

Guided Surfing: Development and Assessment
of a World Wide Web Interface for an
Undergraduate Psychology Class

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Introduction

Although the World Wide Web has great potential as an educational tool, and many educational practitioners have begun utilizing the Web in many ways (e.g., Dodge, 1995; Logan, 1996; Mounts, 1996; Weiler, 1996), as yet, there has not been much systematic, theory based, research aimed at examining these methods. The principal purpose of this experiment was to begin to address the issue of how best to structure an interface between learners and the vast jumble of resources at their disposal on the Web. The need for the development and investigation of such an interface is indicated by research, which has found that some degree of learner guidance is particularly important in effective web learning (Anderson & Joerg, 1996).

Guide/Interface Development

Seventy-five sites were selected, within the domain of Sensation and Perception. The guides consisted of a series of node-link maps. The map designs were strongly based on the work of Novak and colleagues (i.e., "concept maps"; e.g., Novak, 1993; 1990a; 1990b; Novak & Gowin, 1985), and Dansereau and colleagues ("knowledge maps"; e.g., Patterson, Dansereau, & Newborn, 1992; Rewey, Dansereau, & Peel, 1991).

Assessment

Twenty students participated in the assessment. Half studied the pages presented in a map format (Figure 1, displays an example of the map format) and half studied the links in a list format. After studying, students filled out a questionnaire consisting of Likert-style and open ended items. The principal findings that emerged from the analyses of questionnaire items were: Students in the list group tended to focus primarily on two of the four areas, while those in the Map group were more balanced (see Figure 2). Those in the list group also agreed to a much larger degree with the statement that their search was focused, as opposed to broad (Figure 3). Students in the list group were more likely to see studying as a "positive" experience and reported lower levels of anxiety (see Figure 4).

In general, with respect to the guides, those who were in the map group had more positive comments. Figure 5 consists of representative comments.)

Conclusions

The finding, that students in the map group tended to report a more broad search, indicates that students in this condition were able to, more quickly, note the breadth of the domain, as represented by the web pages included, and subsequently to broaden their exploration of the pages, relative to those in the control group. In this sense, the maps may have acted to enhance the students' metacognitive knowledge of the domain.

The more negative affect reported by those in the map group may have been due to a number of factors, the most likely being that the map format was unusual/unfamiliar compared to the more traditional displays of links. Previous research, which involved affect associated with studying from knowledge maps, indicates that this is very possibly the case (Hall & O'Donnell, 1996). It's also important to note that students' open ended responses clearly favored the guides, in terms of rating their educational effectiveness, indicating that any reported negative affect, did not carry over into students' perception of the educational efficacy of the technique.

