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Usability News is a free web newsletter that is produced by the Software Usability Research Laboratory (SURL) at Wichita State University. The SURL team specializes in software/website user interface design, usability testing, and research in human-computer interaction.

[Barbara S. Chaparro](#), Editor

Searching the University Course Schedule Using a Digital FlipBook

By [Spring Hull](#)

Summary: This article examines user performance and satisfaction of a university schedule of courses using the FlipViewer® digital FlipBook format. This format was compared to a schedule of courses website and subjectively compared to the university's printed schedule of courses catalog. Results indicate that the participants performed some tasks faster with the FlipBook format and found it to be engaging and easy-to-use.

INTRODUCTION



In our last issue of Usability News, we examined the usability of E-Book™ Systems Digital FlipViewer® FlipBook ([Hull, 2005](#)). FlipViewer® is an electronic book (e-book) viewer and web browser which allows users to read FlipBooks, three-dimensional digital documents that resemble traditional printed books. Several companies currently use the FlipBook technology for their online catalogs, such as duPont Registry and Advanced Imaging1 (E-Book™ Systems, 2003). This study evaluated several of the unique features of FlipViewer® such as "grabbing" and manipulating multiple pages of a FlipBook at one time and AutoFlipping pages at an adjusted speed. The study revealed that some participants had difficulty using these features, but overall, were satisfied with their experience viewing a document in this format. All participants suggested that they would recommend this product to others.

The current study explores performance and satisfaction of university students using a FlipBook format of the university Course Schedule. Traditionally, university course schedules are printed in a paper catalog format. Searching for courses electronically reduces printing costs for the university as well as paper waste. E-Book™ Systems is eager to find out whether students will accept the use of a 3-dimensional online catalog to display the course schedule catalog. In addition to displaying the course schedule, the online format can be extended to allow students to register for courses and order course textbooks directly.

To evaluate the use of the FlipBook course schedule, performance and satisfaction were compared to that of another web-based course schedule available on the university website. It was hypothesized that users would complete tasks faster using the traditional web-based schedule of courses since this format was most familiar. It was also hypothesized, however, that with minimal practice, students

would prefer the FlipBook format due to its novelty and resemblance of the traditional printed book format.

METHOD

Participants

Twenty-four students (17 females, 7 males) aged 18–46 (M=24 years) enrolled in undergraduate psychology courses at Wichita State University volunteered. Sixty-six percent reported visiting web sites daily and 66.7% reported spending 1-5 hours per week online.

Materials

A Dell Dimension 4600C desktop PC with a 15" monitor was used for the study. The Wichita State University Fall 2005 schedule of courses catalog was used. E-Book™ Systems converted the catalog into a demonstration for the FlipBook condition. The demonstration version did not contain all of the information found in the printed format, however, it was functional for the purposes of this study. Participants in the website condition viewed the Fall 2005 online schedule of courses. A stopwatch was used to record the time to complete tasks.

