Preface

INTRODUCTION

Curricular programs are a great deal more than simply a selection or sequence of subjects undertaken by students to complete a specific educational level, qualification, or course of study. Much more than purely content, curricular programs may be conceptualized as the overarching structure of learning experiences, and subsequently shape both learning activities of students and teaching activities of faculty down to the classroom lesson level.

Emanating from human experience, curriculum is deeply rooted in both the surrounding contexts (for example, disciplinary, institutional, personal, social, historical, economic), and the contextually embedded beliefs about the purpose and value of education. Unsurprisingly then, the field of curriculum development is characterized by complexity, change and much debate.

Inextricably connected with social context, the complexity of curriculum development reflects the degree of complexity in society. Curriculum thinking is very much the product of educators seeking to maintain alignment of education with the constantly changing surrounding contexts. As Carl Rogers noted quite some years ago, we are living in an environment that is continually changing. Our environment is characterized by the fast pace of technology that drives our society to move forward and causes our knowledge to increase at an exponential rate. The commonly accepted consequence of such exponential change is increasing social complexity.

The growing complexity of present (and likely future) society is very frequently acknowledged across educational literature. Barnett (2000) makes the point most clearly when in his discussion of the challenges faced by curriculum developers in higher education he refers to the 'current age of super complexity' (p. 255). Barnett (2000) defines a complex world as one in which there is a large volume of data, facts, evidence, tasks and arguments but 'we can easily handle within the frameworks which we have in our being' (p. 257). On the other hand, a 'super complex' world is one in which the 'very frameworks by which we orientate ourselves to the world are themselves contested' (Barnett, 2000, p. 257). Barnett talks about the notion of 'fragility' in super complex world - fragility spawned not merely by technical and social change but fragility in reference the constant state of change and the challenge of constantly having to change our understanding the world, and our own sense of security about knowing how we should act and interact with the world. Super complexity is about individuals constantly having to reinvent themselves throughout their lifetime; it is about flexibility, adaptability and self-reliance (Barnett, 2000). The point made so abundantly clear by Barnett (2000) is that it is imperative for curriculum thinking to be in a state of constant change and turn towards producing experiences, which will effectively enable individuals to engage with the multitude of frameworks and 'open-ended' situations, which they will likely encounter over the course of their lives.

The call for change in curriculum thinking and models is a reoccurring theme throughout the history of curriculum development. Plate (2012) observes: 'the history of curriculum development has been characterized by a series of crisis' arising primarily from existing curriculum failing to respond to the changing demands of growing social complexity (p. 1311). Any brief examination of history of curriculum development demonstrates very clearly how social contexts and beliefs about the purpose of education lead curriculum thinkers to challenge the status quo, spark often vigorous debate about what should be taught and how it should be done. The tale told by Harold Benjamin (1939) in his book *The Saber tooth Curriculum* of a Paleolithic education system, is founded in the view of education needing to be responsive to the changing needs of society and life. The work is a powerful response to what Benjamin perceives to be the crisis of an education system 'stuck in the past. One moral of the story is a failure to examine embedded traditions forms barriers to much needed change.

There are numerous other examples of vigorous debate and 'crisis' throughout curriculum history. One commonly cited example in history of curriculum literature is the curriculum debate occurring in America at the turn of the twentieth century. For the majority of the nineteenth century, American education was dominated by classical Latin and Greek curricula. This curriculum, informed by the discipline of psychology, saw exercise of the mind as critical to education and thus there was an emphasis on memorization and rote learning through recitation and repetition (Plate, 2012). This classical curriculum was challenged on two major fronts: 1) failing to cater for those students which would not go onto a college education (the large influx of immigrants saw great growth in enrollment numbers in city schools and so schooling was now for the masses not just the elite) and 2) Memorization and rote learning was blamed for students general lack of reasoning and critical thinking skills (at a time when Americans were seen as being particularly easy to persuade with mere rhetoric (Plate, 2012). Steadily, there was some attention towards the more learner centric ideas of the curriculum. The work of those such as John Dewey resulted in progressive ideas which exerted great influence over the curriculum. Indeed, the influence of John Dewey on curriculum development is one of the most pervasive (Peterson, 2011). Dewey sought to change the rote methods used in schools and vehemently opposed 'learning by heart' (Peterson, 2011). In his book, *The Child and the Curriculum*, Dewey (1902) articulates his core beliefs about the nature of curriculum. According to Dewey, curriculum and the child are inextricably connected; we cannot talk of curriculum in isolation of the child. He also advocates the active role (interaction) of the student in the process of education and the connection of that interaction with 'particular societal aims, meanings and values' (Peterson, 2011, p. 23). Learning, as seen by Dewey, is dynamic and highly personal process. Alongside such leaner-centric ideas a view of education for the good of society as a whole also emerges. But of course, as is the nature of curriculum development and social change such 'progressive' ideas are in turn challenged with some holding the view that too much focus on emotional and social dimensions of curriculum was leading to a loss of developing fundamental academic skills (Plate, 2012).

