

‘Where is the post-modern truth we have lost in reductionist knowledge?’ A curriculum’s epitaph

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This essay suggests a way for creating a curriculum for the future amidst the challenges of post-modern uncertainty. Curriculum discourse in the past has been dominated by widely accepted key questions, which produce and maintain curricula that are essentially fragmented and reductionistic, and directly opposed to the essential demands of the holistic nature of life. The essay proposes a contemporary curriculum philosophy that is fundamentally heuristic, with a radically eclectic, contingent character.

Keywords: authentic learning; holistic education; open education; post-modern curriculum; student-centred approaches

The curriculum’s epitaph—a crisis

The word ‘crisis’ seems to have a visible presence in present-day curriculum discourse (Macdonald 2003, Wraga and Hlebowitsh 2003). Furthermore, the crisis is characterized by descriptors such as ‘anachronism’, ‘disarray’, ‘schism’, and ‘very wrong’ (Slattery 1995, McGinn 1999, Westbury 1999, Macdonald 2003). The vision and philosophies that underpinned the curriculum in the past were less plagued by crisis—they served the needs of their eras effectively and efficiently. However, as Slattery (1995: 245) has noted, ‘these theories, despite their contributions to previous generations, have proved to be impotent in the face of growing turmoil in the modern world’. This inability of the past to prepare us for the future is highlighted by Oliver and Gershman (in Slattery 1995: 244) when they say ‘we are at the end of an age, so that its metaphors and symbols no longer explain where we have been nor inform us about what next to do’.

The obsession with content and the premise of fragmentation as a requirement for the curriculum are the primary contemporary criticisms directed at the traditional curriculum (Hindess 1972, Kleinig 1973, Watt 1976, Evers and Walker 1983, Wraga 1999). As Miller (1990: 315) maintains, every facet of present-day schooling is still saturated with the reductionistic world-view that parcels the world into ‘departments’ and ‘subjects’ for ‘mechanized efficiency’ and ‘scientific management’. Because we are caught up in this world-view, and much of our thinking is still imprisoned within it, it is imperative that we take note of what Bohm (1980: 1) writes about the dangers of this fragmentation: ‘fragmentation is now very widespread ... [T]his is leading to a kind of general confusion of the mind, which creates an endless series of problems and interferes with our clarity of perception so seriously as to prevent us from being able to solve most of them’.

The consequences of living amidst such perpetuated fragmentation are reflected in our way of life. It has brought about pollution of every kind imaginable: It has disturbed the balance of nature and sent it hurtling towards ultimate destruction. It has created an unmanageable population explosion in spite of a world-wide HIV/AIDS pandemic—a fatal paradox. It has given us global economic disarray and confusion within a money-driven order, and has left us with political disorder and vulnerability to war and global terrorism. Consequently, the individual ‘has developed a widespread feeling of helplessness and despair’ (Bohm 1980: 2).

The fruitless attempts to unite the fragmented reality of education and restore a moral-aesthetic dimension by simply adding ‘inter-disciplinary subjects’ to the curriculum are symptomatic of this lack of understanding. These ‘subjects’, e.g. life-skills education, environmental education, sex education, anti-drugs education, moral education, values education, HIV/AIDS education, etc., serve mainly to add even more separate fragments. There is little doubt that our current world-view, and the fragmentation of the curriculum resulting from it, has become intolerable. As Slattery (1995: 248) has put it:

Contemporary society, like education, has reached the apex of modernity, an absurd psychodrama of self-destruction. Modernity does not offer a vision of order in chaos, a whole to part relationship, or a global experience in the local context.

Fragmentation of education in all its variations may be safe and comfortable for students, teachers, and administrators—because it is familiar and is designed for mechanistic management and efficiency. It is not surprising that teachers and students find security in a minimalist curriculum where disciplines and departments are isolated, where knowledge is separated from the learner, where meaning is sought without context, where learning is judged on memorization, and where competition is immortalized. Unfortunately, the destructive power of such fragmentation is all too evident and should serve as a strong incentive to attempt, and to arrive at, a contemporary curriculum philosophy. This parallels Lyotard’s (1985) warning that absolute standards and generalized categories (fragments), produced by ‘grand narratives’ and legitimized as universal truths, should be seriously questioned. In fact, the construction of any contemporary curriculum theory calls for a complete shattering of the notion that curriculum is the pursuit of knowledge as universal truth.

As we have indicated, it is more than the criticism of fragmentation that should propel us into seeking a curriculum for the future. We must also break free from the paralyzing shackles of the modern era in order to find a relevant curriculum philosophy as a foundation on which we can construct a new vision of education, and a curriculum for the future. Such a foundation must also address the yearning for meaning and holism that is conspicuously absent in the writings of Lyotard and other post-modern thinkers (Lyotard 1985, Tarnas 1991: 395–410).

Beyond reductionist knowledge: exploring post-modernism

Proposing a curriculum philosophy and a hypothetical curriculum frame for post-modern times is risky. We nevertheless argue that such a project is both fruitful and necessary and we will undertake this endeavour in the sections that follow.