References

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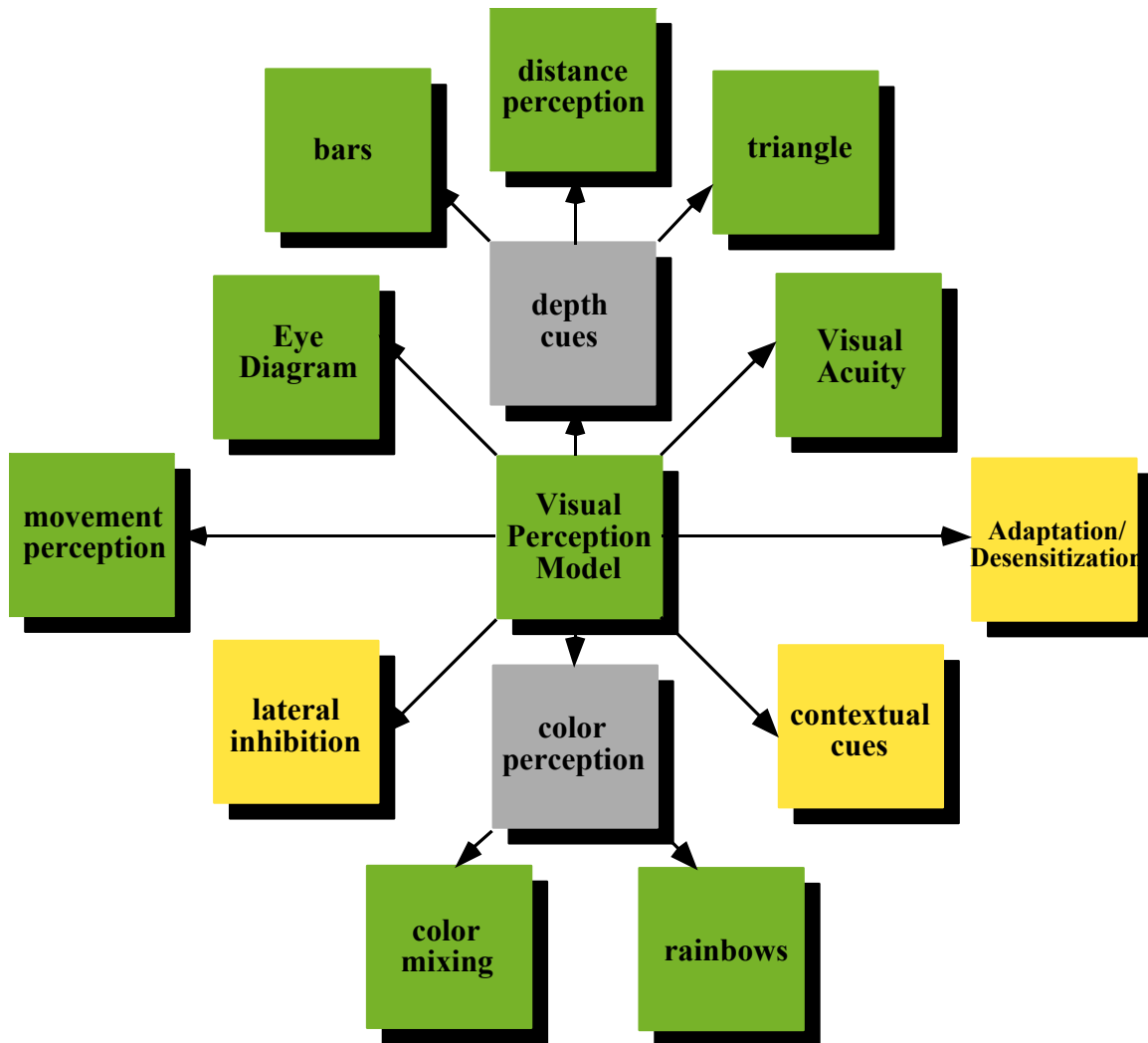


Figure 1: Map Guide for Vision Links
(Click on green nodes to links, and yellow nodes for other maps.)

