Abstract - SWENET, the Network Community for Software Engineering Education, is an NSF funded project to produce and organize high-quality materials supporting software engineering education. The project supports faculty members delivering software engineering degrees and also individual software engineering courses in other computing degrees. SWENET also seeks to foster the development of the community of software engineering educators. This paper discusses plans to continue this development beyond the period of the initial NSF grant. The paper begins with a summary of the SWENET efforts to create course materials and other SWENET activities. The paper also addresses future directions in developing shared course materials, and creation of permanent resources and mechanisms for interaction among software engineering educators.

Index Terms - Software engineering education, curriculum models, software engineering body of knowledge

OVERVIEW

Undergraduate software engineering degrees have been a reality for about a decade in the United States and for somewhat longer internationally. Good progress has been made in that time, as demonstrated by the SE2004 curriculum model, and establishment of accreditation criteria for U.S. degree programs. At the same time, the development of software engineering has been somewhat contentious and there are only about 30 programs in the U.S. and about 70 worldwide.

Continued growth and health of software engineering education will depend on maintaining a vibrant community of software engineering educators. The SWENET project has fostered that goal, and the remainder of this paper discusses this issue from the perspective of the SWENET project. A primary focus of SWENET is development of educational materials, but the project also seeks to advance the software engineering education community generally.

SWENET is a multi-institution effort, encompassing several of the first B.S. in Software Engineering programs in the United States. However, the project has also maintained a focus on accommodating faculty who teach in other computing degree programs where the need for software engineering coverage is high, but the available class time for these topics is much lower.

SWENET ACTIVITIES

Much of the effort on the SWENET project has been devoted to creating a collection of curriculum materials. These materials have been organized into a course modules with a fixed structure anchored to an existing framework.

The project began shortly after the Guide to the Software Engineering Body of Knowledge project (SWEBOK) [1] had provided one perspective on the discipline, so SWEBOK provided the initial framework for this project. The module categories in the prototype web site – design, process, quality, and requirements – corresponded directly to major focus areas of SWEBOK.

More recently, the Computing Curriculum in Software Engineering (SE 2004) [2] has become available and influenced the development of the SWENET project. SE 2004 has given rise to a more detailed body of knowledge for education. This software engineering education body of knowledge (or SEEK) has the advantages of (a) relating directly to the mission of SWENET, and (b) providing a more structured and focused taxonomy. SWENET has been adjusted to use the SEEK areas and topics to structure the modules and to help focus the module development effort.

SWENET has also included several workshops to promote interaction among faculty with software engineering education interests. In 2004, a workshop was held at Rochester Institute of Technology focusing on approaches to adding software engineering content to degree programs. This workshop addressed a range of options including complete software engineering degrees, minors in software engineering, and adding coverage of software engineering in other degree programs such as computer science.

In summer of 2005, a workshop is being held at Milwaukee School of Engineering to allow faculty to work together on curriculum materials development, and to discuss issues in teaching various topics in software engineering. The presentation for this paper will discuss the results of this workshop.

Both the curriculum development efforts and the workshops have attracted substantial interest among software engineering educators. In looking ahead, it will be important to continue efforts of this type.
FUTURE DIRECTIONS

The NSF funding for SWENET will end in late 2005, so this is the right time to look at alternatives for continuing and expanding this effort. Some of the issues relevant to this planning are:

SE 2004 implementation - The publication of the SE 2004 curriculum model took place within the time of the SWENET project. Assuming general acceptance of the model, it would be natural to use SWENET to move toward having a full set of sample materials that would support implementation of a BSSE degree program.

Continued materials development - Independent of the opportunity presented by SE 2004, there is a broader question of how to continue the effort to develop SE course materials. For long term success, this needs to be an extended effort with a committed community of participants.

Case study development - The course materials included in SWENET contain data and examples. But there is still a pressing need for more extensive case studies that can be used to provide students with a better understanding of the full software life cycle. It is particularly important that materials that work with a realistic size system be developed.

Making software engineering education development visible - A core community of software engineering educators is well-established, and maintains a reasonable level of interaction. However, there are a substantial number of software engineering programs whose faculty members do not interact regularly with faculty members from other programs. In addition, there are many people teaching software engineering courses who are not connected to this community at all. It is important to provide continuing opportunities for these faculty members to participate.

Coordination of efforts - There are other efforts underway to produce curriculum materials relevant to software engineering. Over time, it would be helpful to coordinate these separate efforts. In addition, as this paper is being prepared, there is discussion of re-organizing the software engineering education efforts within the IEEE Computer Society Technical Council on Software Engineering. SWENET could become part of that effort.

Faculty workshops - SWENET supported two summer workshops related to software engineering education. There was strong interest in both of these workshops, and the option of holding additional workshops seems attractive.

Online presence - The SWENET results are currently available on the project site (www.swenet.org). If this site is to remain viable, there is a need to review what it provides and expand its facilities, if that would be useful for the software engineering education community.

This presentation will address issues related to these topics. Participants in the session will also be asked to provide input on future directions for the project.

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REFERENCES