The loss of meaning—truth eradicated

The modern epoch has created a *positivist* scientific consciousness of progressive disenchantment, increasing non-participation, rigid distinction, and total separation of mind and matter (Berman 1988: 16)—‘providing an increasingly unworkable and dangerous blueprint for human thought and activity’ (Tarnas 1991: 409). The alienation between subject and object that Berman (1988) found in his exploration of the epistemology of science convinced him that something was wrong with our entire Western worldview: ‘Western life seems to be drifting toward increasing entropy, economic and technological chaos, ecological disaster, and ultimately, psychic dismemberment and disintegration’ (p. 15). We contend that the reason for the crisis Berman identifies is the breaking-down of the fundamental relationships that gave meaning to life and living. We have lost *meaning* in an ultimate philosophical and religious sense. When meaning

is lost, value systems and the individuals and communities that live by them start to crumble—and we lose our sense of being. This leaves us with a crucial intellectual question that looms over our time: Is the current state of profound metaphysical and epistemological irresolution something that will continue indefinitely and take a more radically disorienting form as the years and decades pass? Is this state the ‘entropic prelude to some kind of apocalyptic denouement of history’—or does it represent ‘an epochal transition to another era altogether’, an era that will bring forth a new form of civilization and a subsequent new world-view with fundamentally new and different ideals and principles from those that have compelled the modern world through its course (Tarnas 1991: 410)? Some characteristics of this new form of civilization may be depicted as the emergent epoch in our journey through the ages (see table 1 at end of article).

Not only our civilization but the future of the human spirit and that of the planet is hanging in the balance. As a pre-requisite for answering the questions proposed by Tarnas (1991), we have to agree with Berman (1988: 23) that ‘*some* type of holistic, or participating, consciousness and a corresponding socio-political formation have to emerge if we are to survive as a species’. Tarnas’s plea is one of profound desperation: ‘If ever boldness, depth, and clarity of vision were called for, from many, it is now’ (p. 413).

Envisaging potential—truth revealed

It is, first of all, the opening of *vision* as a way of access to beings and Being that is required to engage in the exploration of a curriculum for the future. It is opening our eyes to the dimensionality of Being within the life-world of our experience that reveals the field of possibilities that we call existence (an authentic potentiality-of-Being). Most important, perhaps, that vision is a capacity of our being, and as such it is an achievement involving the process of development (Levin 1988: 5–14).

How is vision, this practical activity which is part of our endowment, linked to development? Levin (1988: 419) provides us with an explanation that has its roots in philosophy itself. Philosophy is derived from a Greek word that means ‘love of wisdom’. However, wisdom is meaningless without love of truth. Truth (in Greek, *aletheia*) is opening, unconcealment (as opposed to truth as correctness or correspondence). Truth is, therefore, a visionary experience that ‘calls for a distinctive epistemological and ontological attitude; it takes place when there is a *practice* of truth which lets things come forth, lets things present themselves in their own way—on their own terms’. As a human experience, truth, manifested through vision, contains a vital social context, which integrates its association with development. It is a process of seeing in the others the potential of which even they are not aware, and helping them to realize that they may maximize it. Such a vision opens them to their own-most, inner-most, individual truth, and it is productive of self-development. It is the vision of the seer that subsequently produces the truth of the essential richness in the open dimensionality of Being in others. The vision that gathers such truth creates a capacity to see much more clearly and much more concretely beings and Being as it is interconnected in a web of life (Capra 1996). This restores meaning to Being—which we so sadly have lost. The human capacity to see in this way maximizes human potential through its realization and fulfilment (Levin 1988: 454).

The ethics of truth—‘ecology’ as metaphor

Since vision produces the truth of human potential to be realized, it requires an *ethical* practice of that truth, because the consequence of this production is a corresponding *moral* character with underpinning values. Helping others to be true to themselves in this context requires a practice of truth ‘rooted in the wholeness of heartfelt caring’ for the humanity in us. ‘And this means

caring for the development of our potentiality-for-being-human: our capacity, our predisposition, our response-ability as human beings' (Levin 1988: 18). There could be little that is more fundamental than caring in education. Fortunately, 'the essence of humanism is not will; it consists, rather, in our capacity for caring' (Levin 1988: 22). However, also this capacity needs to be developed.

'Education is Being' (Berman and Aoki 1991: 15), and within the postmodern condition we agree. However, what would be the most appropriate context for education? The ideas of Bateson (Berman 1988: 234, 235) become critically important for thinking about education for the 21st century. Thus, Berman (1988) concludes, after his investigation on the disenchantment of the world, that a holistic, 'ecological' world-view will reenchant our fragmented world. This is the same root metaphor Bateson gives us—'ecology', a natural system that includes humans and other life forms sustained through information and energy exchanges' (Berman 1988: 276). Bowers and Flinders (1990) also suggest thinking of a classroom as an ecology, especially with regards to the sociology of knowledge seen as mental ecology. However, even more important, ecology as metaphor not only suggests an interdependence wherein humans and all the other biotic forms of life are interconnected and interdependent upon the entire abiotic environment, sharing the same information and food chain. It also provides the basis for understanding what constitutes moral behaviour: 'a whole new set of moral imperatives that both clarify the limits of acceptable human behaviour and creates the possibility of rediscovering a way of understanding what was integral to the lives of ancient peoples' (Bowers and Flinders 1990: 235).

Being constitutes the ontological, fundamental interconnectedness of all phenomena. It requires the opening of vision to reveal the significance of our intra-personal and inter-personal relationships and our relationship with nature (living and non-living). It necessitates an ethical engagement with the development of our, and other's, moral character and value systems—to root them in caring for everyone and everything as the essence of being human. This gives an integrated, interrelated meaning to existence as realizing human potential in every domain of human existence—physically, mentally, emotionally, socially, and spiritually—as a holistic entity. This is the postmodern philosophical foundation from which we want to construct a curriculum for the future.

The wholeness of truth—a moral quest

In other words, moral education is pivotal in the construction of any curriculum for the future. Furthermore, the recognition of the interconnectedness and interrelatedness of *all* phenomena integrates moral education into an understanding that education must be holistic. Thus, the discussion of the 'Universal cultural values to be cultivated by education for global ethics', the UNESCO International Commission on Education for the 21st Century (UNESCO 1996: 244–245) incorporates into its vision such extended fields of human existence as:

- A spirit of caring;
- Awareness of human rights combined with a sense of social responsibilities;
- Values of social equity and democratic participation in decision-making and government;
- Understanding and tolerance of cultural differences and pluralism;
- A co-operative spirit, an enterprising spirit, and creativity;
- Sensitivity to gender equality;
- Open-mindedness to change; and
- A sense of obligation to environment protection and sustainable development.

