SUPPORTING SOUTH AFRICA'S ECONOMIC DEVELOPMENT THROUGH UNIVERSITY-INDUSTRY LINKAGES FOR WOOD PROCESSING EDUCATION

University of British Columbia, Stellenbosch University and Nelson Mandela Metropolitan University

1. The Partnership

With 186 wood processing plants employing more than 46,000 people, the wood processing industry is a key economic activity in South Africa. Its low start-up capital barriers and suitability to small-scale production in rural areas make it a promising sector for the economic growth of the country. But, since the early 2000's, prospective students did not consider positions in the wood processing industry attractive and, as a result, enrolment rates in wood processing programs have been low, affecting the capacity of the industry to recruit qualified staff and that of higher education institutions to update their programs.

It is in this context that a review of the degrees offered by South African higher education institutions in the field of wood processing was conducted. The review led to recommendations to create a new undergraduate degree in the science and technology of wood products manufacturing with a focus on the design and manufacturing of secondary wood products[1]. It also recommended that this new program be modelled on highly successful programs in Europe and Canada, including the program and approaches of the Centre for Advanced Wood Processing at the University of British Columbia (UBC).

LEARNERS IN THE FURNTECH BUSINESS INCUBATOR PROGRAM STUDY TECHNICAL AND SMALL BUSINESS SKILLS FOR THE FURNITURE INDUSTRY. Photo: University of British Columbia

The Stellenbosch University (SUN) chose to contact UBC because of its close linkages with both the primary and secondary wood processing industries. Initiated in 2004, their partnership extended beyond the two initial partners to include the Nelson Mandela Metropolitan University (NMMU), wood processing industry representatives and relevant South African government agencies like the Department of Trade and Industry and the Ministry of Education.

AUCC
Association of Universities and Colleges of Canada
Association des universités et collèges du Canada

IDRC | CRDI
International Development Research Centre
Centre de recherches pour le développement international

Canada

LEARNERS IN THE FURNTECH BUSINESS INCUBATOR PROGRAM STUDY TECHNICAL AND SMALL BUSINESS SKILLS FOR THE FURNITURE INDUSTRY. Photo: University of British Columbia

The dual purpose of the six-year initiative was to develop university-level programs capable of training the managers and technical industry workers needed to make the South African wood processing industry more competitive and to enhance the capacity of participating South African higher education institutions to deliver educational programs in secondary wood processing and make adjustments to curriculum and timetables at SUN to allow for the delivery of a new BSc Forestry (Wood Products Science). This included the development of Internet-based course materials and of new pedagogical approaches. The project also sought to enhance awareness of and access to the educational courses developed through the project, both within South Africa and more broadly throughout Southern Africa.

2. Ways of Working

The partners adopted a collaborative methodology for the implementation of the project. Ongoing consultative processes took place on a regular basis by email, Skype or telephone. Partners collaborated to make incremental adjustments to the work plan and adapt to emerging needs. The most important task was the development of new courses and updating of existing courses. The UBC faculty members ensured that the course contents were relevant to the needs of the South African students and industry partners through visits to 23 factories in South Africa, the participation of undergraduate and graduate students from both UBC and SUN in data collection for the development of course case studies, an assessment of the training needs of the industry, a gender-based analysis of the South African wood industry, technical research and the development of multi-media materials. In addition, the effectiveness of e-learning as a delivery method for training industry learners was tested. A South African industry advisory board reviewed and commented upon the materials developed further ensuring their relevance.

The newly developed courses were offered to mixed groups composed of both full-time students and industry learners. The blended e-learning format developed included web-based course elements containing theoretical principles combined with practical hands-on sessions in which learners applied the knowledge gained. This format was adopted based on the preliminary tests of e-learning that found that the combination of an e-learning course with a practical component greatly enhances the learning of students and their satisfaction with the education received. It was also found to be an effective method for enhancing the exchanges between full time students and industry learners. Through the development of the courses, the students and faculty members from both countries took part in exchanges that were key in learning about practices in both partner countries.

The partners promoted gender equality within their sector through featuring women in leadership positions in the case study materials developed to support the delivery of the various courses and through the dissemination of the results of their study on gender issues in the South African wood products industry to relevant partner organizations. The discussion of gender issues in the wood processing industry was new to all partners and there is now greater consideration of these issues at both partner universities.

At last, created as part of the implementation processes of this partnership project, the Consultative Forum for the Stellenbosch University Wood Products Science Program allowed the university, industry and relevant government ministries to combine their efforts toward the improvement of the quality of education in the wood-processing sector.

3. Results

The partners achieved the expected results and reported two unexpected results: the design of a course on furniture design in collaboration with Emily Carr University in Vancouver and the establishment of new research collaboration between UBC and SUN.

IAIN MACDONALD (UBC) AND JOHN MORTIMER FROM STELLENBOSCH UNIVERSITY VISIT KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, GHANA, IN 2009.
Photo: University of British Columbia

Enhanced Capacities to Deliver Relevant Programs

At SUN, the restructured BSc in Wood Products Science includes six new digital courses and at NMMU the National Diploma and BTech Programs in Wood Technology use digital materials in six of their courses on secondary wood processing. Some of the materials developed are now utilized as a foundation for courses offered to the industry managers and technicians. The curriculum now includes discussion of environmental issues and impacts. The improvements to the university programs achieved through this partnership promoted the strengthening of the value-added wood products industry, a great contribution to the creation of markets for sustainably managed plantation timber.

