

Handbook of Curriculum Development



*Education in a Competitive
and Globalizing World Series*

Limon E. Kattington
Editor

NOVA

EDUCATION IN A COMPETITIVE AND GLOBALIZING WORLD

**HANDBOOK OF CURRICULUM
DEVELOPMENT**

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EDITOR

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PREFACE

Curriculum Development can be defined as the systematic planning of what is taught and learned in schools as reflected in courses of study and school programs. These curricula are embodied in official documents (typically curriculum "guides" for teachers) and made mandatory by provincial and territorial departments of education. The primary focus of a curriculum is on what is to be taught and when, leaving to the teaching profession decisions as to how this should be done.

Chapter 1 - The application of the controversial PBL strategy in medical schools was the most widely known major curricular intervention in the last century. As a response to the problems faced within traditional education, Mc Master University in Canada pioneered the 1st complete PBL curriculum in 1969. Nowadays, there are few Western medical schools that don't include some aspects of PBL.

In recent years, PBL effectiveness and research has been a subject of considerable interest and debate. Although the research is still inconclusive, there is good evidence that PBL approach delivers on some very important issues. Process-based research concerned about the theoretical advantage behind PBL; it revealed PBL as a successful attempt to transform the effective learning theories into practical learning experience. Outcome-based research showed wide discrepancy in its results, many studies described PBL as superior to traditional methods in many students' competencies especially in the social and cognitive dimensions; other reviews, however, found more similarities than differences between PBL and conventional approaches' outcomes with no convincing evidence that PBL improve knowledge or clinical performance of the students at the magnitude of effectiveness hoped for with this major intervention.

The author of this chapter, as a PBL graduate and a faculty member in a pioneer PBL medical school in Africa, will reflect on the PBL experience after 40 years of its implementation in medical schools, discuss various controversial issues and debates on PBL, and throw some light on various PBL success/failure factors, explore how can/can't PBL help in preparing the doctor of the future, what are the effective learning principles behind PBL, and the role of the accreditation programs in standardizing the educational processes in medical schools. The author also will critique the available educational research, and discuss the research needs in the current stage.

Chapter 2 - The authors have developed a Model of Formative Situation to Teach Science and Technology. It is intended as a basis for teachers' decisions to achieve quality in teaching; and also a theoretical ground to practically relevant educational research. It

embodies a constructivist view where the fundamental constructs are: students' world, tasks, teacher mediation and intended learning outcomes. The model guided several studies, conducted by us and several collaborators, and was improved in a permanent dialog between the evidences found and our theoretical elaboration.

Further developments led us to develop a Model for Effective Teaching of Intended Learning Outcomes in Science and Technology. This model articulates the contributions of science and technology educational research in the last four decades. It incorporates the research studies made by the authors and fifteen years of field work. The model encapsulates diverse teaching approaches and educational goals. It provides a reading grid of science and technology educational research papers to help teachers in making choices according to specific students' characteristics and learning outcomes. The model also intends to aid teachers in identifying directions for their professional development and to point directions for science and technology educational research.

Chapter 3 - Many higher education faculty members find themselves with the opportunity or requirement to design a new course, or to redesign existing courses or programs. In such situations they have a number of options for how to proceed, but may be unaware of these options. And despite the recommendations and examples provided by organizations such as the Mathematical Association of America, the authors lack objective guidelines for making curricular decisions and for evaluating potential curricular changes. Additional complications are encountered in the hard sciences, where evaluation of hypotheses typically occurs only after rigorous experimentation. With many curriculum experiments resulting in ambiguous or anecdotal data or lacking data whatsoever, the authors are faced with making decisions under a great deal of uncertainty. In this chapter, the authors will discuss five models for curriculum development that are founded on different concepts of the learning experience. Each is unique in its approach and each pairs with different types of learning goals and objectives. Like all curriculum models, these are an attempt to share with students some underlying knowledge structure, a structure that is essentially a mathematical object known as a graph or network. They can be generated through a kind of mind map or concept map and possess complex inter-relations among the components which often require a three-dimensional model to fully visualize. To construct any curriculum then requires that the authors take this complex structure in three spatial dimensions and project it into a single temporal dimension so that students can experience the curriculum over time. This projection is not unique, except for the simplest of knowledge structures. Thus, all decisions about curriculum development become equivalent to a single geometric question: How do the authors choose the best projection from which to view the curriculum? An alternative approach, the one taken in this chapter, is to go beyond a fixed curriculum or static projection to expose students to a hyperlinked curriculum. Rather than hiding the complexity of knowledge and its connections to the students, the hyperlinked curriculum is generated by students under the constraints, guidance, and support of teachers and in collaboration with others. These teachers are in turn supported by each other, linked together by administrators who seek to guarantee appropriate opportunities for all learners.