The recommendations of this UNESCO commission can be read alongside the work of Noddings (1992, 1993, 1995, 2002), who advocates ‘caring’ as a keynote value for education. For Noddings, moral education is characterized by the kind of caring that moves away from a personal frame of reference into the frame of reference of others. Moral education is a practical act of emotional empathy—whether joy or sorrow—that transforms all participants in their being and doing. Caring embraces the essence of human experience, and is very different from a narrow-minded ‘character’ education (Noddings 2002). For such acts to become not only developmental but transformational, they must draw on the power of proximity to encounter personal narratives in the sharing of our personal stories (experiences, feelings, emotions), models of dynamic interconnected cooperation, and actual personal experience in the practice of caring (Tatum 2000: 81).

The following quotations from texts about the context of moral education in practice ultimately and inextricably relate moral education to our holistic view of education:

- ‘guiding students on an inner journey toward more truthful ways of seeing and being in the world’ (Palmer 1998: 6);
- ‘the ancient and abiding human quest for connectedness with something larger and more trustworthy than our own egos’ (Palmer 1999: 6);
- ‘when relationship is growth-producing, it results in five good things: increased zest, a sense of empowerment, greater knowledge, an increased sense of self-worth, and a desire for more connection’ (Miller 1988: 67);
- ‘our goal is to affirm identity, build community and cultivate leadership in a way that prepares our students for the 21st century’ (Tatum 2000: 81);
- ‘we are educating our students to be effective agents of change’ (Niebuhr 1996a: 8);
- ‘teachers are moral change agents’ (Fullan 2001: 16); and
- ‘Because we still seek to provide an education which can be transformative and that will move us closer to an equitable and just society for all, we must facilitate the emergence of the spiritual energy I saw released in my classroom. ... Change does not come easily or without a struggle. When I look at the lives of change agents, past and present, what I find in the core of what they do is a strong sense of connectedness to the greater good, a strong sense of spirituality. If the development of one’s spiritual life is a component of maintaining one’s stamina, then as educators concerned with cultivating leadership, we must also cultivate spiritual growth and development, the capacity for connection’ (Tatum 2000: 82).

The truth about wholeness—a contemporary curriculum foundation

In view of this philosophical foundation, a paradigm for education based on the relation-axes model of Wielemans (1993) is probably one of the best attempts at expressing the nature of an appropriate curriculum of education for the future. Wielemans’ (1993) research on the images of man in the sciences led him to recognize the fundamental dimension of relatedness. This recognition requires a curriculum that focuses on the intersections between possible human *relationships*: humans and nature; humans and other humans, with their institutions; and humans themselves. The human *competences* with which these human relationships intersect are, e.g. *constructing meaning*: observing, describing, experiencing, quantifying, interpreting or conceptualizing; *technical*: projecting and planning; *ethical*: morally acting, valuing and evaluating; *aesthetic*: producing creatively; and *spiritual*: creating ultimate meaning.

For us, this model has the following implications:

- The basis for general formative education is situated in the fundamental relations in life and focuses on the general competencies to be mastered.
- The traditional subjects disappear in favour of integration, co-ordination, and overcoming of the barriers to effective *relatedness*.
- New dimensions of learning come to the fore.
- Traditional hierarchies and opposites fall away, i.e. theory/practice or the natural/human sciences. The rigidity of traditional subject content is cast aside in favour of the integration of new knowledge and/or structures so as to make the curriculum immediately relevant.
- By way of a continuous creative endeavour, the teacher must seek to provide optimal learning experiences for the learner.

It is clear that this model focuses on both wholeness as opposed to fragmentation and on the competencies to be mastered as the requirement for a future curricula. However, we should extend the basic principles in Wieleman's model and incorporate them in the principles contained in the holistic vision for education. Clark (1997) contends that the underlying principle of unity, where everything is connected to everything else, is at the heart of the holistic paradigm. In spite of the separateness, conflict and competition perceived at surface layers, there is a connectedness (see Waldrop 1992). 'Holistic education includes those human depth dimensions that do account for a spiritual basis for reality' (Flake 2002: 290–292):

- Educating for human development, that is realizing human potential;
- Honouring learners as individuals, that is meta-learning—learners taking responsibility for their own learning and development;
- The central role of experience, that is active, experiential, constructivist, problem-based learning;
- A new role for educators, that is as facilitators of learning to realize human potential;
- Freedom of choice, that is acquiring intra- and inter-personal life-skills;
- Educating for participatory democracy, that is co-operative learning—learners helping others to learn and develop;
- Educating for ethnic and cultural diversity and global citizenship, that is acquiring life-skills to become versatile and flexible;
- Educating for 'earth literacy', that is restoring the alienated subject-object, mind-matter relationship; and
- Spirituality in education, that is, restoring the spiritual basis of reality.

Such a curriculum philosophy, constructed within the model of Wielemans (1993), has to be viewed with the urgency and seriousness required by a world in a state of educational paralysis. However, as Aspin and Chapman (1994: 11–12) contend, 'it is the working out of *ad hoc* theories to apply to currently pressing and perplexing *issues, topics, and problems* thrown up in and by such key human activities as education, medicine, social welfare, politics, government, and economics'. It is, therefore, *not a priori* preconceptions of structured knowledge, nor a set of judgements and prescriptions relating to desirable cognitive activities and cultural values that should determine the curriculum. Rather it is the proliferation of urgent daily problems increasingly pressing on modern men and women that suggests the path along which curriculum design should advance. These problems provide the agenda for curriculum action. The task is to identify the array of problems that press on us today and adopt a pragmatic approach to their solution (Aspin and Chapman 1994: 13).

