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GIFT: Maximizing first-year students' 'least effort' information gathering habits using Information Foraging Theory

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It has widely been reported that engineers use a 'least effort' approach to meeting their information needs.[1,2] While some have translated this as some kind of intellectual laziness, one should rather think of it as an approach embedded in efficiency. Engineers want to find just enough information to be able to make a reliable decision and then get on with their project. This is in contrast to the typical research-based approach to information gathering in academia, where comprehensiveness is more valued. By tapping into the values underlying the least effort approach, however, one can make the case that by becoming more familiar with higher-quality and/or more specialized information resources, it lessens the effort to access those resources, so they can be easily incorporated into a student's overall search process, leading to more informed, better quality design decisions.

A persuasive model we have used in introductory classes is to think of information as embedded in a landscape and students are foragers, looking to find nutritious and easy to harvest information resources. Information Foraging Theory (IFT) [3] is similar to least effort, in that, ecologically, an optimal forager is one who can maximize the resources extracted from their environment per unit of effort expended. Using IFT, we align instructor, librarian, and student values to motivate students to explore and become proficient information foragers. We take a hypothetical raccoon making the rounds to secure resources for the day, visiting a variety of patches, like berry bushes, a fenced garden, a garbage dump, or a storm sewer (see Figure 1). Students are asked to think about the effort involved in extracting needed resources, the quality of the resource, and the variety or unique kinds of resources available in the patch.

Figure 1: Forager exploring their ecological environment

Students then explore some different resources, like standards, patents, material properties, and scholarly databases, and report back on the characteristics they found and what they might be used for (see Figure 2). Students are asked to make analogies between patches in either scenario, for example, the open Web is like the garbage dump…there is definitely a lot of good stuff in there and a raccoon can probably live successfully in that environment, but it might take a lot of effort to sort through the 'junk' to get to the actual food, which might be of variable quality (and safety). A berry patch is more like a'library database,' the quality is more uniformly higher, but it can be hard to get through the thorns until you learn some techniques to navigate it easily.

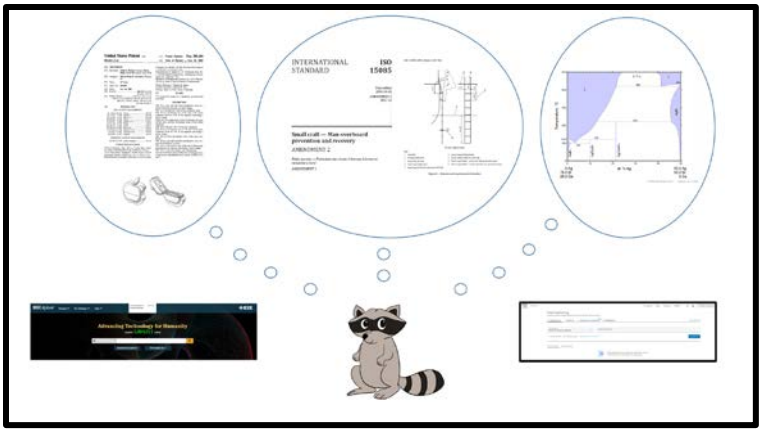

Figure 2: Information forager exploring their technical environment

We divide students into small groups with guiding questions to evaluate their resources (see Table 1), focusing on identifying the value, as well as obstacles, to using it effectively, so we can address those gaps and help make more scholarly resources part of their information landscapes.

Table 1. Sample template of questions about information resources

	Type of information?	**Ease of Use/Challenges?**	**How might I use this?**	**Quality?**
Patent	**Inventions**	**Legal language is difficult**	**Cutting edge technology**	**Approved by US Gov**
Standard	**Procedures/processes**	**Hard to find what I need**	**Components for project**	**Industry approved**
Material Property	**Resistance, heat capacity, melting T...**	**Graphical interface is nice**	**Choosing right thing**	**???**
IEEExplore	**Info about articles/conferences**	**Like a regular search engine**	**Scholarly articles**	**Peer reviewed**

First-year students come from very different information environments, typically much smaller than the university library. The information foraging mental model provides students with the language and concepts so they can be reflective searchers who understand why they are learning about 'library resources,' as well as non-library information sources, and what the reward is for investing the time to become more sophisticated searchers.

References

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