USING QUALITY INDICATORS TO CREATE WORLD CLASS CURRICULA:
FROM CONCEPT TO APPLICATION

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Abstract: In this paper, Curriculum Quality Indicators (CQIs) are described including what they are, how they are developed, and how they can be used to help create curricula that meet world class employers’ needs. The world class workplace is presented as a frame of reference for curriculum quality. Next, details about how a set of CQIs was developed is described. The application of CQIs to a comprehensive curriculum project at Helsinki Polytechnic in Finland is the detailed. Several implications are offered for CQI use in vocational higher education curriculum development.

OVERVIEW AND PURPOSE

One particularly vexing problem associated with VET curriculum design and delivery is the selection of curriculum outcomes that are of value to all stakeholders. This is of major importance for curricula that focus on preparing people for employment in high performance workplaces, world class workplaces, and other workplaces where every work day brings with it another change, a different challenge, and an opportunity to learn something new. In these environments, employees may work in self-directed teams and solve complex problems extending beyond traditional country and cultural boundaries (Finch & Dettmann, 1999). This continuously evolving work environment reflects what Spady (1994) refers to as a transformational zone where employees are expected to demonstrate complex role performances in real-world contexts. Traditionally, work performance of this type has been considered beyond the scope of formal education. But with the evolution of more complex work environments where complex, multifaceted demands are placed on employees; educators can no longer continue to just provide their students with the development of “discrete content skills, structured task performances, and higher-order competencies (Spady, 1994, p. 21). When Curriculum Quality Indicators (CQIs) are used as part of the curriculum creation process, they have the potential to help move educators and others into transformational zones where they can focus their curricula on today’s and tomorrow’s increasingly complex world class work environment. The purpose of this paper is to describe
Curriculum Quality Indicators: what they are, how they are developed, and how they can be used to help create curricula that meet world class employers’ needs. First, the world class workplace is presented as a conceptual frame of reference for curriculum quality. This is followed by a description of how a set of CQIs was developed. Then, the application of CQIs to a comprehensive curriculum project at Helsinki Polytechnic in Finland is described. Several implications are offered for CQI use in vocational higher education curriculum development.

CURRICULUM QUALITY INDICATORS: CONCEPTS

A Frame of Reference for Curriculum Quality

Over the past several decades, many businesses and industries throughout the world have been faced with the need to change from traditional workplace arrangements to workplaces that compete head-to-head with world class competition. With reference to the United States, the National Alliance of Business (1999, 1) noted, “rapidly changing technology, the globalization of markets, and other changes sweeping through the U.S. economy mean that our long held assumptions about the economy and business are changing.” In response to a need to be more competitive, numerous organizations have shifted focus from a traditional workplace model to a world class workplace model. This shift has caused employers and their employees to change the ways they are organized and function. Changes have occurred internationally in fields ranging from hospitality and tourism to “fast” food and other areas of retail sales, however, they have most dramatic and far reaching in the manufacturing and information technology (IT) fields.

What is the World Class Workplace? An extensive examination of Internet sites and text-based publications resulted in at least a partial answer to this question (Finch & Dettmann, 1999). Definitions may vary from employer to employed depending on what is produced, provided, or sold. However, the concept and its application are perhaps most important than the name. The world class workplace can be more transparent, by serving as the ultimate objective of a long term TQM effort or the real reason behind seeking registration as an ISO 9000 organization. It can also take the spotlight, such as a company or organization that prepares a mission statement announcing “we meet customers’ needs worldwide” or “we prepare our graduates for employment in world class businesses and industries.” Lacking a simple definition, it is perhaps best to offer several commonly used descriptors. Thus, the world class workplace:

• can be found in a variety of workplaces including but not limited to those engaged in manufacturing, production, marketing, distribution, sales, service, education, and training.
• can be integrated and correlated with TQM and/or ISO 9000 activities.
• depending on the focus of organization, can include just-in-time delivery, performance specifications, mass customization, continuous quality improvement, and similar types of activities.
• can engage employees in flexible work assignments; group planning, problem solving, and decision making; team building, and similar types of activities.
• expects employees to utilize a wide range of interpersonal, academic, and technological skills; understand what occurs in the workplace as a whole; and demonstrate similar types of talents.

Ultimately, the world class workplace makes creative and extensive use of numerous human resources, materiel resources, quality and productivity activities, and related strategies to systematically maintain a competitive edge in the global work environment.