Authentic learning—a contemporary curriculum passage

Thus, one approach to curriculum design, a kind of problem-based learning, is gaining impetus, especially in higher education (Duch *et al.* 2001). There are many interpretations of problem-based learning, but at the bottom it is a curriculum designed around real-life problems. It seeks authentic learning, with a dual emphasis on both competency-development and the construction of meanings that cut across artificial (i.e. subject content) boundaries (Barrows 1986, Bridges 1992, Albanese and Mitchell 1993, Young 1998).

The ‘problems’ in the traditional curriculum are analytical, and suitable for multiple-choice tests, because they (a) are clearly defined; (b) come with all the information needed to solve them; (c) have only a single right answer which can be reached by a single method only; (d) are disembedded from ordinary experience; (e) have little or no intrinsic interest; and (f) are not offered as examples of the relevance of prior learning. They are exercises for applying information already learned in a subjectbased approach.

On the other hand, the types of problem suitable for a problem-based curriculum need to be original, real-time urgent puzzles that needs to be solved right now because the dissonance experienced is too much to bear. The purpose of such an authentic problem is to provide a trigger for the use of creative problem-solving skills, as well as providing a focus for a search for the appropriate information and skills that might be necessary to understand the problem and the possible processes towards resolution(s). Such problems tend to: (a) be ill-structured; (b) require information-seeking and skills that have not yet been acquired; and (c) have various acceptable methods and solutions. Such problems should effect the enhancement of life at the very moment the problem has been resolved (Barrows and Tamblyn 1980: 18, Slabbert 1997, Claxton 1999, Van Loggerenberg 2000).

Variations of problems exist. Some may be existing problems that desperately need solutions. Others may not be initiated by an existing problem, but sprout from a desire to improve the quality of life—making a problem where none has existed, so to speak. Some place emphasis on social issues, others on individual needs, persistent life-situations, prominent areas of living, while others may seek to reconstruct society (Mancall *et al.* 1992). Dealing with and solving such problems, or improving the quality of life, should be pivotal in curricular activities. As Aspin and Chapman (1994: 15) suggest, they require from a learner,

engagement in a number of forms of intellectual activity and critically skillful thinking, so that our coming generations can not only begin to understand their difficulty, complexity and multifariousness but also start to help present generations begin to make tentative moves towards their solution.

Cutting-edge research in experimental psychology, cognitive science, artificial intelligence, and neuroscience is leading us towards a new, and practical, understanding of cognitive growth and development and the way in which the nature of knowledge itself is changing as a consequence. This research demonstrates increasing understanding of the intricacies of the brain–mind instrumentation for acquiring and generating knowledge (Claxton 1999). We need to enhance the brain–mind potential of our students through a curriculum constructed to prepare our students to meet the challenges of real life: the curriculum should be dynamic, flexible, responsive to rapid changes in all areas of life, including work, life, morals, and leisure.

What is, in fact, most important about an authentic problem-based curriculum is that such a curriculum provides for the opening of *vision*. Although vision cannot simply be equated to intuition, its relationship towards awakening the inner eye cannot be denied:

The intuitive mode is characterized by engagement of the will, involvement of the senses, receptivity, a quest for understanding or meaning, and a facilitative tension between subjective certainty and objective uncertainty. (Noddings and Shore 1984: xiv)

The intuitive is a spontaneous, non-rational act of grasping the meaning, significance, or structure of a problem without explicit reliance on any analytical explanation. In this sense the creation of knowledge depends on two processes. The first is perceptual and intuitive and works through imagination to reveal what is real. The second is conceptual and logical and draws on the intellect and composes 'knowledge'. Even more vital is that, with the emphasis on real-life problems to be solved, a problem-based curriculum inevitably generates the environment for experiential learning for moral development.

In this regard one of the most interesting contexts for moral education flows from Noddings and Shore's (1984: 203) suggestion that moral education could be approached intuitively. When this happens, 'we refuse to "think" the persons we engage; instead, we encounter them directly—we receive them, feel what they feel, and put our motivational energies into their service'.

Intuition is fundamental to solving problems of all kinds and in all domains of human existence, but it is even more essential for discovery and creativity, and it is sustained by spiritual intelligence (Zohar and Marshal 2000). It is for this reason that Noddings and Shore (1984: 40) suggest that 'students must come to recognize the potential of becoming a seer in dealing with the problems of school and life'.

Constructing truth—a contemporary curriculum criterion

Needless to say, an approach to a curriculum of the kind that we have outlined requires a set of guidelines for curriculum planning. What is needed are criteria of stability, consistency, and coherence—to guard against what could become a somewhat anarchical situation. Such criteria have been articulated by Dewey, Vygotsky, and Bruner as well as by their present-day successors, e.g. Ackerman (1980), Gutmann (1987), Mendus (1989)—the idea of 'education for democracy' in which stability, consistency, and coherence are created through the recognition of every individual's 'aspirations, values, and visions' in a socially- and morally-constructed society (Senge *et al.* 1994: 14). If we are serious about such a criterion, it means that our learners will be dealing with problems that will necessitate, as Aspin and Chapman (1994: 17) put it:

nothing less than the highest degree of engagement in those intellectual forms of knowledge and criticism that enable students as future citizens to understand past causes, monitor and appraise the present situation, and plan how to act in the future.

It must be obvious that such a criterion rejects those concepts of knowledge proposed by, e.g. Benjamin Bloom and his followers with their taxonomies, and many other curriculum theorists. For them, 'knowledge' refers to those facts, concepts, rules, and sets of propositions that can easily be transferred and memorized—to be repeated on demand in assignments and assessments. 'Understanding' for these theorists is achieved through 'explanation'; and 'understanding' is provided when something is repeated 'in one's own words'. Such activity is obviously but 'a step above' the knowledge-reproduction and -recycling that pertains to little more than sheer memory, although it is regarded to be on an apparently higher level in a hierarchy of cognitive operations.