There is substantial evidence of the series of crises in curriculum development continuing to present day. Young (2013) for example, identifies a crisis in curriculum development ultimately resulting in losing the object of curriculum: 'What is taught and learned in school' (p. 101). Young (2013) argues for somewhat of a shift away from the learner-centered traditions of the progressive tradition generated by those such as Dewey, and a shift away from experiential curriculum models which put 'trust in the emancipatory capacities of learner, if only we knew how to realize them' (p. 102). Young (2013) argues that to date, these approaches are failing to achieve what they set out to in the first place and the crisis in current curriculum development is such approaches have led to neglect of a central issue in curriculum, that of 'access to knowledge' (p. 103). Ignoring the question of what knowledge should students be entitled

to is detrimental, says Young (2013) and there is an urgent need to put 'entitlement to knowledge' as a central curriculum goal. The view expressed by Young is that emphasis on knowledge is not necessarily 'oppressive' but rather with the appropriate pedagogical foundations, knowledge can be a powerful basis upon which the learner can creatively expand their thinking. Young's ideas about curriculum reform in turn are sparking further debate.

The preceding discussion of change in curriculum thinking though very brief is illustrative of the debate that characterizes curriculum development. Notably, throughout the history of curriculum development is a commonly occurring tension between the progressive ideas and the more traditional (Plate, 2012). At the present time in history when the forces globalization, technological advancement and unprecedented change bear down on society, it is not so surprising to find debate around curriculum intensifying and calls for curriculum reform gaining much momentum. Amid this rising preoccupation for change, and although change and reform may dominate the landscape of curriculum thinking, it is imperative to reflect and consider the more traditional historical ideas in our thinking. As necessary and crucial as evolution of thought is, it is not to say old thinking is obsolete or does not warrant consideration. Consideration of historical ideas proffers the opportunity to both identify the mistakes of the past and avoid replicating them, and /or to take advantage of the wisdom of the past and use it as is or use it as a firm foundation for further development.

One of the most enduring works in curriculum development is the work of Ralph Tyler. Since Ralph Tyler published his first edition of *Curriculum Development and Evaluation* in 1949, this book has been offering continued and timely guidance for both scholars and practitioners in the field of education and across all disciplines where curricula and programs are developed. To date, every curriculum developer recalls the four fundamental questions that Ralph Tyler asked to guide the curriculum and program development process:

- What is the purpose of education?
- What learning activities and experiences are we supposed to provide?
- How can these learning activities and experiences be organized to attain the purpose of education?
- How is this learning evaluated?

Although they are not exactly the same questions Ralph Tyler has asked, evidently his questions flow directly from behaviorism or a liberal education philosophy, which mirrors the American philosophy at the turn of the 20th century. Tyler's pedagogical model may still be useful in K-12 education. K-12 students may also benefit from Knowles' seven step process given that many of today's students are gifted and self-directed at a young age. Similarly, field-dependent adult learners or those who have not had the opportunity to learn to be self-directed may require Tyler's pedagogical model as they transition into self-direction.

Numerous universities have developed educational programs based on Tyler's curriculum development model. One outstanding model was developed by U.C. Berkeley; it is termed a 'four step instruction'. Even to this day, numerous universities still teach this model, which has specified the following four steps:

- Motivation or preparation of learners.
- Presentation of course materials.
- Assigning homework to learners.
- Evaluation of learning objectives.