Program enrolments are growing, especially among industry learners at SUN and a marketing plan for the courses has been developed, to further increase enrolment. Four new teaching staff have been hired at SUN and one at NMMU. The teaching exchange visits have enhanced teaching capabilities of four South African course instructors.

New Collaborative Relationships

Close links have been fostered between Stellenbosch University and industry through cooperation on the design and marketing of the improved programs, lending of equipment by the industry to the universities and various consultative processes to determine the best way to ensure that the courses offered respond to the needs of the industry both in terms of content and delivery methods. The provincial government of the Western Cape has created a Furniture Initiative to support the industry, and the Department of Trade and Industry is investing the equivalent of 400 000 CAD to create a Furniture Centre of Competitiveness at Stellenbosch. These closer linkages forged with the industry through this process have opened up new employment opportunities for graduates of these programs.

One unexpected result of this partnership was the collaborative development and testing of an industry e-course on furniture design, with Emily Carr University of Art and Design, Vancouver. In addition, four furniture design workshops were held, attracting over 60 learners. This e-learning course was made possible through additional funding from the Government of Western Cape and from the South Africa Forest Industries Education and Training Authority (FIETA), a clear message that these two entities believed in the value of this initiative.

Increased effectiveness of UBC Centre for Advanced Wood Processing

The Canadian partner university also benefitted from the initiative: new approaches to the delivery of education and training in secondary wood processing were developed and contributed to the Centre for Advanced Wood Processing to become much more effective in meeting its mandate as a national centre for education and training in Canada. In addition, the partnership, which provided UBC with additional experience in international cooperation, resulted in joint research projects and publications and more frequent student exchanges between Canada and South Africa.

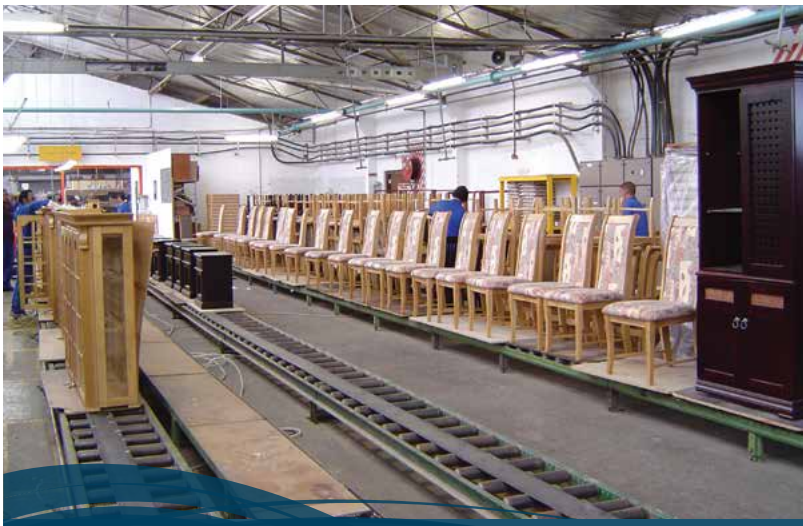
4. Innovative Practices: Strengths and Challenges

A collaborative relationship based on mutual learning was established. At the onset of the project, the partners adopted a very strong focus on the needs of the South African wood processing industry and higher education institutions engaged in preparing students to work in that sector. Although SUN was interested in accessing the UBC expertise, the relationship evolved beyond a mere North-South transfer of knowledge; it was based on an interest to learn from both sides. In the end both SUN and UBC benefitted from this partnership that successfully established strong linkages between curriculum development, outreach to the industry and applied research to inform the development of new or revised courses.

The project adopted an inclusive and proactive approach to knowledge production and utilization. A broad range of stakeholders took part in the production of knowledge and the project results were enhanced through the integration of the new knowledge into the contents of the various courses and their delivery methods.

The strategy of involving a wide range of stakeholders produced results beyond the institutions involved to reach other industry partners. For example, the pulp and paper industry sponsored some of the participants in the wood processing courses. This sector was not originally anticipated as a target market for the courses.

The main challenge experienced by the partners was the project funding rules that did not allow for the appropriate compensation for the time spent by South African faculty members and thus limited the amount of time that they could devote to the project. The partners coped with this limitation through the adoption of a more flexible work schedule.



A FURNITURE FACTORY IN THE CAPE TOWN AREA, SOUTH AFRICA.
Photo: University of British Columbia

5. Looking Forward

The way the partners collaborated strengthened the relevance and sustainability of the results achieved. As a result, when the project ended the industry was sending an increasing number of its staff to these courses and the new investment by the South African universities and relevant industry and government agencies indicate renewed faith in these universities' training programs.

This strategy of focusing on education first will increase the opportunities for research and development in the future: graduates will understand the need for research and will be able to draw on their connections with higher education institutions to develop and implement improvements to their industry's processes.

Finally, new academic research collaborations between UBC and SUN faculty have emerged and are currently being pursued, as well as a similar partnership agreement involving the Canadian and South African partners and a Ghanaian higher education institution.

Contact:
Iain Macdonald, Managing Director, University of British Columbia Centre for Advanced Wood Processing, Iain.Macdonald@ubc.ca.

[1] Primary wood products include lumber, paper or semi-finished wood products produced by sawmills and pulp mills, while secondary wood products are value-added products like furniture, cabinets, paneling and decorative items.