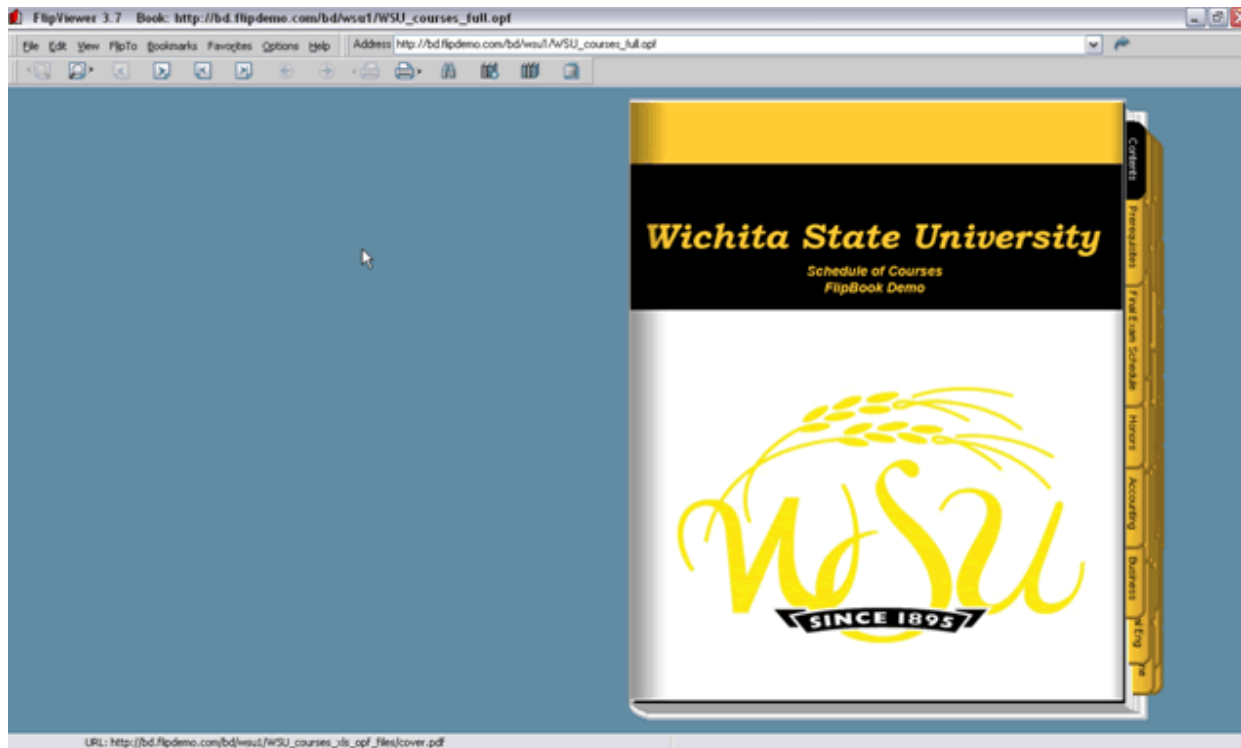


Figure 1. Sample screen of Wichita State University FlipBook Schedule of Courses Demo

ID	TERM	TIME	DAYS	ROOM	CAMPUS	INSTRUCTOR	QUOTA
1646	07:05PM	09:45	TN		Westside	STAFF	44
ACCT 220	MANAGRL ACCTG	03 Credit Hours					
1648	12:30PM	01:45	TTH	DH 107		PD HARRISON	180
1649	07:05PM	09:45	THN		Westside	STAFF	44
1650	08:00AM	09:15	MW	CH 206		TS CLAUSEN	60
	2 nd	10:30 12:45	F	CH 210			

1651	2 nd	UD:30PM 06:50	MWN	CH 204	TS CLAUSEN	60
		05:30 07:30	FN	CH 210		
Media Type: Internet used only to facilitate course instruction for faculty-student communication						
Exams will be given on Friday from 5:30 pm to 7:30 pm in the computer classroom Clinton Hall 210.						
Exam dates are 9/16, 10/14, 11/18 and 12/9						
ACCT 260	INFO PROC BUS	03 Credit Hours				
1652		07:05PM 09:45	TN	CH 206	STAFF	60
Media Type: Internet used only to facilitate course instruction for faculty-student communication						
1653		09:00AM 12:00	SA	CH 210	RG JONES	0
Media Type: 2/3 or more (less than 100%) of instruction via internet						
Online ACCT 260—study anywhere and anytime. Five mandatory						

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URL: http://bd.flipdemo.com/bd/wsu1/wsu_courses_xls_op_files/wsu_courses_xls.pdf

Figure 2. Sample screen of the FlipBook Schedule of Courses showing Accounting Courses

WICHITA STATE UNIVERSITY
Thinkers, Doers, Movers & Shakers

Sat, February 23, 2006 10:15:18 AM CST

Students | Parents | Faculty & Staff | Alumni | Future Shockers | Visitors

Home | Site Index | Directory | Search

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Fall 2005 Schedule of Courses

Campus (Optional):
Any Campus

Session (Optional):
Any Session

Time of Day (Optional):
Any time

Department (Optional):
ALL DEPARTMENTS
Accounting
Aerospace Engineering
Anthropology
Art and Design Foundation
Art Education
Art History
Biological Sciences

Cat Number (Optional):
[]

Course Name (Optional):
[]

Instructor (Optional):
[]

Result rows per page (Optional):
16

Search [] Reset Fields []

Navigation Menu:
WSU HOME
REGISTRAR HOME
ACADEMIC CALENDAR
CATALOG
FERPA
FINAL EXAM SCHEDULE
REACTIVATION FORM
RESIDENCY
SCHEDULE OF COURSES
SCHEDULE CHANGES
SHOCKER LINE
SHOCKER CARD
SHOCKER ONE STOP (\$0\$)
TRANSFER COURSE EQUIVALENCIES
TRANSCRIPTS
TRANSFER GUIDES
WEB ENROLLMENT DATES

Figure 3. Sample screen showing the university web-based Schedule of Courses. Users select course criteria using a series of lists.

Procedure

Participants were assigned to either the FlipBook or website condition based on their experience with the web-based schedule of courses. None of the participants had used the FlipViewer technology before. Participants assigned to the website condition did not have prior experience using the site to search for courses. All participants had experience using the printed schedule of courses catalog. Participants were presented an introductory task followed by nine search tasks presented in random order. Participants were given a maximum of five minutes to complete each task. A sample of tasks included finding the following:

- an Accounting 220 course offered on Tuesday/Thursday
- options for taking macro-economics in the evening
- a 100-level dance class offered on Friday or Saturday
- whether taking English 101 with Dr. Waters will conflict with taking Communications 111 Monday and Wednesday at 8:00AM

Participants were requested to state the section number for all correct courses in the website condition and were requested to state the ID number for all correct courses in the FlipBook condition. Performance on each task was determined to be successful if the participant successfully completed the task in less than five minutes. Participants also rated the level of difficulty of each task and rated their overall satisfaction of the online course schedule.

