Browsing Multiple Texts under Time Pressure

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The Problem of Multiple Texts

With the expansion of the World Wide Web and other electronic information sources, it is becoming increasingly important for learners to actively allocate their time among texts in order to maximize their learning. Finding relevant texts is no longer the main problem; rather the problem is one of adaptive time allocation among multiple relevant texts. What constitutes a good text is dependent on, among other things, the individual's background knowledge, since comprehension requires textual information to be integrated with this knowledge so as to construct a situation model. If there is too much overlap between the text and the reader's background knowledge, then the text affords little opportunity for learning, but if there is too little overlap then the text would be incomprehensible. Good texts for learning therefore fall in the middle ground that Wolfe, Schreiner, Rehder, Laham, Folz, Kintsch & Landauer (1998) call the zone of learnability.

Thus, at least one task facing the self-directed learner is to allocate his or her time selectively to texts that fall within this zone of learnability and ignore the rest. Experimental studies of metacognition (e.g. Son & Metcalfe, 2000) have explored the way in which prior judgments of text difficulty influence study-time allocation, but have been silent about our main question, which concerns the strategies by which difficulty judgements are integrated with browsing to produce preferential study. To understand these browsing strategies we follow Pirolli & Card (see 1999) in drawing on optimal foraging theory (see Stephens & Krebs, 1986).

Foraging Theory and Browsing

One of the findings in the optimal foraging literature that is particularly relevant to the issue of selective browsing is that animals will *sample* unfamiliar food patches in order to decide which to exploit. Krebs, Kacelnik & Taylor (1978) observed that great tits initially switched rapidly between two food patches before settling down to exploit the higher-value patch.

Do readers use a similar sampling strategy when deciding how to allocate their time among multiple texts? Sampling strategies have as an objective to choose the best source (of food or information). An alternative to such the sampling strategy is a satisficing strategy, in which readers continue to read any text that is good enough (which we take to mean that the text would still fall within the zone of proximal learning).

Experiments and Findings

We have conducted a number of experiments on reading multiple texts under time pressure, investigating the prevalence of sampling and satisficing strategies and the effectiveness of these strategies for the preferential allocation of time among texts.

The results of Experiment 1 suggested that readers were adaptive in that more expert readers allocated more time to more difficult texts, and that satisficing was a much more common strategy than sampling. The results of Experiment 2 suggested that the provision of outline overviews led to participants being more selective in the documents that they read, and encouraged sampling to the extent that it became the modal strategy. Other experiments have confirmed the general adaptive character of browsing and shown how document preference is influenced by the nature of the learning task (e.g. studying to answer factual questions leads to a preference for more difficult texts than does studying to write a general essay).

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