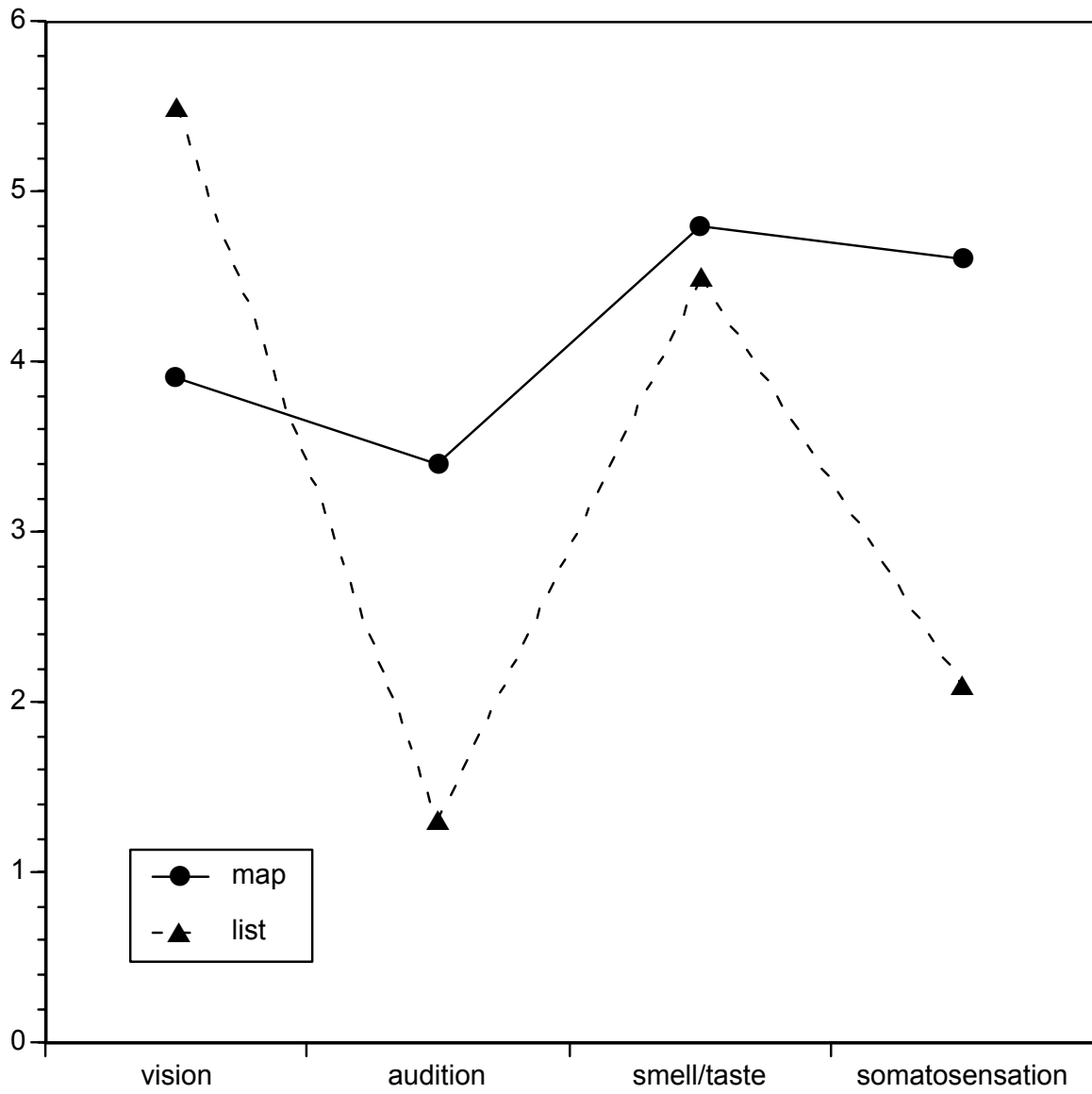


Figure 2: Reported Time Allotted to Study as a Function of Group and Category

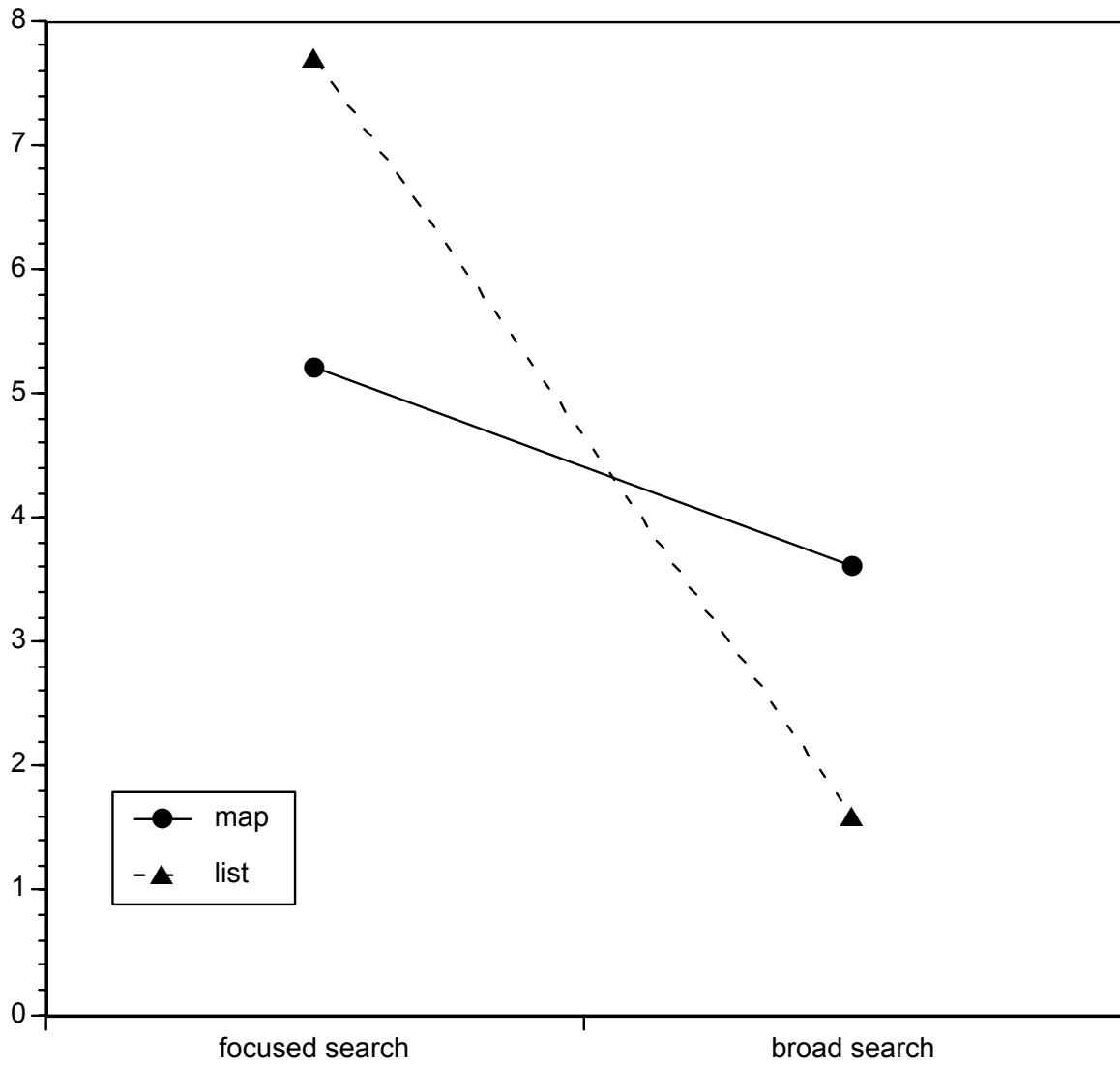


Figure 3: Rating of Search Focus and Broadness of Search as a Function of Group

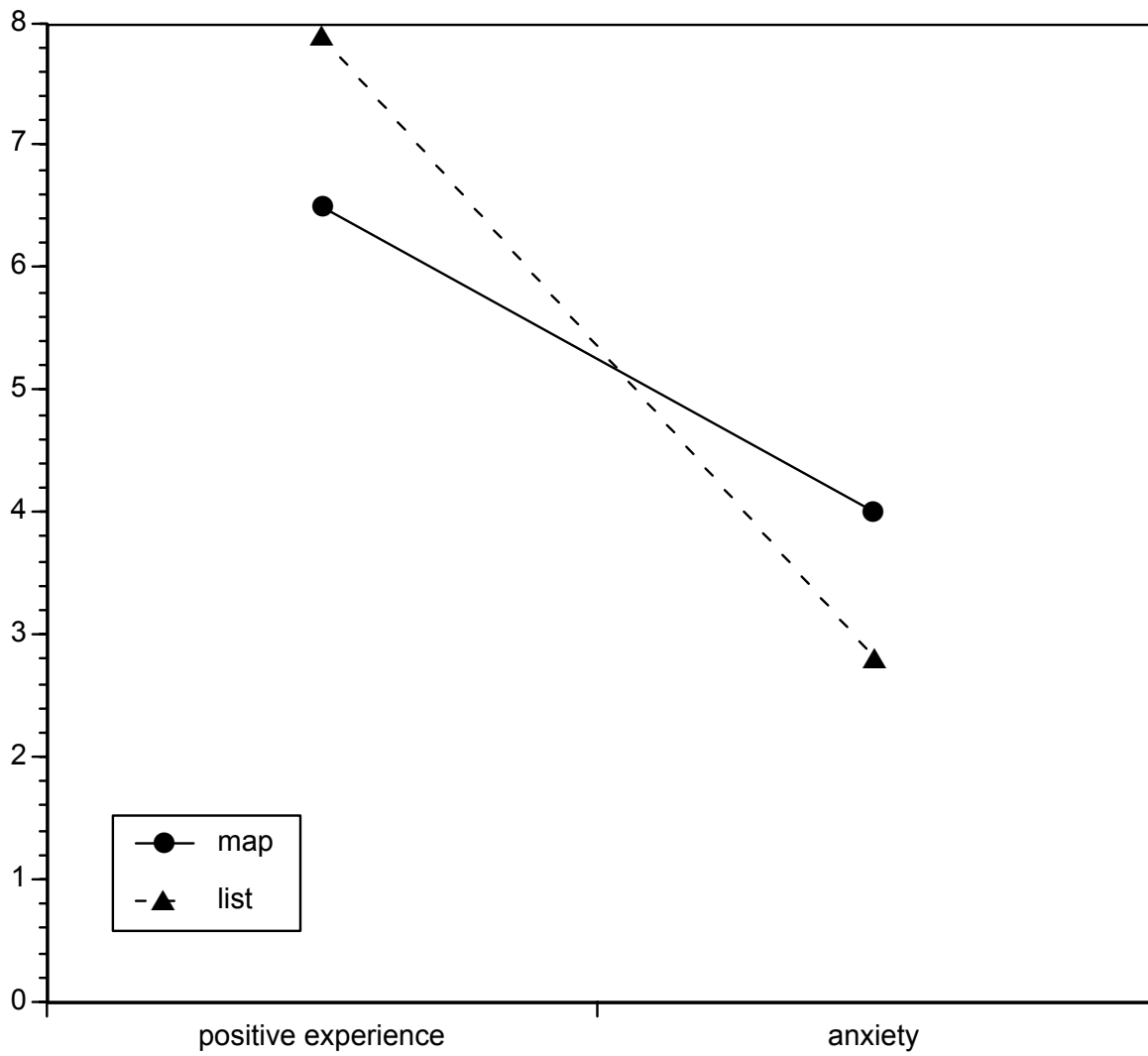


Figure 4: Rating of "Postive Experience" and "Anxiety/Nervousness" as a Function of Group

Representative Comments from the Map Group:

The guide pages helped to make the huge amount of information more manageable. It was helpful to have fewer choices and to narrow down the subject.

I found them to be very effective in helping me to find information I wanted. The nodal guides were effective in localizing my searches.

I liked the guide pages because you could see how everything was connected. It let you see everything that was associated with one major topic.

I found the guide pages to be effective because they aided in going through the various information that was supplied.

Representative Comments from the List Group:

I found the guide pages to be fairly helpful, although I mainly just stumbled upon the topics that I thought to be the most interesting.

Some of the guide pages were not helpful simply because I did not know what some of the things listed were

I found the guide pages to be somewhat effective and useful. They directed me in the direction that I wanted to go, so I guess you could say they served their purpose.

Personally, I found the guide pages to be only somewhat helpful. I used the guide page to find a basic topic and only went back to it if I ran out of links, or at least interesting links.

The guide pages were not very helpful to me. The reason is that I never look at them (usually).

Figure 5: Representative Student Comments