RESULTS

The average time for participants to complete all tasks in the FlipBook condition was 517.75 (SD= 166.6) seconds and 669.33 (SD= 228.2) seconds in the website condition. This difference was not statistically significant [$t(1, 22) = -1.86, p=.08$]. Independent t-tests of the time on task across conditions revealed that the FlipBook was statistically faster for 4 of the 9 tasks (see Table 1). Only one task resulted in faster times for the web-based course schedule (see Task 2 in Table 1). This was due to the fact that the course name was not carried over from one page to the next in the FlipBook.

Table 1. Performance Data Comparison (bold items are significantly different, $p < .05$)

Task - Find the following:	Mean Time in seconds (S.D.) 1=FlipBook 2=Website
1-Accounting 220 course offered on TTH	1=29.3(19.6) 2=64.4(43.6)
2-Options for taking macro-economics in evening	1=84.4(37.3) 2=49.3(48.7)
3- 100-level dance classe offered on Fri or Sat	1=32.4(12.5) 2=70.3(27.7)
4- Biology 106 offered on TTh with lab on Wed	1=43.6(33.3) 2=71.6(62.2)
5-English 102 offered on Mon evening	1=42.3(19.0) 2=35.3(14.1)
6-Earliest time to take College Algebra on MWF	1=41.8(22.7) 2=44.0(15.8)
7-Spanish 112 class with instructor Garcia	1=31.5(13.9) 2=83.3(79.8)
8-If taking English 101 with instructor Waters will conflict with Comm 111 on MW.	1=98.4(72.6) 2=76.3(23.8)
9-If taking History 103 will conflict with taking German 111	1=55.3(26.2) 2=72.1(39.6)
10-Final exam date and time for a MWF 9:30AM class	1=58.8(34.5) 2=102.9(52.4)

Observations of the FlipBook format Schedule of Courses

Participants found it very easy to navigate to a requested course by selecting the department name (i.e. Accounting, Math, Spanish, etc.) from the Table of Contents page in the FlipBook. Despite this, some participants stated that it would have been even easier if the departments were listed alphabetically instead of by college (i.e., College of Liberal Arts and Sciences).

Most participants that attempted to use the "grab and hold" feature (where multiple pages can be manipulated at one time) to compare courses (tasks 8 and 9) had difficulty doing this successfully. This

does not appear to be a feature that is easily mastered with little practice.

Courses that began on one page and continued to the next page were not identified by headers on the following page(s) in the FlipBook. Figure 2 illustrates this problem. The first course listed is Accounting 210 Financial Accounting. However, the title of the course is only identified on the first page. Twenty-five percent of participants failed the task that required them to identify all possible options for a course that continued on the following page.

Observations of the web-based Schedule of Courses

Browsing courses using the web-based format was reported to be more difficult than using the Flipbook or printed book format. Browsing all courses in this format produced one long scrolling page which several participants stated was "fatiguing and boring."

Many participants in this condition took longer to find the final exam schedule to complete task 10. The final exam schedule is listed in the left-side navigation menu, however all other tasks required participants to use the search fields (see Figure 3). Many users continued trying to use the search fields to find the final exam schedule and simply overlooked the left-side menu.

Searching, in general, was more cumbersome in this condition because of the dropdown lists. For example, to find a particular course, participants had to first scroll through a list of department headings (see Figure 3). Some departments were difficult to find due to the wording; such as, the Spanish department, which was listed under Modern Classical Languages. Searches with multiple criteria were also problematic. One task requested participants to find a course with a particular instructor. If the participant entered the instructor's name into the search field but chose the wrong department, the search would return "No Records Found". This resulted in multiple search attempts and increased frustration.

DISCUSSION

The purpose of this study was to compare user performance and satisfaction with a FlipBook schedule of courses to a web-based schedule of courses. Results showed that, for several tasks, the participants were more efficient using the FlipBook format, despite the fact that they had never used nor seen this format before. Most participants viewed the FlipBook as engaging and easy-to-use. While participants in both conditions stated a preference for an online version of the course schedule over the printed catalog, some users commented that the convenience of carrying the paper catalog around and browsing at their leisure without the need of a computer and Internet access was still sometimes advantageous.

1 See <http://www.flipviewer.com/fv/index.php> for examples of FlipBooks.

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E-Book™ Systems (2003). Publishers Tell Why They Chose E-Book System's Digital Flip Technology for Online Versions. (available at http://www.flipalbum.com/press/news/publishers_09092003.htm)

Hull, S. (2005). Online Flipping: Examination of the Digital FlipViewer®. Software Usability Research Laboratory. (available at <http://psychology.wichita.edu/surl/usabilitynews/72/FlipBook.asp>)

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