Evolution of the world class workplace may be found in many work fields but change has been perhaps most graphic in the manufacturing field where lean production has displaced
traditional mass production processes. Essentially, lean production has as its goals lower cost and higher quality production. However, it is the production process that achieves these goals. Included in the lean production setting are just-in-time delivery of parts, use of performance specifications for parts, an assembly line that any worker may stop at any time and, most important, focus at all production levels on continuous improvement. In some cases, the assembly line form of production has been completely eliminated (Ellegard, Engstrom, & Nilsson, 1991). Lean production workers function as members of production teams, have flexible work assignments, and are expected to initiate improvements to production rather than merely reacting to problems (Womack, Jones, & Ross, 1990). Unlike the mass production employee, the lean production worker is expected to work as a team member, perform a wide variety of activities and tasks, participate in group problem-solving sessions, and otherwise contribute to the total production process and the quality outcomes of that process. This employee is expected to be proactive, have a grasp of the entire production process, and have a solid grounding in basic skills (i.e., mathematics, science, communication). Mastery of these basic skills enables the worker to more readily adapt to changes in the workplace. Realistically, this new type of worker should arrive at the workplace with these basic skills, as well as others such as interpersonal relations that contribute to success in the lean production environment. In a number of cases, lean production has evolved into mass customization; an organic organizational structure that has enabled businesses and industries to achieve “low costs, high quality, and the ability to make highly varied, often individually customized products” (Pine, Victor, & Boynton, 1993, p. 111). Mass customization has made it possible for more and more companies to compete on the world marketplace.

CQI Description and Development

Given the increasing complexity of the workplace and the evolution of its focus from local, state, and national to world class competition, a need exists to extend beyond the strict reliance on curriculum development methods that identify important tasks and skills. The complex nature of workers’ roles in the world class workplace demands that VET curricula be designed to prepare graduates so they will function in new and complex ways. Briefly stated, CQIs may be considered as the “super glue” that binds curriculum components together such that quality can be assessed both comprehensively and in the long term. Indicators can assist curriculum developers to obtain a macro view of the curriculum and thus see how the curriculum they are developing or revising can best contribute to students’, graduates’, and employers’ expectations (Finch, 1993). One example of CQI development began over 20 years ago when a book on curriculum development was first being prepared. At that time it was felt important to include in the book a set of overarching qualities that would aid curriculum developers in going beyond the process-oriented goals found in most traditional curricula. As newer editions of the book were prepared, the qualities were examined and refined based on input from curriculum developers and others in the US and 10 other countries (Finch & Crunkilton, 1999). When working during the fall of 1993 with developers of curricula at Jyväskylä Polytechnic (at that time a new vocational higher education institution in Finland) the list of qualities was expanded and quality indicators were prepared. Persons at the polytechnic who used the CQIs felt they aided in focusing on more critical curriculum concerns and outcomes. Subsequent use of the CQIs in interviews with persons in VET institutions in four different countries further supported the indicators’ value. Although refinement continues, the CQIs constitute a useful way of determining what curriculum quality should be and how it can be implemented.

1 A list of CQIs that link with the world class workplace may be obtained from Curt Finch <crfinch@vt.edu>.
CURRICULUM QUALITY INDICATORS: APPLICATION

Helsinki Polytechnic

The Finnish higher education system consists of polytechnics and universities. At the beginning of the academic year 2000-2001 the number of permanent polytechnics in Finland will rise up to 29. Helsinki Polytechnic was established in 1996 by merging eight existing institutions of higher education maintained by the City of Helsinki. The new organisation was officially launched 1 January 1999 when these separate institutions were abolished. The process was completed by adding four new institutions, the last two in August, 2000. All these institutions, at present integrated, had long traditions in teaching, with experience going back many decades. They educated competent engineers and nurses, among others. Before the integration, guidelines for developing curricula followed traditional curricula theories; for example, in the field of technology they were close to German Lehrplan and in the social services Anglo-Saxon traditions. As one of the largest polytechnics in Finland, Helsinki Polytechnic has over 6,000 full-time students and close to 900 part-time students. Helsinki Polytechnic has three faculties: Technology and Transport, Health Care and Social Services and Cultural and Services. Helsinki polytechnic awards professionally orientated higher education degrees, which take 3.5-4.5 years to complete (140-180 credit units). The structure of all degree programs consists of basic studies (common and discipline-specific), professional studies, practical training, language studies, elective studies and final project (Bachelor’s thesis).

The Faculty of Culture and Services offers studies in seven (7) degree programs from Beauty Care and Catering Services to Media, from Drama and Theater to Pop/Jazz and Classical Music. At the Faculty of Health Care and Social Services Helsinki Polytechnic is proud to offer students studies in all the degree programs available at the Finnish polytechnics. Studies in fifteen (15) degree programs include e.g. Nursing and Health Care, Occupational Therapy, Optometry and Oral Hygiene. The five (5) degree programs at the Faculty of Technology and Transport include Electrical Engineering and Telecommunications, Mechanical Engineering, Civil Engineering, Automotive Engineering and Laboratory Sciences (Helsinki Polytechnic, 2000).

Helsinki Polytechnic intends to be internationally acclaimed for the high standards of its educational programs whose students become employed immediately after graduation. The strategic aims of Helsinki Polytechnic consist of enhancing the polytechnic’s international activities, improving the level of professional expertise, increasing the cooperation both inside the organisation and with its partners, and developing the urban culture in Helsinki.


