Discipline-Specific Information
for Entomology Students

Proposal to the Technology Advancement Committee
College of Agriculture

Department of Entomology

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Project Overview and Expected Benefits

Because education increasingly involves technology, the Department of Entomology has put significant effort into making electronic resources available to students. In fact, students are beginning to expect that syllabi and other class resources be available electronically. Our distance education courses, which rely on the internet for delivery are increasingly popular. For example, the enrollment in ENT 201/211 distance educations sections increased from 33 in 1999 to 224 in 2005. There is no question that the internet is playing a more prominent role in the life and studies of our students.

One of the most common tasks that our students do is to use the internet to research a particular order of insects, investigate a subdiscipline of entomology (such as biological control or forensic entomology), or learn about a current problem in entomology (such as the upcoming invasion of Emerald Ash Borer into Iowa). For example, a typical assignment in ENT 376 (Fundamentals of Entomology and Pest Management) is to hand in a “pest profile” describing an insect of economic importance. One of the major obstacles students face when carrying out these kinds of activities is that the internet is filled with information but much of that information is untrue, biased, or not applicable. The objective of this project is to cordon off a section of the internet with the best research-driven information in entomology and integrated pest management.

This would be an impossible task if we were starting from scratch. However, we have two successful foundations on which to build.

Foundation 1: The Entomology Index of Internet Resources

For the last 13 years, we have been steadily reviewing and compiling a directory of the best entomology resources on the internet. Currently at 1,229 resources, the collection constitutes the most complete directory of quality information available (please see http://www.ent.iastate.edu/list/). Sites listed in the Index are from research universities and trusted organizations such as professional entomological societies.
Foundation 2: Bugguide

Bugguide (found at http://bugguide.ent.iastate.edu/) resides at Iowa State and is an example of the kind of site that appears on the Entomology Index. Bugguide is a buzzing community of insect and photography enthusiasts and provides a tremendous collection of photographs of various insect species. Photographers submit photographs of insects and experts in insect systematics identify the insects. If a photo is of high enough quality, it becomes part of the permanent collection. Please visit the website and click on a representative insect order to see the results of this collaboration. It is a gold mine of information for students.

The Next Step

What we are asking for is assistance in taking the next step. We would like to purchase a Google Search Appliance. This would enable students to search the information on all the pages of the 1200+ sites included in the Entomology Index of Internet Resources and all of the information contained in Bugguide simultaneously. Students would have one interface to a large body of top-quality information in the field of entomology.

Contribution to Instructional Program

As noted above, this would improve the learning experience for any student studying entomology and using the internet to find information, including most entomology courses and many in related disciplines. However, we do not want to make this available but not have it be used because students don’t know about it, so we plan to contact instructors in entomology and related courses that have an entomological component with a sample syllabus section that points students to the Google search appliance and explains briefly how to use it.

Representative quotes from our students:

“A reliable entomological on-line resource would not only benefit my own research, but would also greatly enhance my abilities as a teaching assistant. As a TA for Entomology 370 (Insect Biology), I am continually faced with questions from my students for which I cannot always give a reliable answer. The quickest and often most effective way of finding the answer is searching online. However, searching simply with Google will often give multiple answers. A concise search engine designed to search effectively through the online mess of resources would provide reliable ongoing information. It will reach even more students, as 9 out of 10 of my students are not Entomology students, but come from Agronomy, NREM and EEOB.” – Rebecca Brown
“This Google search engine would be very useful to students for class projects by compiling many useful entomology websites into one searchable resource.” –Nina Richtman

“I’ve taken numerous entomology courses and have always found it difficult to search and find the necessary resources on the internet. The proposed search appliance would save me precious time and direct me to those resources within the ISU Index. –Nick Schmidt

Innovation

The Google search appliance solves a very difficult problem. The problem is: How does one search across a selection of multiple websites and bring the most relevant results to the top of the result list? It is this latter part that is difficult, and the search appliance solves it better than any solution so far. Earlier this year it was named Best Product for Information Management by Network World (February 27, 2006), and is a state-of-the-art solution.

Possible Questions

Answers to possible questions the committee may have:

Can’t students just use Google.com? Yes, that is what they are currently doing. The objective of this project is to improve that situation. When we recommend a textbook for a course, we strive to find one that is as unbiased as possible and complete…not one that is full of information that is biased, incomplete or just plain wrong.

Isn’t part of education learning to discern between good and bad information? Yes, and we require that of our graduate students, but the vast majority of our students do not have the necessary background to do this. For many students one course is their only exposure to entomology. One must first know what the good information is before being able to discern good information from bad.

Will this resource be limited to entomology students? No. Students from agronomy, horticulture, NREM, and other disciplines all have an entomology component in their work and would benefit; thus, this project benefits the college of agriculture.

Have you considered using open source software for this? Yes. Google is the leader in internet searching and it is for a good reason. The quality of search results using Google’s
solution is head and shoulders above the competitors, including open source competitors. In fact, Iowa State University recently switched from an open source solution (Htdig) to a Google Search Appliance for ISU’s web search.

**Can’t you use Iowa State’s Google Search Appliance?** No; it is only for searching internal campus documents. This appliance will search documents outside Iowa State (though of course our own entomology-related materials will be included).

**Support and Maintenance**

Costs for support and maintenance for two years are included in purchase price. Training materials and hands-on instruction in the use of the system will be provided by John VanDyk, Systems Analyst for the Department of Entomology.

An appendix showing the layout of room 411 Science II, where the Google Search Appliance would be housed, is included.
Budget

Table 1. Full Itemized Budget

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<th>Number</th>
<th>Unit Cost</th>
<th>From College Pool</th>
<th>From Dept.</th>
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Table 2. Minimum Feasible Itemized Budget

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Appendix – Room Layout of 411 Science II

The room layout is shown along with the proposed location of the Google search appliance.