORN, S. PARROTT, P. SMARTT, J. ROBERTS AND J.E. MEHLHORN THE UNIVERSITY OF TENNESSEE AT MARTIN, MARTIN, TN 38238

Abstract
The rapid proliferation of technology continues to impact higher education paradigms. The use of digital media technologies can provide an additional conduit for students to better understand classroom concepts. However, many of these technologies require adoption overhead that is unpalatable for some faculty. Teachers that frequently use symbolic nomenclature (mathematics, chemistry, etc.) need solutions that allow them to easily and effectively share concepts with online and traditional learners. The Livescribe Pulse Smartpen (LPS) uses microcomputer technology to accurately digitize handwriting (on dot-encoded paper), while recording audio. The user may access the "linked" audio from the hand-written notes by simply "double-tapping" that portion of text. In addition, it provides unprecedented ease in posting handwritten materials (with linked audio) to the Internet (URLs that can be placed in an email or posted in a course management system). The LPS requires a minimal learning curve and is relatively inexpensive. Since pen and paper are used, late-adapters feel reasonably comfortable incorporating this technology in their teaching architecture. The LPS provides Tablet-PC features without some of the technology overhead associated with Tablet PCs. In the spring of 2010 selected University of Tennessee at Martin faculty were surveyed to determine their perceptions of the LPS for graduate (online) and undergraduate (traditional) courses (2010 NACTA Abstract – 125).

Background
It is important for faculty to have the ability to convey content to students using various media-types to ensure learning takes place. Computer-based technologies are changing the way faculty interact with students. These changes are challenging some faculty member’s approaches to teaching in the traditional classroom as well as teaching at a distance (Frey, 2003). Technology that enables the transfer of learning objects to students through digital media is becoming increasingly more relevant in higher education, particularly in light of budgetary issues faced by most institutions. Faculty are more likely to adopt technologies for teaching when the technologies are easy to use and enhance student understanding. Incentives for faculty adoption of innovative teaching technologies are also important for adoption (Robert, et al. 2007).

Usage of the LPS was dominated by mathematics and note-taking (both at about 59% of respondents). Respondents also used the LPS for brainstorming (41%), sketches (35%), graphing (29%), and diagramming (23%).

Interestingly, for undergraduate instruction, more respondents used the LPS for traditional undergraduate classes (59%) versus undergraduate online (41%). For graduate instruction, online usage (55%) was much higher than traditional (6%). The primary dissemination methods for LPS learning modules were: Posting LPS link in the Course Management System (35%), emailing the LPS link, and posting LPS link to a website (29%).

While a majority of respondents had not received feedback from their students (47%), those who did received Strongly Positive or Positive feedback.

Summary
An online survey (using SurveyMonkey®) was developed to determine the attitudes and acceptance of a digital pen and paper technology (Livescribe Pulse Smartpen) for developing learning objects for traditional and online higher education courses. The survey was sent to 65 individuals using email with a hyperlink to the survey website. The survey was initiated on May 17th, 2010 with follow-up solicitations to complete the survey on May 20th and 22nd, 2010.

Of the 65 survey solicitations, 27 responded to the survey for a 41.5% response. About 93% of the respondents were aware of the features and capabilities of the LPS. Eighteen (18%) respondents had purchased a Livescribe Pulse Smartpen (LPS). Of the 18 respondents who had purchased the LPS, 17 had utilized it in some fashion to enhance their respective academic endeavors. Of those purchased, about 88% were of the 2 or 4 GB memory size configuration. Only two (2) respondents had purchased additional software for the LPS. In both cases, it was a software solution that converts handwriting to text (MyScript by VisionObjects®, Inc.).

About 67% of respondents that had a LPS used a Windows-based computer, while the remaining 33% used a Macintosh-based system. The respondents overwhelmingly said the software was easy to install (94%), regardless of computer platform.

Livescribe, Pulse, Tabletop, and Livescribe Pulse are either registered trademarks or trademarks of Livescribe, Inc. All photographs courtesy Livescribe.

References

Survey Demographics
The survey was sent to 65 UT Martin respondents (May 17-23, 2010). There were 27 responses to the survey (41.5%). Of the 27 respondents, 17 had purchased a Livescribe Smartpen (LPS) (67% of those responding to the survey).

Survey Item #1. About 35% of the respondents (27) utilized a Tablet PC in their teaching.

Survey Item #2. Tablet PC was used: indicate: use wirelessly to solve math problems, drawing graphs, solving descriptive and inferential statistics, Powerpoint in conjunction with a digital whiteboard, recorded lectures, and drawing notes from articles with students.

Survey Item #3. About 93% of the respondents (27) were familiar with the capabilities of the LPS.

Survey Item #4. About 97% of the respondents own a LPS.

Survey Item #5. LPS Memory Capacity
1 GB - 12%
2 GB - 44%
4 GB - 44%

Survey Item #6 & #7. Only ten (2) respondents had purchased additional software (MyScript) for their LPS. MyScript converts LPS handwriting to text.

Survey Item #8. About 59% of the respondents that own a LPS have used the device.

Survey Item #9. Of the respondents who own a LPS, 51% allow a Windows-based computer and 37% use a Macintosh-based computer.

Survey Item #10. About 34% of the respondents who own a LPS indicated that it was easy to install.

Survey Item #11. Livescribe Usage
Survey Item #12. Classification/Teaching Style
Survey Item #13. Sharing Learning Modules
Survey Item #14. About 54% of respondents would recommend the LPS to a colleague.

Survey Item #15. About 56% of respondents indicated that the LPS saves time when developing online materials.

Survey Item #16. About 84% of respondents believe the LPS enhances their ability to develop meaningful learning objects.

Survey Item #17. Student Feedback