The concept of knowledge required by the criterion of education for democracy as the basis for curriculum planning is constructed through the process of open and public communication:

though claiming to be objective in its intersubjectivity, [knowledge is] highly uncertain, highly unstable and liable to refutation. It refers *not* to facts, nor to mathematical certainties, nor to empirical verifiabilities; it exposes instead, and indeed draws attention to, the theoretical frameworks within which knowledge-claims are formulated and articulated, and exposes them to critical scrutiny, error elimination, and every possible attempt at disconfirmation. (Aspin and Chapman 1994: 20)

It is obvious that values are incorporated within the process of knowledge construction. Knowledge and values are not distinct entities but are integrated in a holistic concept. It is this holistic concept, of the wholeness of the curriculum, secured by a constructivist concept of knowledge which must be the foundation of a post-empiricist curriculum philosophy. The curriculum can no longer be seen as a rigid, stable, unchangeable body of traditionally valued 'knowledge'. Its intention must be to maximize human potential, to enable learners to create the future they want (as opposed to becoming victims of an unknown future). The curriculum must be seen as a dynamic process involving large-scale and rapid epistemic change in the dimensions of planning, delivery, and assessment.

Teacher education—contemporary curriculum implementation

We have been discussing the curriculum. However, it is obvious that the same philosophy applies to the curriculum for *teacher education*. Teachers implement, and create, the curriculum; they must understand the complexity and ambiguity of the world—in contrast to the world-view portrayed by the dominant paradigm.

Thus, the demands on teacher education far exceed the requirement of preparing prospective teachers to prepare standardized lesson plans with clearly-formulated, mandatory outcomes. The post-modern paradigm exposes this modernist standardization as nothing more than pure folly. Education, and consequently teacher education, must recognize that learning 'depends absolutely on being able to acknowledge specific uncertainties—unsettled questions for which we will never know the answers' (Senge *et al.* 1994: 501). Uncertainty *is* the human experience.

Steinberg and Kincheloe (1995: xi–xii) contend that the post-modern situation requires the restoration of meaning and the demolition of the wall 'separating bricks of truth and virtue, values and facts, and curriculum and social justice'. This same concern was earlier expressed by McLuhan (Armstrong 1991: 175) when he contended that the child of the television and cyber era is attuned to up-to-the-minute 'adult' news: violence, crime, war, death, inflation, strikes, disasters, and perpetual crises. No wonder that the child of the 21st century is bewildered by an educational establishment in which 'information is scarce but ordered and structured by fragmented, classified patterns, subjects and schedules' (Armstrong 1991: 175). Teachers must ensure the building of a post-modern community that seeks to understand lived experience and the self in relation to others and the world. Teachers must violate the restrictions of the traditional standardized lesson plan with a celebration of the novel, different, unfamiliar, unexpected, unusual, and even what may have traditionally be regarded as absurd. 'The insurrection is out of control', say Steinberg and Kincheloe (1995: xi), 'and the post-modern hermeneutics will no longer obey the curriculum authorities, passively execute the official methodologies of instruction or accept the radical orthodox interpretations of the canonical texts'. Prospective teachers, and consequently teacher educators, must be educated in ways that let them explain the importance of the interpretative act, as it might bear on students.

Living life—the framework for contemporary curriculum

Thus, in the post-modern paradigm, meaning is *constructed*. However, the limited constructivist vision that we now have is far exceeded by the possibility of a curriculum which creates opportunities for the realization of human potential that manifests in self-understanding (Slabbert 1997: 134–155), ‘when self-understanding results from the synergistic unification of intellect, body, spirit, and cosmos’ (Steinberg and Kincheloe 1995: xi). Participants in the curriculum discourse must become participants in a human quest for meaning in which the exploration of life itself is central.

This corresponds with the philosophy of practical reason that Meyer (1994) suggests is the way out of the discursive paralysis of the present and a way into the rebuilding of a learning culture. There are five guiding principles, as suggested by Slattery (1995: 252–257), for curriculum development in the post-modern era:

- Restoring wholeness through the construction of meaning in pluralist epistemologies that constitute the individual as a potential diversity of faculties and inter-relatedness.
- A process approach that respects the unique development of the individual and the inter-relatedness of all experiences.
- Hermeneutics as central to the process of the lifelong learning of learners and teachers—in that it radically changes both learners’ and teachers’ traditional roles. Slattery (1995: 253) clarifies this in the following way:

Teachers must be lifelong learners and students must be leaders of instruction. A hermeneutic circle must be formed in classrooms where the discourse is shared, empowering, emerging and tentative. This is a dramatic break with modern bureaucratic curriculum paradigms.

- Construction of meaning as a result of hermeneutic exploration, recognizing that meaning is constructed from experience.
- Curriculum viewed primarily as ‘*currere*’, which refers not to the racecourse etymology of ‘curriculum’, but to *the running of the race*, which emphasizes the individual’s own capacity to reconceptualize her or his own autobiography. As Schubert (1986: 33) writes:

The individual seeks meaning amid the swirl of present events, moves historically into his or her own past to recover and reconstitute origins, and imagines and creates possible directions of his or her own future.

A contemporary curriculum philosophy is, therefore, fundamentally an endeavour situated in living, real life, experienced in the form of a problem in the broadest sense of the word—a problem, existing or generated, that seeks solutions. This understanding has evolved as a consequence of the phase-four world seen in table 1, and has formidable implications for education and curricula.