Chapter 4 - Oral presentation skills are recognised as central professional skills. In a majority of higher education curricula, courses are incorporated that centre on these particular skills. The present chapter starts with a conceptual discussion about oral presentation skills, and an in-depth discussion about the reliable assessment and evaluation of oral presentation skills.

But how can the authors design and develop an effective way to develop these oral presentation skills? It is difficult to find an answer to this question, due to a lack of a clear theoretical framework to guide instructional interventions. The authors introduce such a theoretical framework to understand how oral presentation skills evolve and can be influenced from an instructional point of view. As much as possible, the authors build on the scarcely available research results about the instruction of oral presentation skills. The authors adopt a social cognitive theoretical perspective towards self-regulated learning to develop a theoretical base for oral presentation skills instruction. In a systematic way, the authors link the theoretical base to the teaching and learning of oral presentation skills.

Four sub-processes of the observational learning cycle, derived from the social cognitive view, are put forward. Next the authors describe basic sub-processes of self-regulated learning, the cyclic model of self regulated learning and finally the transition from observation to self-regulated performance.

Chapter 5 - Curriculum materials are critical tools with which teachers plan for and teach science. Rather than using them as written, however, teachers often evaluate and adapt curriculum materials. To effectively engage in this process of curriculum design, teachers need to develop robust pedagogical design capacity, or their ability to identify and mobilize requisite resources, both personal and material, to develop effective learning environments. However, beginning elementary teachers face many challenges in learning to engage in curriculum design for science. They often lack substantial subject matter knowledge, struggle to articulate scientific inquiry in practice, and experience teaching contexts in which science is deemphasized. These factors mediate teachers' interactions with curriculum materials. To explore how elementary teachers learn to engage in curriculum design for science, three beginning elementary teachers were studied longitudinally over their first three years of professional teaching. Results show that the three teachers engaged in a substantial degree of curriculum design, drawing on a myriad of curriculum materials and modifying them to craft their own science curriculum materials. Their curriculum design efforts were influenced by their own views of science teaching, but also by features of their unique curricular contexts. Ultimately, alignment between the teachers' views and the curriculum materials they used, as well as opportunities to engage in iterative cycles of curriculum design with a stable set of curriculum materials, were important in supporting their developing pedagogical design capacities. These findings have implications for the field's understanding of teacher learning along the teacher professional continuum and help inform research on teachers and teaching, as well as science teacher education and curriculum development.

Chapter 6 - This chapter presents the results of a qualitative study conducted at Copenhagen Business School of the possible links between full time graduate students' identity and learning. Based on our empirical findings, the authors argue that students' learning is closely related to their identity construction processes. The authors also argue that since there is diversity in terms of students' identity construction and students' approaches to learning, curricula should be developed to fit the individual learning needs of students. As such the chapter presents a move towards student- and learning centered curriculum development and it aims to inspire faculty and administration within higher education institutions to systematically address issues of identity and learning in their educational programs. The underlying argument is that such focus will help enhance students' learning outcomes and at the same time help them in their creation of professional identities. The

chapter will be of interest to curriculum developers, administrators of higher education, and teaching faculty interested in improving students' learning outcomes.

Chapter 7 - This paper describes a new second-year undergraduate project course in software engineering. The course aims to broaden students' experience, knowledge, and skills. The students worked on six one semester projects. The authors motivate and assess this pedagogy by our pre- and post-findings, and explain the rationale behind it. The outcome revealed that the students had the capability and motivation to engage in solving many complex managerial, organizational, and technical problems with little guidance and supervision. This suggests that they maintained their focus on the system rather than on individual tasks, which facilitated their understanding of the course material and software lifecycle.

Chapter 8 - Five years of service-learning data was explored for this mixed method study 1) describing the importance of integrating academic and social curriculum using subject area and service-learning standards and 2) analyzing the integrated service-learning projects by academic content, curriculum themes, service-learning types, impact on students. Total number of participants included 132 preservice teachers and 3500 students, prekindergarten to 2nd grade. Data for this chapter is comprised of the 129 consenting preservice teachers' service-learning lesson plans, questionnaires, and focus group interviews and 563 student responses, which represent five randomly chosen students from each participating classroom.