The institutions of higher education that formed Helsinki Polytechnic brought with them different traditions and approaches to developing curricula. Thus, a project was launched in 1999 to determine common aims and strategies for all the curricula and to improve their quality. The purpose of this project was to ensure that each curricula for each of the 26 degree programs would offer students the necessary skills and capacities to work as solid experts of their respective fields in current and future international labor markets (world class workplace). A project team was appointed to take the responsibility for organizing the project. Also, one of the lecturers in each degree program was put in charge of a working group formed to examine and revise that curriculum. Assigned lecturers led groups of 3 to 6 other lecturers. In total, close to 180 lecturers were actively involved in the project. The main working methods during the project consisted of systematically
organized discussions between staff members at the polytechnic, its different units, students, and partners in the working life.

As the project began, it was important to form a common view on the notion of a curriculum. The basis for this was the presupposition that a curriculum should be the fundamental framework for all activities within the polytechnic. Thus, this does not mean only writing down the curriculum but also judging its effective implementation and conducting continuous improvement. From the beginning, the aim was to create common terms and concepts to use for all the curricula without forgetting the special features and expertise of each degree program. This was essential for realizing the requirements set by future working life and enhancing the possibilities to meet them.

Next, it was necessary to define three strategic aims for developing the curricula. They included:

1. The curricula will meet the requirements set by future’s working life and area of operation and act according to them. Thus, the critical factors for attaining this involve: activities based on ethics, responsibility and commitment; team work skills and know-how; expert knowledge; information processing; sustainable development; entrepreneurship and internationality.

2. The curricula will be based on solid expertise of each field and they provide students the means to work as experts. This involves basing the curricula upon the most recent and essential information of each field, accentuating the logic in contents and continuity, and integrating theory with practice.

3. The curricula will be implemented according to the notion of learning particular to Helsinki polytechnic. This implies that each student has the possibility to create an individual curriculum based on his/her earlier knowledge and skills. This requires the continuous development of student and staff skills and knowledge and methods of teaching that emphasize active learning.

During the process of refining these strategic aims and planning the continuation of the whole developing project, the Curriculum Quality Indicators (CQI) were used as reference to ensure that the curricula under development would provide the students with the necessary skills and knowledge needed in the world class workplace. Additionally, evaluation of the project’s first phase was and the forthcoming phases will be based on the CQIs.

Each curriculum should achieve the stated strategic aims by year 2004. The progress will be estimated annually as a part of the continuous development process in cooperation with the working life, students and researchers of the future at different fields with the help of the Curriculum Quality Indicators. In the first phase of the project, common ground was established to enable the continuous development of each curriculum. The process was carried out through a set of questions formed to ensure that each curricula would meet the requirements set by the World Class Workplace. The next phase will take place in 2000-2001. The work will proceed within the framework created during the first phase and emphasis will be on the strategic aims defined according to the needs of each degree program specified during the first phase.

Elaboration of the curricula was based on a dialogue between the project team and the working groups set for each degree program that used the Curriculum Quality Indicators as a starting point. The project team and all the lecturers who were in charge of the development work took part in these discussions. Project work proceeded through a series of questions and reasoning using the theme areas for the Curriculum Quality Indicators as organizers and the following issues/questions as focal points:

**Basic Decisions, Needs, Students, Emphasis on the Future**

1. What skills and abilities does the future’s working life and area of operation expect of an expert in a field, and why? What does a student expect of his/her education, and why?
2. What kind of curriculum meets these expectations, and why?
3. How can an individual curriculum be implemented, and why?
   Outcomes, Flow and Linkages, Application, Students, Value Added Emphasis
4. How does practical training fit in the curriculum, and why?
5. What is the structure of a curriculum like, and why?
6. What kind of expertise does a curriculum require of the staff, and why?
7. What will be the major changes in the curriculum, and why?

The CQI theme areas and world class emphasis will be assessed further and linked more closely to the curriculum development process during the project’s next phase.

The project team evaluated the achievements of the first phase and discovered the following:

- Persons involved in the project achieved a comprehensive picture of different degree programs at the polytechnic and found new ways to cooperate. A genuine development work process begun.
- It was possible to create a new, common strategy for developing the curricula that respects differences. A clear framework for developing the curricula was established.
- Persons involved in the project found a common enthusiasm and interest in developing curricula together. An "interactive chaos that creates something new" stimulated new innovations and projects.

In its entirety, the development project strengthened the assumption that curricula can be developed to meet the requirements set by future’s working life only by respecting existing differences between the degree programs, strengthening their expertise and working together. Thus, for an expert organization to succeed in the future, it will not only need solid expertise but also well-established cooperation and multidisciplinary networks that cut across traditional boundaries of expertise.

IMPLICATIONS

Several implications for vocational higher vocational education curriculum development may be drawn from this discussion. First, large scale curriculum development projects need to be planned in advance and for the long term. Advance planning combined with the recognition that change will not occur overnight can go a long way toward developing quality curricula. Second, curriculum change across an entire institution requires active support from higher administration and active involvement by faculty and staff at all levels. If this does not occur, it is likely that faculty and staff will not feel they have ownership of the process or the product. Third, the use of quality indicators can aid faculty members in understanding the macro and long-term aspects of the curriculum. This understanding can, likewise, lead faculty members to view the curriculum as more than a series of subjects taught in one program. Ultimately, however, success in institution-wide curriculum reform can help make the whole institution become more than the sum of its parts.

REFERENCES


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