Of course, none of us are really able to predict what an appropriate curriculum, or structure for a curriculum, for a post-modern world should be. Curriculum designers and implementers alike must seek to translate the philosophy and foundation we envisage into interpretations of a curriculum framework. Our proposal for such a framework would use the analogy of a spherical shape that has no beginning or end, no front or back, and no top or bottom, and as such constitutes integrated wholeness. It is multi-dimensional and can only be described if at least three of its dimensions, represented by three axes, the *x*-, *y*- and *z*-axes, are known. Each axis, in this context, represents the meta-themes of the whole, as seen in figure 1 (at the end of the article) on the *x*-axis, the competencies and skills to be cultivated through education; on the *y*-axis, the

problems that are authentic and relevant for a particular group of students; and on the *z*-axis, the variety of contexts in which the problems prevail. A particular point within this sphere may be represented by *x*, *y*, *z*, and brings together a *particular* competence (skill) to be cultivated by engaging in a *particular* problem within a *specific* context, which in turn provides a focus area for a fruitful opportunity for learning—as one point within the multi-dimensional sphere.

A myriad of such *x*, *y*, *z*-points, that is fruitful learning opportunities, exist on various levels of complexity within such a curriculum framework, and continually metamorphose into a fresh, responsive curriculum sphere. Depending on a particular point, for example, in history, or in time, or in an individual's life/identity, or in a nation's or community's existence, various *x*, *y*, *z*-points of immediate relevance can be highlighted and given a superordinate position—to fall back to a subordinate position when another, more relevant situation presents itself. Only through exploring more and more points of the sphere will 'reality' become known, that is unconcealed. However, the curriculum sphere does not drift in a vacuum. It is surrounded by a 'philosophy' that maintains its holistic character *through its teachers*. Their caring invigorates the 'ecological' system; the consequent synergy releases life's most valuable asset—human potential.

The representation of the curriculum as a dynamic sphere allows for the eclectic nature of a curriculum to emerge. As Slattery (1995: 266–267) concludes, post-modern curriculum development is:

radically eclectic, determined in the context of relatedness, recursive in its complexity, autobiographically intuitive, aesthetically intersubjective, phenomenological, experiential, simultaneously quantum and cosmic, hopeful in its constructive dimension, radical in its deconstructive movement, liberating in its post-structural intents, empowering in its spirituality, ironic in its kaleidoscopic sensibilities, and ultimately, a hermeneutic search for greater understanding that motivates and satisfies us on the journey.

Curriculum revival—an adventure

Although it is clear that a phase-four world is staring us in the face, it seems as though we have been beaten into submission—accepting our condition to be no more advanced than a phase-two world—rather than recognizing our complacency and fighting it with vigour. Unless we wake up to the challenge of a change to forms of curricula which maximize human potential, destruction of our civilization will be the result (Hall 1976: 4). It may well be true that none of us really know what an appropriate curriculum should be, what structure it should assume, or what it should contain, but uncertainty is a fundamental of learning to live in the fourth-phase world. However, uncertainty is also a powerful motivating force, compelling human beings to explore and *create* the future (Koestler 1972: 112).

The post-modern world *creates* the future. It follows that it is highly problematic, if not well nigh impossible to document/specify/outline curricula for it. It is *life* itself which becomes the curriculum, and *living it* becomes education. *Currere* becomes what it was in ancient Greece, *paideia*, the adventure of discovering and living one's potential. We will not see formal curricula in the fourth-phase world. We will look at life and find it there— where it is lived.

References

- Ackerman, B. A. (1980) *Social Justice in the Liberal State* (New Haven, CT: Yale University Press).
- Albanese, M. A. and Mitchell, S. (1993) Problem-based learning: a review of literature on its outcomes and implementation issues. *Academic Medicine*, 68(1), 52–81.
- Armstrong, T. (1991) *Awakening Your Child's Natural Genius: Enhancing Curiosity, Creativity and Learning Ability* (Los Angeles, CA: Pedigree Books).
- Aspin, D. N. and Chapman, J. D. (1994) *Quality Schooling: A Pragmatic Approach To Some Current Problems, Trends and Issues* (London: Cassell).
- Barrows, H. S. (1986) A taxonomy of problem-based learning methods. *Medical Education*, 20(6), 481–486.
- Barrows, H. S. and Tamblyn, R. M. (1980) *Problem-Based Learning: An Approach to Medical Education* (New York: Springer).
- Berman, L. M. and Aoki, T. T. (1991) *Toward Curriculum for Being: Voices of Educators* (Albany, NY: State University of New York Press).
- Berman, M. (1988) *The Reenchantment of the World* (Ithaca, NY: Cornell University Press).
- Bohm, D. (1980) *Wholeness and the Implicate Order* (London: Routledge & Kegan Paul).
- Bowers, C. A. and Flinders, D. J. (1990) *Responsive Teaching: An Ecological Approach to Classroom Patterns of Language, Culture, and Thought* (New York: Teachers College Press).
- Bridges, E. M. (1992) *Problem Based Learning for Administrators* (Eugene, OR: University of Oregon, ERIC Clearinghouse on Educational Management). ERIC ED 347 617.
- Capra, F. (1996) *The Web of Life: A New Synthesis of Mind and Matter* (London: Harper Collins).
- Clark, E. T. (1997) *Designing and Implementing an Integrated Curriculum: A Student-Centered Approach* (Brandon, VT: Holistic Education Press).
- Claxton, G. (1999) *Wise Up: The Challenge of Lifelong Learning* (London: Bloomsbury).
- Duch, B. J., Groh, S. E. and Allen, F. A. (2001) *The Power of Problem-Based Learning* (Sterling, VA: Stylus Publishing).
- Evers, C. W. and Walker, J. C. (1983) Knowledge, partitioned sets and extentionality: a refutation of the forms of knowledge thesis. *Journal of Philosophy of Education*, 17(2), 55–70.
- Flake, C. L. (2002) Teacher education, spiritual transformation and child advocacy. In V. H. Kazanjian, Jr. and P. L. Laurence (eds), *Education as Transformation: Religious Pluralism, Spirituality, and a New Vision for Higher Education in America* (New York: Peter Lang), 285–298.