Qualitative analysis utilized a starter list of codes for the initial readings of questionnaires, lesson plans, and focus group interviews; rereading and interpretation of the codes was used to create categories of meaning; and finally the categories were transformed into meaningful data by searching for patterns, themes, and regularities as well as contrasts, paradoxes, and irregularities (Delamont, 1992). Quantitatively, the data was entered into SPSS to ascertain the relationship between grade level, type of service-learning project, and what social effect the service-learning project had on the students 3 months later. In addition, a crosstabulation was used to analyze the relationship between service-learning type and curriculum content.

The chapter provides a targeted review of literature describing curriculum standards, service-learning standards, and the rationale for integrating them in teacher education programs and P-12 schools. Findings discuss 1) why social studies and science were the most often integrated academic standards in the 120 lesson plans, 2) the five curriculum theme categories and, 3) the significant impact of the academic and social curriculum on students.

Chapter 9 - This study, conducted with 28 sixth-grade students, investigated the effect of a summarizing teaching program on summarizing skills. The students were grouped as proficient and less proficient students and were presented teaching activities of 8 hours. The aim of this study was to comparatively test the effect of a) giving summarizing education, b) giving expository text (problem solving) education in addition to summarizing education against giving no summarizing education. Three study groups were used in the study: A Control Group (Group C) who were given traditional education, and two experiment groups. Experiment Group 1 (Group E1) was given both summarizing and text structure education, and Experiment Group 2 (Group E2) was given summarizing education. The results of the study show the positive effect of the teaching program on the experiment groups. The groups who were given summarizing and text structure education were more successful than the ones given only summarizing education.

Chapter 10 - Changing times and postmodern perspectives have changed the traditional beliefs about child development knowledge, early childhood learning and curriculum and their relationships. Despite ongoing exchanges about how best to respond to the critique of the developmental knowledge base, few descriptions of how particular educators have reconceptualized their curriculum exist. Employing postmodern views of knowledge, learning, and curriculum, this chapter describes a new narrative curriculum developed by the authors to enact a postmodern early years learning in a typical Chinese context: Story Approach to Integrated Learning (SAIL). It first reflects on the existing early childhood curricula in Hong Kong and the associated problems and challenges. Second, it reviews the literature about the reconceptualization of early years learning and curriculum to seek possible solutions to Hong Kong problems. Third, a brief introduction of SAIL is presented and an example is given to illustrate how SAIL can put postmodernism curriculum into practice. Last, this chapter concludes with a discussion of some of the challenges and future directions relating to the shift from developmental to postmodern practices in the development of early childhood curriculum.

Chapter 11 - To promote STEM (science, technology, engineering, and mathematics) education with American Indian students in grades 5-8, a civil engineering focused curriculum was designed through collaboration among educators, researchers, and engineers. The curriculum was created to introduce American Indian youth to career opportunities in civil engineering, various civil engineering concepts, and the role of civil engineers in the technology driven 21st century. The emphasis of the curriculum is placed on structural engineering, which is a branch of civil engineering concerned with the design and structure of buildings, bridges, and roads. The curricular activities focused on one particular structure - bridges. Through the activities the students engaged in engineering, as well as science, mathematics, and technology.

Chapter 12 - A science curriculum should emphasize the nature of science, and foster the development of scientific habits of mind within the student population. This is particularly important within science content courses designed for practicing teachers, who will teach the subject matter as well as model scientific methods within their own classrooms. Previous science educational research revealed that inquiry-based and active learning strategies in traditional classrooms can result in meaningful student learning, but the translation of these methods in online environments is far less researched. Therefore, the authors focused on science curriculum development in the online environment by which science content, the nature of science, and scientific habits of mind can be conveyed to practicing teachers.

Through numerous semesters (N = 10) and a variety of online science courses (N = 6), our research demonstrated that online science curriculum development proceeds successfully through incorporation of SCALE. The online science curriculum should focus upon Self-directed autonomous activities, Community-based learning, both within an online environment and within the teachers' local areas, Active-learning strategies that move practicing teachers beyond the confines of the computer environment, and Local Environment incorporation for easy access and relevance to individual online learners. The SCALE method allows for interdisciplinary and integrated science curriculum in a variety of online science environments. The resultant content is consistent with the theory of human constructivism, which stresses that "less is more," and it emphasizes meaning over memorization, quality over quantity, and understanding over awareness.

