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Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement

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Abstract

Despite continuing criticism of public education, experimentally demonstrated and field tested teaching methods have been ignored, rejected, and abandoned. Instead of a stable consensus regarding best teaching practices, there seems only an unending succession of innovations. A longstanding educational doctrine appears to underlie this anomalous state of affairs. Termed developmentalism, it presumes "natural" ontogenesis to be optimal and it requires experimentally demonstrated teaching practices to overcome a presumption that they interfere with an optimal developmental trajectory. It also discourages teachers and parents from asserting themselves with children. Instead of effective interventions, it seeks the preservation of a postulated natural perfection. Developmentalism's rich history is expressed in a literature extending over 400 years. Its notable exponents include Jean Jacques Rousseau, John Dewey, and Jean Piaget; and its most recent expressions include "developmentally appropriate practice" and "constructivism." In the years during which it gained ascendance, developmentalism served as a basis for rejecting harsh and inhumane teaching methods. Today it impedes efforts to hold schools accountable for student academic achievement.

Over the past thirteen years American public schools have been subjected to an increasing barrage of criticism. The chief object of complaint has been their continuing failure to equip students with the academic and workplace skills needed in an era of increasing economic competition.

Recent expressions evidence a growing public impatience. In an April 1993 statement, U.

S. Secretary of Education Richard Riley commented: "A watered down curriculum and low expectations for too many of our students prevent them from meeting high standards" (Riley, 1993). A September 1993 report by the National Center for Education Statistics found that 16 to 20 percent of the U. S. adults who perform at the lowest levels of reading, writing, and arithmetic were high school graduates (Kirsch, Jungblut, Jenkins & Kolstad, 1993). In November of 1993, the U. S. Department of Education reported that in comparison to their peers in other industrialized countries, gifted American students rank near the bottom in math and science achievement (Kantrowitz & Wingert, 1993). In September of 1994, the American Legislative Exchange Council (ALEC, 1994) disclosed that since the Nation at Risk report in 1983 there has been little change in the achievement levels of public school students despite a 43% increase in real dollar expenditures. Near the end of 1994, the Organization for Economic Co-operation and Development (OECD, 1994) described the quality of American education as a major threat to the future economic well-being, productivity, and competitiveness of the U. S. In April of 1995, Business Week (Mandel, Melcher, Yang & McNamee, 1995) declared that businesses find too many job applicants unable to read, write, or do simple arithmetic and that Americans are "fed up" with their public schools.

Berliner and Biddle (1995) and various other commentators (Bracy, 1996; Westbury, 1992) have attempted to defend the public schools' record by offering a more sympathetic interpretation of the available evidence. However, a recent review of Berliner and Biddle (Stedman, 1996a) and the ensuing exchange between Berliner, Biddle and Stedman (Berliner & Biddle, 1996; Stedman, 1996b) demonstrates that reinterpretation of school and student performance data is unlikely to convince knowledgeable observers that the ongoing criticisms of public schooling are "manufactured" or otherwise off target.

Despite these mounting concerns, schools have largely ignored the availability of a number of teaching methodologies that seem capable of producing the kind of achievement outcomes demanded by the public. They are experimentally validated, field tested, and known to produce significant improvements in learning. Instead, the schools have continued to employ a wide variety of untested and unproven practices which are said to be "innovative" (Carnine, 1995; Marshall, 1993). In particular, teaching practices such as mastery learning and Personalized System of Instruction (Bloom, 1976; Guskey & Pigott, 1988; Kulik, Kulik & Bangert-Drowns, 1990), direct instruction (Becker & Carnine, 1980; White, 1987), positive reinforcement (Lysakowski & Walberg; 1980, 1981), cues and feedback (Lysakowski & Walberg, 1982), and the variety of similar practices called "explicit teaching" (Rosenshine, 1986), are largely ignored despite reviews and meta-analyses strongly supportive of their effectiveness (Ellson, 1986; Walberg, 1990, 1992). Yet methodologies such as whole language instruction (Stahl & Miller, 1989), the open classroom (Giacomia & Hedges, 1982; Hetzel, Rasher, Butcher, & Walberg, 1980; Madamba, 1981; & Peterson, 1980), inquiry learning (El-Nemr, 1980), and a variety of practices purporting to accommodate teaching to student diversity (Boykin, 1986; Dunn, Beaudrey, & Klavas, 1989; Shipman & Shipman, 1985; Thompson, Entwisle, Alexander, & Sundius, 1992) continue to be employed despite weak or unfavorable findings or simply a lack of empirical trials.

Equally surprising is the observation that many of the ignored and rejected methodologies are quite similar to those that have been found effective and are routinely used by special educators and school psychologists (Hallahan, Kauffman, & Lloyd, 1985; Hammill & Bartel, 1990; Wang, Reynolds & Walberg, 1987). In many instances, the otherwise unused practices are successfully implemented but only after a student has been identified as disabled.