- Fullan, M. (2001) *The New Meaning of Educational Change* (New York: Teachers College Press).
- Gutmann, A. (1987) *Democratic Education* (Princeton, NJ: Princeton University Press).
- Hall, E. T. (1976) *Beyond Culture* (Garden City, NY: Anchor Press).
- Harman, W. (1988) *Global Mind Change* (Indianapolis, IN: Knowledge Systems).
- Harman, W. (1992) Reconciling the experience of consciousness with the scientific world view. Paper read at the Science and Vision Conference. Pretoria: Human Sciences Research Council.
- Hindess, E. F. (1972) Forms of knowledge. *Proceedings of the Philosophy of Education Society of Great Britain*, 6(2), 164–175.
- Kleinig, J. (1973) R. S. Peters' use of transcendental arguments. *Proceedings of the Philosophy of Education Society of Great Britain*, 7(2), 149–166.
- Koestler, A. (1972) *The Roots of Coincidence* (London: Hutchinson).
- Land, G. and Jarman, B. (1992) *Breakpoint and Beyond: Mastering the Future Today* (New York: Harper Business).
- Levin, D. M. (1988) *The Opening of Vision: Nihilism and the Postmodern Situation* (London: Routledge).
- Liotard, J.-F. (1985) *The Postmodern Condition: A Report on Knowledge*, trans. G. Bennington and B. Massumi (Minneapolis, MN: University of Minnesota Press).
- Macdonald, D. (2003) Curriculum change and the post-modern world: Is the school curriculum-reform movement an anachronism? *Journal of Curriculum Studies*, 35(2), 139–149.
- Mancall, J. C., Lodish, E. K. and Springer, J. (1992) Searching across the curriculum. *Phi Delta Kappan*, 73(7), 526–528.
- McGinn, N. F. (1999) What is required for successful education reform? Learning from errors. *Education Practice and Theory*, 21(1), 7–21.
- Mendus, S. (1989) *Toleration and the Limits of Liberalism* (Atlantic Highlands, NJ: Humanities Press).
- Meyer, S. (1994) Practical reason and policy work on rebuilding the culture of learning and teaching. Proceedings of the Kenton 21 Education Conference (Cape Town, South Africa: University of Cape Town).
- Miller, J. B. (1988) *Connections, Disconnections and Violations* Work in Progress, No. 33 (Wellesley, CT: Wellesley College, Stone Center Working Paper Series). Available online at: <http://www.wcwoonline.org/title122.html>, accessed 21 July 2005.

- Miller, R. (1990) Beyond reductionism: the emerging holistic paradigm in education. *The Humanistic Psychologist*, 18(3), 314–323.
- Niebuhr, G. (1996) Colleges setting moral compasses. *New York Times*, 4 August.
- Noddings, N. (1992) *The Challenge to Care in Schools: An Alternative Approach to Education* (New York: Teachers College Press).
- Noddings, N. (1993) *Educating for Intelligent Belief or Unbelief* (New York: Teachers College Press).
- Noddings, N. (1995) *Philosophy of Education* (Boulder, CO: Westview Press).
- Noddings, N. (2002) *Educating Moral People: A Caring Alternative to Character Education* (New York: Teachers College Press).
- Noddings, N. and Shore, P. J. (1984) *Awakening the Inner Eye: Intuition in Education* (New York: Teachers College Press).
- Palmer, P. J. (1998) *The Courage to Teach: Exploring the Inner Landscape of a Teacher's Life* (San Francisco, CA: Jossey Bass).
- Palmer, P. J. (1999) Evoking the spirit of public education. *Educational Leadership*, 56(4), 2–27.
- Pearcey, N. R. and Thaxton, C. B. (1994) *The Soul of Science: Christian Faith and Nature Philosophy* (Wheaton, IL: Crossway Books).
- Schubert, W. H. (1986) *Curriculum: Perspective, Paradigm, Possibility* (New York: Macmillan).
- Senge, P. M., Roberts, C., Ross, R. B., Smith, B. J. and Kleiner, A. (1994) *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization* (London: Nicolas Bearly Publishing).
- Slabbert, J. A. (1997) A quantum leap to excellence: the challenge for education. Unpublished manuscript, University of Pretoria.
- Slattery, P. (1995) *Curriculum Development in the Postmodern Era* (New York: Garland).
- Steinberg, S. R. and Kincheloe, J. L. (1995) Series editors' introduction. In P. Slattery (ed.), *Curriculum Development in the Postmodern Era* (New York: Garland), iii–ix.
- Tarnas, R. (1991) *The Passion of The Western World: Understanding the Ideas That Shaped Our World View* (New York: Crown Publishers).
- Tatum, B. D. (2000) Changing lives, changing communities: building a capacity for connection in a pluralistic context. In V. H. Kazanjian, Jr. and P. L. Laurence (eds), *Education as Transformation: Religious Pluralism, Spirituality, and a New Vision for Higher Education in America* (New York: Peter Lang), 79–88.
- UNESCO (1996) *Learning: The Treasure Within: Report to UNESCO of the International Commission on Education for the Twenty-first Century* (Paris: UNESCO Publishing).