SCALE can be accomplished through autonomous informal activities utilizing teachers' local field sites, history of science investigations, online community discussions, and interdisciplinary topic portals for self-directed research and classroom implementation. Our mixed methodology research investigations indicate that more successful learning occurs within an online science SCALE curriculum. SCALE may also result in more positive teacher attitudes toward online science courses.

Chapter 13 - While the social, political, and employment contexts of practicing archaeology have changed over the past 30 or so years, curriculum structure and content and post graduate opportunities have remained relatively unaltered well into the 1990s. One reason for this is the development of archaeology as an academic, university taught discipline. For over 100 years, archaeology has been a formal academic discipline taught as one of the four classic sub-disciplines of anthropology, and the traditional professional outlet for most archaeologists has been the academy (Michaels 1996:192). However, given how archaeology is currently practiced it has, by necessity, expanded beyond the academy.

Archaeology has changed significantly, not only in method and theory, but with respect to its obligation to help manage cultural heritage in the public interest. As a result, professionals have had to rethink how students are educated and trained in order to meet the new challenges of a century in which the majority of archaeologists are employed outside the academy in governmental and private sector settings (Smith et al.1995; Zeder 1997). It is also clear that students must have both an academic and a pragmatic understanding that heritage resources are nonrenewable and finite and must have complete and substantial documentation; that archaeologists do not have an exclusive right to the interpretation of the past; and that many people besides archaeologists have a vested interest in the past and its material remains.

The need for public support for archaeology demands that students must also be able to demonstrate the discipline's relevance in contemporary society, especially within the contexts of professional ethics and values and competing national and international agendas. Especially in a strained economy, the use of scarce resources must be carefully designed and justified. Students must be able to effectively communicate both within the profession and with the public through written and oral media and to apply archaeological method and theory to issues and problems, some of which might be influenced by factors outside the heritage arena. To deal with the changing demands of the profession two initiatives were undertaken by the Society for American Archaeology (SAA) – Teaching Archaeology in the 21st Century and Making Archaeology Relevant in the 21st Century (MATRIX).

Both the Teaching Archaeology in the 21st Century and MATRIX initiatives grew out of earlier activities undertaken by the SAA. The first was the 1989 “Save the Past for the Future” working conference followed by the second “Save the Past for the Future” working conference in 1994 in which recommendations regarding formal education and professional development were pursued.

Participants in the Teaching Archaeology in the 21st Century initiative made recommendations on how those needs outlined above could be addressed by the undergraduate and graduate curriculum. Central to their mission was the notion that one of the most potent means for combating rapid destruction of the archaeological record was the education of diverse publics about the value and significance of knowledge that could be produced through archaeological inquiry (McManamon 1991). Over time this perspective has expanded to include the idea that public engagement in both research and interpretation is

also essential to preservation. From the outset, the students that archaeologists teach formally were considered a key component of this audience.

Chapter 14 - The paper examines the implications of critical ethnography for curriculum in studies on transnationalism and the internationalization of higher education. It suggests that as universities in Australia are being integrated into the new global system of transnationalism in higher education, particularly with students from the Asian sub-continent, there is a need for re-strategizing in universities in the areas of curriculum and pedagogy to enable transnational learning communities and generate and sustain empowering knowledge networks. There are three main sections to the paper. The first section of the paper focuses on the conceptual framework for the paper by citing the works of James Clifford (1997). The second section examines the internationalisation of higher education in Australia with an analysis based on interviews with transnational students from the People's Republic of China. The final section provides practical conceptual resources for making innovations in education policies, pedagogies and politics through the internationalisation of higher education.

Chapter 15 - Jenkins et al (2006) expanded the discussion of media literacy, arguing for a paradigm shift from a focus on individual expression toward one on community involvement. In addition to the skills traditionally emphasized by media educators, a set of social literacies becomes indispensable as students learn to navigate their way through cyberspace. This paper aims to strengthen the case for the social literacies by arguing for their centrality to twenty-first century civic education. It first describes how the emerging participatory culture is offering abundant opportunities for young people's civic engagement: by promoting open and thoughtful civic discourse, by facilitating the mobilization and organization of collective action, and by encouraging the expression of civic voices through media production. It then argues that in order to take full advantage of these learning opportunities, young people need to acquire the social literacies—in particular, the skills of negotiation, collective intelligence and networking.