While the four-step instruction has proved to be useful and helpful in K-12 education, the father of adult education, Malcolm Knowles found it less useful in the education of adult learners, who now make up more than 47% of the student population on North American campuses. Out of the Tyler fundamental questions and the four-step instruction model, Knowles developed an innovative 'seven-step process' that serves as a theoretical framework for curriculum and program development for adult learners. In 1980, Knowles advocated this seven-step process to implement and capitalize upon the assumptions of andragogy.

- Creating a cooperative learning climate;
- Planning goals mutually;
- Diagnosing learner needs and interests;
- Helping learners to formulate learning objectives based on their needs and individual interests;
- Designing sequential activities to achieve these objectives;
- Carrying out the design to meet objectives with selected methods, materials, and resources; and
- Evaluating the quality of the learning experience for the learner, including reassessing needs for continued learning.

The seven-step process is a further step forward from Tyler's model. However, neither the seven-step process nor Tyler's model takes into consideration critical theory or the theory of transformative learning, let alone societal and cultural differences, institutional differences, subject matter differences. All these factors put a strain on Tyler's and Knowles' beautifully formulated models for curriculum and program development

Potentially the greatest strain placed on existing models for curriculum and program development comes from the forces present in the twenty-first century. Of those forces, technological advancement is often cited as one of the greatest. Though almost cliché, it is truth to say the technological advancements seen over the past few decades are of a scale never before witnessed in human history. The scale of the interplay between technology and learning is evidenced by a quick search of literature resulting in an avalanche of work related to technology and education, much of it citing the advantages of technology in terms of efficiency, opportunity for institutions to remain globally competitive, flexible, and pedagogical potential. On the basis of technology of infusing almost every aspect of life, there exist numerous arguments for technology to be integrated into the curriculum. The term 'technology-based curriculum' frequently occurs in literature. It is important here to caution against a technology-centric view of curriculum, and point out that we must not make the assumption of some innate power of technology to, entirely on, promote real and meaningful learning (Young, 2013). Along this train of thought, it is useful to reflect on educator David Orr's (2002) critique of innovation in relation to technology. He says '[we seem to suffer from] a kind of technological immune deficiency syndrome that renders us vulnerable to whatever can be done and too weak to question what it is that we should do' (p. 63). Though Orr is primarily saying this in reference to ecological concerns, his message is highly relevant to technology in the curriculum and learning in general.

The interconnected nature of the twenty first century world manifests in curriculum discourse as renewed interest in ideas about integrative curriculum and system thinking in curriculum. Furthermore, global interactions raise cultural considerations in the curriculum and growing massification of education bids serious consideration of issues related to access, equity and social justice. The idea of the purpose of education to develop 'global citizens' is oftentimes encountered.

For some curriculum thinkers, sustainability is the pressing issue in curriculum development. For example, David Orr presents a thought provoking view that creating a culture of sustainability is what education should be about. To provoke thought, Orr (2011) asks 'Measured against the agenda of human survival, how might we rethink education?' (p. 242).

Another theme prevalent in curriculum discussions at the present time is concerned with equipping students with those capacities identified as necessary for full functioning in the twenty first century society. There is apparent general agreement of what are twenty first century capacities, which students must develop. Amid talk of equipping individuals to function effectively within a 'knowledge economy', it is the generic skills that allow for flexibility and adaptability, alongside communication skills and leadership which are of great value in an rapidly changing globalized environment (Barnett, 2000; Voogt & Roblin, 2012). Preoccupation with twenty first century competencies, employability and an urgency for 'drastic' changes to develop those competencies is apparent. Some critique the competency driven, employability view, arguing that it serves primarily the needs of economies and is narrowing education to workplace skills rather than knowledge required for empowering interactions with the world. Other works point out the role of education as being both social and economic and the acquisition of twenty first century competencies is for benefit of both society and individual (Tisdall, 2013). In reference to twenty first century competencies, the term 'skills' is often applied, and some authors caution the dangers of speaking of skills and knowledge as being two separate entities (Rotherham & Willingham, 2010). Linking back to Young's (2013) argument of crisis in education and the urgent need for 'entitlement to knowledge' as a core curriculum goal, skills and knowledge are inseparable and thus one is not more important than the other but rather must necessarily develop together – 'to think critically students need the knowledge that is central to the domain' (Rotherham & Willingham, 2010, p. 19).

In considering twenty-first century capacities in the curriculum, 'leadership' is an often encountered term. Particularly in higher education settings, leadership is generally viewed as an essential twenty first century capacity. An examination of the graduate capabilities or attributes statements of the vast majority of universities shows this to be true.