- Van Loggerenberg, A. (2000) Implementing a Problem-Based Learning Model in the Training of Pre-Service Teachers for an Outcomes-Based Technology Curriculum. Doctoral thesis, University of Pretoria.
- Waldrop, M. M. (1992) *Complexity: The Emerging Science and the Edge of Order and Chaos* (New York: Simon & Schuster).
- Watt, A. J. (1976) Transcendental arguments and moral principles. *Philosophical Quarterly*, 25(1), 40–57.
- Westbury, I. (1999) The burdens and the excitement of the ‘new’ curriculum research: a response to Hlebowitsh’s ‘The burdens of the new curricularist’. *Curriculum Inquiry*, 29(3), 355–364.
- Wielemans, W. (1993) *Voorbij het individu: Mensbeelden in Wetenschappen* [Beyond the Individual: Images of Man in the Sciences] (Leuven, Belgium: Garant).
- Wraga, W. G. (1999) Extracting sun-beams out of cucumbers: the retreat from practice in reconceptualized curriculum studies. *Educational Researcher*, 28(1), 4–13.
- Wraga, W. G. and Hlebowitsh, P. S. (2003) Toward a renaissance in curriculum theory and development in the USA. *Journal of Curriculum Studies*, 35(4), 425–438.
- Young, M. F. D. (1998) *The Curriculum of the Future: From the ‘New Sociology of Education’ to a Critical Theory of Learning* (London: Falmer).
- Zohar, D. and Marshall, I. (2000) *SQ: Spiritual Intelligence: The Ultimate Intelligence* (London: Bloomsbury Publishing).

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Table 1. Civilisation's journey (adapted from Harman 1988, 1992, Land and Jarman 1992, Pearcey and Thaxton 1994).

	Phase 1	Phase 2	Phase 3	Phase 4
Time	?–16 th century	16 th –19 th century	20 th century	Emerging
Main events	Aristotelian geocentrism	First scientific revolution: Copernican heliocentrism	Second scientific revolution: Relativity theory and quantum physics	Third scientific revolution: Knowledge is fallible; social and spiritual revival
Metaphysical perspective	Multiple spiritualism: no matter–mind concept	Materialistic monism: matter gives rise to mind	Science–humanities dualism: mind and matter	Transcendental pluralism: mind gives rise to matter
World-view	Spiritual survival	Logical growth	Creative fulfilment	Maximizing potential
Science dominance	Mythic-ontologic	Functionalistic; positivistic; reductionistic; mechanistic; deterministic	Naturalistic; humanistic	Noetic; humanistic
Thought pattern	Intuitive/spontaneous; past, present and future part of unified continuum	Rational; past leads to present and future	Creative; future vision drives present and future	Creating the future
Religion	Worship of infinite spirits and nature	Gods. Organized religion merged with temporal rulers	Individual spirituality	Interconnected divinity
Power	Assumed by skilled members as needed	Physical force; hierarchical power structure; inherited power	Shared responsibility	Collective accountability
Time procedures	Unstructured. Emphasis on seasonal cycles	Rigid schedules; mechanical	Flexible; versatile	Timeless; activity dictates
Relationship with nature	Humans dominated by and in awe of nature's mysteries	Humans conquer nature	Ecological	Wholeness
Human membership	In clan by birth	Extended by commonality	Enriched through shared differentness	Participative growth
Social system	Ability dictates roles. Community based	Specific roles. Unequal status	Empowerment of all	Collective responsibility
Relationships	By necessity. Dominated by nature	Dependent; independent; competitive	Interdependent; co-operative	Interconnected co-operation
Work and play	No separation	Divided and different	Joyful work and play	Interconnected

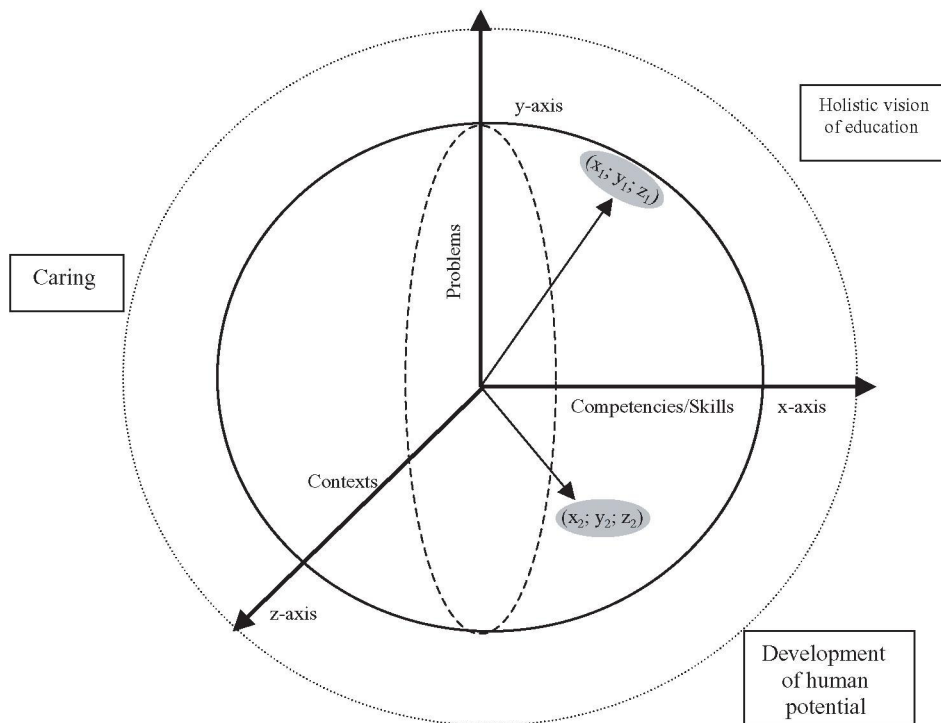


Figure 1. A post-modern curriculum framework: the holistic sphere. Key: x-axis: Competencies/skills—meta-learning skills; doing skills; attitudes; values; information technology; y-axis: Problems: real-life problems; simulated problems; case studies; z-axis: Contexts: cultural; community; ethnical; moral; political; social; global; economical; world of work; world of recreation/leisure; environment; rural/urban; personal/identity; health.