Chapter 16 - A rapid and dynamic change in science, technology and social life is being experienced around the world. Nations, which want to adapt themselves to this change and have adopted continuous advancing as a principle, attaches special importance to science education (Ayas, 1995; Ünal, 2003). No doubt, quality of education programs is a determinant in quality of science education. Therefore, it seems that innovative and enterprising changes to be done in science education may become possible if education programs are contemporized.

To raise quality of science education, studies on program development should be continuous and novelties in science and trends in education area should be taken under consideration during this process (Ayas et al., 1993). In addition, failing aspects of current and previous programs should be determined and faults, which have occurred in the past, should be discovered within program development process. Accordingly, investigating the programs, which have been developed in the historical process, from the point of view of planning, practicing and evaluating has an important role in improving quality of the programs to be developed in the future.

Due to this reason, the science programs, which have been developed in Turkey, are presented in this study in chronologic order with a criticizing point of view by considering program development processes.

Chapter 17 - The changing context for quality assurance and enhancement in education in the UK and elsewhere presents both an opportunity and a challenge because it offers the

possibility of integrating sustainable development into all quality systems. One consequence is the alignment of a number of policy developments to provide a more coherent and integrated approach to performance management and relevant outcomes in our education institutions. More fundamentally it raises the following questions:

- Should sustainable development be an integral component of all quality assurance processes and standards in our education systems?
- Does education which embraces sustainable development contribute to a transformative learning experience and thus better performance by learners?

This paper assesses current developments in quality assurance and enhancement in the UK's education sector and how this evolving agenda is approaching the question of integrating sustainable development within it. It also questions how far current processes of promoting sustainable development might contribute to student performance and to the development of good practice in teaching and learning.

Chapter 18 - This study aims to explore the curriculum reform initiated in 2005 in the secondary level education in Turkey with special reference to its impact upon *Anatolian high schools*, highly competitive schools in Turkish education. A large-scale survey was administered to 170 teachers and 851 students in order to determine their perceptions of this recent curriculum implementation. In the analysis of the survey questionnaire, both descriptive analysis and content analysis were employed. Findings indicated that despite disagreements in the perceptions of teachers and students on some issues, both groups of participants had a favorable opinion on many aspects of the curriculum innovation. It is suggested that the findings be evaluated within the overall framework of the current education system.

Chapter 20 - Media education has been around for quite some time in the West (Bazalgette *et al.*, 1990), but only started to gain acceptance in Asia (Cheung 2005), particularly in Hong Kong, in the last decade. Recently, it has been gaining more attention in Hong Kong thanks to the curriculum reform in which Liberal Studies will become one of the four core subjects to be taken by students in the New Senior Secondary Curriculum and media is one of the six themes to be studied in the subject of Liberal Studies. This paper argues for the need for teaching media education in liberal studies and shows the many connections between the two subjects that facilitate this integration.

Chapter 1

**“CURRICULUM DEVELOPMENT IN MEDICAL
EDUCATION: A REFLECTION IN THE 40 YEARS -
EXPERIENCE OF PROBLEM-BASED LEARNING (PBL),
THE EDUCATIONAL RESEARCH AND THE
ACCREDITATION PROGRAMS OF MEDICAL
SCHOOLS”**

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ABSTRACT

The application of the controversial PBL strategy in medical schools was the most widely known major curricular intervention in the last century. As a response to the problems faced within traditional education, Mc Master University in Canada pioneered the 1st complete PBL curriculum in 1969. Nowadays, there are few Western medical schools that don't include some aspects of PBL.

In recent years, PBL effectiveness and research has been a subject of considerable interest and debate. Although the research is still inconclusive, there is good evidence that PBL approach delivers on some very important issues. **Process-based research** concerned about the theoretical advantage behind PBL; it revealed PBL as a successful attempt to transform the effective learning theories into practical learning experience. **Outcome-based research** showed wide discrepancy in its results, many studies described PBL as superior to traditional methods in many students' competencies especially in the social and cognitive dimensions; other reviews, however, found more similarities than differences between PBL and conventional approaches' outcomes with no convincing evidence that PBL improve knowledge or clinical performance of the students at the magnitude of effectiveness hoped for with this major intervention.

The author of this chapter, as a PBL graduate and a faculty member in a pioneer PBL medical school in Africa, will reflect on the PBL experience after 40 years of its

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