

ASSESSMENT OF FOREST PRODUCTS UNDERGRADUATE EDUCATION IN THE UNITED STATES

Abstract. Traditional Forest Products/Wood Science programs have been curtailed and/or merged into other programs at many universities during the last 10 yr. Current economic challenges throughout the nation are continuing this trend. This trend is somewhat alarming when one considers the implications for education and development of the next generation of scientists in this very critically important field. If proper training programs and adequate professionals are not available, the conservative, wise, and perpetual utilization of renewable natural resources could be compromised for future generations.

INTRODUCTION

Wood is a key raw material worldwide. Its continued efficient and effective use depends upon ongoing development of scientists and engineers educated in wood and cellulosic science. Given the trend of declining enrollment in university programs dedicated to Forest Products/Wood Science (FPWS) education, the development of future scientists in this critical field appears to be at risk. The importance of actions to ensure vitality of the FPWS field is accentuated by the reality that products created from trees are associated with very low environmental impacts in comparison with alternative materials, due in part to the natural dynamics of tree growth and wood production. This can be summed up in a simple analogy as provided by Dr World Nieh: *“A tree is a factory that manufactures a renewable material (wood) with a combination of greenhouse gases (carbon dioxide and water) and energy from the sun.”*

A declining trend of undergraduate enrollment in traditional FPWS programs at universities across the US and the curtailment, elimination, and merging of such programs is well documented (Lyon and Barnes 1985; Critical Issues Committee Task Group 1992; Lyon et al 1995; Barnes 2007; Shupe 2009). Given this trend, a national visioning and needs assessment workshop and strategic planning session was convened in December 2009.

The intent of this workshop was to gather leaders from the forest products community (academic, governmental, industry) and develop a plan to educate and/or train the next generation of spe-

cialists in this critical field. The workshop was sponsored by the USDA Forest Service, Forest Products Laboratory and held on December 3-4 at the Forest Products Department on the campus of Mississippi State University located in Starkville, MS. Twenty-five professionals from academia, governmental agencies, and industry representatives attended this workshop and strategic planning. This 2-day event explored the past and current state of FPWS educational programs and crafted a plan for future programs. Due to the diversity of participants, a very productive dialogue ensued that addressed many practical issues and challenges facing not only educational institutions, but also employers requiring wood science expertise.

OBJECTIVES

The objective of this initiative was to develop a comprehensive summary and evaluation of the current forest products educational programs and how to improve them on a national level to ensure development of the next generation of scientists. Specific objectives were to:

1. *Evaluate* current and future needs for forest products undergraduate curricula and education strategies;
2. *Identify* key issues, purposes, goals, and objectives of future education content and delivery;
3. *Develop* the elements of a baseline document for forest products-related undergraduate education; and
4. *Determine* the collective action steps and paths for moving forward to implement education strategies.

METHODOLOGY

A strategic planning session was directed by Dr Mirja P. Hanson of M.P. Hanson Associates, Inc. This was an open forum in which the group discussed different aspects of past and current programs and then small groups were given assignments to create future plans. All of this information was collected and Dr Hanson then developed a working summary of the workshop/planning session. Segments of the workshop are represented in this summary report and the entire strategic plan can be found on the SWST web site.

RESULTS

There was common agreement among participants that new and creative ways are needed to recruit and educate students in FPWS disciplines. There was agreement as well that the industry also needs to be engaged in subsequent planning to ensure that sufficient numbers of graduates have the skills necessary to contribute to the future product and process development and management. As part of this discussion, the current status of the undergraduate educational programs in the US was explored and several trends were identified. These included the following.

Industry Trends

- A. Public policy is increasingly impacting the marketplace due to growing pressure on public resources
- B. Sustainability thinking and “green” strategies have become mainstream priorities in the private and consumer sectors
- C. The industry is experiencing major shifts due to globalization, technology, competition, and changing demand for wood
- D. An unfavorable image of the forest products industry is negatively impacting recruitment of the next generation of professionals

Education Trends

- A. Skill sets of graduating professionals are not aligned with the needs of industry employers and partners

- B. University silos, tuition, rules, and faculty incentives complicate efforts to quickly and effectively respond to student and industry needs
- C. Traditional recruiting barriers and a negative industry image are inhibiting attraction of students
- D. Education strategies are not currently in synch with preferences and needs of millennial generation students and professionals

From these identified trends, recommended strategies were developed based on identified expertise and competencies needed by professionals in the forest product industry over the next 5-10 yr. Identification of employer needs was based in part on the common view that within the forest products industry, there will be a shift away from monolithic organizations that need people with mainly technical skills toward a multidisciplinary organization that needs people with strong and wide-ranging general skills, core technical knowledge, and a dedicated interest in forestry. It was agreed that in the future, employers are likely to hire people with highly specialized, technical skills on an as-needed basis. In accordance with these views, a need for educating professionals in other disciplines with the critical and basic wood products knowledge to work in the industry was identified. This could be accomplished by offering:

- Program minors in wood products
- Certificate programs
- Technical electives

Based on the information collected, priority directions were established for a national approach to forest products education in the US. Six distinct areas and steps were defined in the sessions that were used, in turn, to create a roadmap for developing a system to educate future leaders and educators in the forest products industry. The six areas are:

1. Direction A: Transform industry image
Engage in marketing and branding to promote the forest products industry as green,

global, innovative, and significant. Proactively improve the industry image, defend markets, and take steps to attract a new generation of professionals.

2. Direction B: Innovate in student recruitment
 - a. Attract more students to enter the forest products field and education programs that prepare them for successful careers.
 - b. Improve recruitment through targeting key audiences and reaching them through multiple means and gateways.
3. Direction C: Restructure forest products professional education

Restructure and revamp the undergraduate forest products curriculum to align with the needs of the emerging forest products industry.
4. Direction D: Expand wood education to nonmajors

Appeal to a broader audience and offer wood/forest products education to professionals in other disciplines including teachers, managers, engineers, architects, builders, chemists, arborists, and others who are key players in the industry and community.
5. Direction E: Incorporate real-life experience

Require real-life industry experience within formal studies by expanding and diversifying opportunities for students to acquire expertise through problem-solving and applied learning in public, private, and community work situations.
6. Direction F: Update education and communication methods

Modernize teaching and communication methods to appeal to next-generation students, hold attention, foster retention, and assure an accessible and effective forest products education for the global industry.

CONCLUDING REMARKS

The workshop and strategic planning event described here provided a valuable first step to addressing needs for change in FPWS undergraduate education in the US. The diversity of organizations represented in the workshop and

associated strategic planning session enhances the credibility of findings, providing a firm foundation for further discussion.

The workshop summary document has been widely circulated among professional organizations and institutes of higher education in the US such that each can utilize its information to the greatest extent possible in their respective organizations.

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