With the global connectivity of the present age, the distance between cultures is very much minimized. Global corporations, global information systems and globalized education result in the need for cross cultural communication and interaction. Predictably then, cross cultural communication skills and collaboration are also often considered important components of the 'twenty first century capacities for a curriculum to develop.

In seeking to design the best possible 'learner centered' curriculum there are some trends to include students as active and valued contributors in the program planning and design process. Initiatives to include the student voice in program planning and design are relatively new (Jagersma & Parsons, 2011). In the present context, a major driver for participatory approaches is vast expansion of participation in education, particularly in the higher education sector in which universities are under pressure to remain competitive globally and are seeking to attract (and retain) ever growing larger student numbers from culturally diverse and academically varied backgrounds (Deane & Stanley, 2015). Additionally, especially in higher education, there is growing emphasis on the student voice and student satisfaction (Deane & Stanley, 2015). Such participatory approaches are seen as empowering for students but also as a means for potentially realizing the promise of 'education for all' in the massification of education. Although a relatively recent development, the roots of participatory approaches to program planning and design can be found in some of the most influential works of curriculum theorists such as Freire and Tyler. Paulo Freire (1993) espoused a libertarian view of education and argued for the inclusion of the consciousness

of the learner and their world view. Freire opposed the so called 'banking' view of education which assumed the student had no knowledge and the educator passed on knowledge to them. We find suggestion in Tyler's enduring work of a need for student involvement in the planning of curriculum. Tyler (1975) recognizes the importance of relevance to motivate and engage students in learning. Active participation of students in the program planning and design process is conducive to developing a program potentially more relevant and motivating to students. There is good evidence in literature of the link between student achievement, thinking, grades and student engagement (Jagersma & Parsons, 2011).

The preceding discussion captures only a few of the main trends found in present curriculum discussion. The views around curricular reform are evidently many. The diversity of views serves a constant reminder not only of the complexity of curriculum development but also of the importance of surrounding contexts and the beliefs and views held in those contexts. Tyler's original question about the purpose of education resonates strongly throughout present curriculum reform discourse and the response to such a crucial question is inevitably bound with context.

Although discussion around program and curriculum development may be initiated by asking 'What should students learn?' and 'Why should they learn it?', the process of curriculum development remains incomplete until consideration is also given to questions about program quality and effectiveness: 'what did students learn? How do we know what that this is what they learned? How well did students learn and how will we know? How did they learn best and how do we know? Such questions direct attention to two important dimensions of assessment and evaluation: 1) identifying the right questions to ask about the effectiveness of approaches and outcomes, and 2) gathering evidence to be able to answer the questions. Devising tools and methodologies which enable the collection of data (and its interpretation) is intrinsic to the program development process. Additionally, it is important to mention that assessment methodologies and data collection tools must be designed to enable continuous monitoring of quality. In order to truly gain insight into program quality and be able to effectively identify what needs to be improved (or changed), data collection and assessment must necessarily be, woven throughout the lifecycle of each program implementation.

Naturally, data per se are not very useful. We must be able to make something of the data so it can be used to drive iterative cycles of continuous improvement of the curriculum program. The notion of 'data to wisdom' posited by Ackoff (1989) springs to mind at this point. Although Ackoff's 'data to information to knowledge to wisdom hierarchy' was originally described in the field of management and organizational studies, it applies in a variety of contexts and is certainly a useful framework to refer to when devising methodologies for program assessment and evaluation. The value of the data to wisdom hierarchy lies in the attention it draws to the necessity of capturing contextual factors as well as performance data in order to truly gain insight into the overall quality and effectiveness of a curriculum program. It is only when data is interpreted contextually that the wisdom or insights necessary for improving curriculum can occur.

Since the curriculum is embedded in many layers of context capturing contextual factors implies a multi-faceted approach to data collection. Ideally, assessment methodologies should enable the collection and analysis of data which has been captured from multiple sources, for each program outcome (Spurlin, 2008). Such triangulation of data lends validity and 'trustworthiness' to program assessment (Spurlin, 2008). Developing assessment and evaluation methodologies designed to enable analysis using 'intersections of multiple measures of data' is crucial to continous improvement (Bernhardt, 2013, p. 102). The theme of using multiple data sources has become increasingly common in assessment methodologies, especially with the general trend towards evidence based practices in education.

