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The Harvey Project: Open Course Development and Rich Content

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INTRODUCTION

The rise of the Internet has started a knowledge revolution whose extent can only be guessed at. The last revolution of this magnitude, brought on by the printing press, led to the proliferation of books and the rise of the modern university system. If universities are to survive the latest knowledge revolution, they must adapt with unaccustomed speed and learn how to use the Internet for more effective teaching.

Most universities adopt a limited approach to building on-line courses. However, many studies have found that merely transplanting materials to the Web does not significantly improve learning (Russell, 1999). In fact, handouts, slides, and viewgraphs that have been “repurposed” for the Web are sometimes derisively referred to as “shovelware” (Fraser, 1999). So while moving existing materials to the Web may increase their accessibility, it will not necessarily improve their effectiveness.

The Internet’s real value as a medium and teaching platform is that it makes possible rich, interactive content such as simulations, animations, and 3-D models. These learning objects, or rich content, can significantly enhance learning, especially in the sciences, and can be just as useful inside the classroom as outside. The difficulty is how to create this enhanced content, since the task demands a broad range of technical skills and enormous effort. Besides faculty domain experts and experienced teachers, rich content development typically requires illustrators, Web designers, programmers, instructional designers, testers, and Webmasters. The only way faculty and institutions can meet this challenge is to embrace collaboration more broadly and seriously than they have in the past. One approach is the multi-institutional consortium. Another solution is a collaboration of faculty to build rich content in their discipline. This chapter chronicles an example of the latter sort: a bottom-up, cross-institutional project.

For such a grass roots collaboration to succeed, it must recruit many faculty pioneering the use of the Internet in their teaching, as well as artists and technical professionals. It must offer collaborators an incentive to participate, and it must attract not only volunteers, but also institutional and agency funding as well. Finally, as a pioneering project, it must create standards and develop paradigms as it goes. This case study describes a work-in-progress to solve these issues.

CASE QUESTIONS

- What is the best example you have seen of pedagogically effective rich content? What makes it effective? Could it be improved??
- What tools were used to create it? How much effort do you think its production required?
- Can you think of faculty who are pioneering the development of rich content in their discipline today?
- What incentives might motivate teachers and researchers to collaborate within their discipline and build rich content?

CASE NARRATIVE

Background

For the last three years, the author has taught an on-line human physiology course (<http://www.science.wayne.edu/~bio340>). The course has both lecture and Internet-only sections, and it is based on 600 static Web pages (converted from PowerPoint) as well as RealVideo asynchronous broadcast of the videotaped lectures and an electronic discussion board.

Although students in this course seem to grasp the superficial details easily, many have great difficulty understanding and manipulating the physiological principles that underlie the material. Physiology, like many sciences, deals with complex chains of causality and laws of chemistry and physics that are generally remote from students' everyday experience. To convey these notions more effectively they need to be brought to life for the students. This requires simulations so students can experience for themselves the consequences of these laws, animations so they can grasp complicated dynamic processes, and 3-D models so they can see how different molecular or anatomical structures are related.

An innovative approach was needed to build the rich content necessary to take the course to the next level. On the one hand, the University was neither willing nor able to help with this enterprise (at that point there was only one other on-line class in the entire university). On the other hand, it was clear that the instructor could not attempt the task on his own. Because of the amount of time and skills required, the most that could be hoped for would be an incomplete and imperfect job that could be eclipsed at any time when another, better equipped and better funded effort came along.

The solution adopted was that physiology teachers and researchers should collaborate across institutions to develop world-class rich content for physiology, and make these materials freely available to other faculty and institutions. Surprisingly, there was no precedent for such a collaboration in other disciplines of higher education, although there were a few distant parallels.¹

This collaborative venture, which started in the summer of 1998, was named the Harvey Project after Sir William Harvey, a 17th Century English physician and teacher. A pioneer of physiology, Harvey was renowned for discovering the circulation of the blood and for the clarity of his exposition.

The Open Source Movement

Although the Harvey Project had no parallel in higher education, an excellent precedent exists in software development. One of the most successful models of software

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