In the system-orientated approaches of the interconnected twenty-first century, designing program assessment methods to effectively capture multiple data sources is no easy task. Furthermore, the digital technologies permeating education present opportunities and challenges not only for learning activities but also for assessment methodologies (Timmis, Broadfoot, Sutherland, & Oldfield, 2016) and the assessment in digital contexts is very much an emerging area of research. The growing volume of literature concerned with assessment methodologies highlights both the difficulty of the task and the necessity of continually refining existing approaches and/or developing new approaches.

Embedded in program development, methodologies for both purpose of program evaluation and for student evaluation, are subject to the same vigorous debate and crisis found in the field of curriculum development overall. The same tensions among institutions, economics and societal beliefs about the value and purpose of education which pull at the field of program curriculum development overall necessarily exert force over component assessment methodologies (Timmis, Broadfoot, Sutherland, & Oldfield, 2016, p. 454). Indeed, the issue of assessment can be one of the most contentious points in curriculum development: 'an institution, culture, or society encapsulates its conceptualization of learning and its aspirations for its future citizens by how it creates and uses assessment' (Timmis, Broadfoot, Sutherland, & Oldfield, 2016, p. 454).

In attempt to provide some insights into program design and assessment, a number of books on program development have been written. Traditionally, these books on curriculum and program development offer a 'how to' or 'comprehensive guide', similar to a recipe for chefs. While such books are undoubtedly useful, to truly engage in productive curriculum thinking a diversity of thought across a multitude of contexts is most valuable. What is required are works which stimulate critical thought, analysis and reflection on how we are doing things, and through a diversity of views potentially reveal opportunities for doing things in novel ways. In present society, fields of knowledge are becoming more complex with an increasing trend towards cross-disciplinary and cross cultural thought. Curriculum programs and their constituent assessment must necessarily be situated within the broader contexts surrounding educational institutions and hence curriculum developers are necessarily dealing with dynamic and complex relationships among numerous factors, across interconnected contexts. From this perspective, it is evident that purely prescriptive books on curriculum and program development will no longer suffice.

There is most certainly much, much more to be thought about and said about program development and assessment. Continuing the discourse in a productive way requires a continuous exchange and sharing of ideas, much reflection and a good deal of creativity. We seldom can find a book on program development and assessment that is based on in-depth and broad research that is bound to generate new knowledge. Indeed, we are surrounded by these outstanding theorists and scholars in both the present and the past. Historically, great educators such as Plato, Aristotle, Confucius, Dewey and Knowles have prescribed not only a particular teaching methodology, but also a whole different approach to education. That is why the Chinese have developed a proverb to emphasize the importance of curriculum and program development, 'Without rice, the cleverest housewife cannot cook for you'.

OBJECTIVE OF THE BOOK

The Handbook of Research on Program Development and Assessment Methodologies in K-20 Education features full-length chapters (8,000-12,000), authored by leading experts. The volume offers an in-depth description of key terms and concepts related to curriculum and program development for educators, students, program designers, instructional program developers, trainers, and librarians.

ORGANIZATION AND IMPACT OF THE BOOK

In terms of curriculum and program development, while most scholars do not deviate too much from pedagogy or andragogy, scholars may go beyond such a dichotomy or continuum as debated by contemporary scholars/researchers in the field. While Tyler addresses curriculum and program development by using pedagogy, Knowles examines curriculum and program development by using andragogy. Others in the field simply follow the aforementioned scholars and theorists in developing curricula and programs. It is important for scholars, as well as practitioners to develop curricula and programs either pedagogically or andragogically because children and adults learn differently. The bottom line is curricula and programs are developed for either children or adults. In other words, the distinction between the education of children and the education of adults in relationship to curriculum and program development made by Knowles in the 1970s has been absorbed in the academia worldwide. Trying to make the distinction blurred is tantamount to saying that children and adults follow the same principles of learning and possess the same characteristics as learners. While there has been the argument that pedagogy and andragogy should be seen as a continuum rather than a dichotomy on the spectrum, the argument has not been well tested and accepted as a theory in the field. To support both Tylerian and Knowles' models in curriculum and program development, the cutting edge chapters have been written by first rate scholars and practitioners in the field.

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