Methods Texts and Experimental Research

A sampling of popular textbooks used in regular education teaching methods courses

offers what may be a reason for this anomalous state of affairs. Widely used textbooks--in the present report, elementary, middle, and secondary teaching methods texts that have been revised repeatedly, some over thirty and forty years (Armstrong & Savage, 1994; Callahan, Clark, & Kellough, 1992; Clark & Starr, 1991; Henson, 1993; Jacobsen, Eggen, & Kauchak, 1993; Kim & Kellough, 1995; Lemlech, 1994; Ornstein, 1992; Sheperd & Ragan, 1992)--give little weight to experimentally demonstrated results as a basis for identifying effective teaching practices. Instead, they present an eclectic assortment of approaches colored by distinct distaste for methods that are structured, teacher-directed, and result-oriented--characteristics that exemplify the experimentally vindicated approaches to teaching. Lemlech's (1994) account is typical:

In classrooms where students are given little opportunity to choose what they will learn, how they will learn, and the way in which they will be evaluated for learning, there is a greater likelihood that the classroom is structured through intrinsic rewards, incentive programs, and normative evaluation. As a consequence, learning will become joyless. There is also a tendency in these classrooms to overemphasize repetition, drill, and commercially produced dittos for practice materials. Some believe this to be prevalent in low socio-economic and low achieving classrooms, and as a consequence it may be the cause of negative motivation patterns. (p. 91)

Instead of empirically grounded recommendations as to best practices, the methods texts suggest a personalized and intuitive approach to instruction built around teacher experience, circumstances, and sensitivity to student needs. Ornstein's (1992) advice exemplifies this view:

In considering what is best for you, you must consider your teaching style, your student's needs and abilities, and your school policies. As you narrow your choices, remember that approaches overlap and are not mutually exclusive. Also remember that more than one approach may work for you. You may borrow ideas from various approaches and construct your own hybrid. The approach you finally arrive at should make sense to you on an intuitive basis. Don't let someone impose his or her teaching style or disciplinary approach on you. Remember, what works for one person (in the same school, even with the same students) may not work for another person. (p. 129)

In essence, these methods texts acknowledge research as a foundation for educational practice but give it little weight in formulating a conclusion about the practices most likely to produce results. Neither do they encourage the reader to rely on research as a basis judging the quality of teaching practices. They seem to wear the mantle of science but oddly neglect its substance and purpose.

The same emphasis on teaching shaped by innovation and sensitivity to student differences is quite evident in the catalogues of publishers that target teachers and teacher educators. The titles and descriptions of offerings by Heinemann (1995) and National Education Association (1995), for example, both reflect a market preference for the new and innovative and a market

indifference to the empirically grounded or to the tried and true.

The varied and ever-mutating body of scholarship referenced by the textbooks implies the kind of ongoing refinement and revitalization characteristic of scientifically informed practice. Yet their recommendations with respect to teaching do not reflect the kind of consensus that would be expected to emerge as recent advancements are built onto established findings (Stanovich, 1992, 1993). Empirical findings are at best an imperfect guide to practice; but as they cumulate and converge, they do yield important clues. At the least, they reveal that certain findings tend to repeat themselves. The impression conveyed by the present textbooks, however, is that learning's relationship to teaching is largely idiosyncratic and unpredictable. That which is true for one teacher, teaching one lesson, to one set of students is not a valid guide for others.

Neither do these textbooks acknowledge the unique value of experimental trials. The distinctive value of experimental evidence is understood throughout the scientific community (Cook & Campbell, 1979), and experimentation as a guide to effective teaching practice has been recognized by the educational community for more than thirty years (Campbell & Stanley, 1963). Yet the methods texts are silent on the matter. Here again although the fallibility of empirical evidence must be acknowledged, it must also be said that the well conceived experiment offers more convincing evidence of whether a teaching method works than a report offering only description or correlation. Dismissing experimental findings on the grounds that offer only good but not certain evidence of pedagogical effectiveness is to fallaciously make the perfect the enemy of the good.

Given the market success of these textbooks and the teaching profession's apparent comfort with such an orientation, it is not difficult to see how schools continue to respond to the public call for better results with untested innovations (Carnine, 1995). Seemingly the education community has neither a scientifically founded consensus about best practices nor a recognition that experimental evidence would be integral to the formation of such a consensus. In the absence of attention to experimental trials, teaching innovations lacking demonstrated effectiveness can come into vogue on the strength of publicity and marketing only to later be bypassed by more of the same (Armstrong, 1980; Carnine, 1993; Marshall, 1993). In truth, continual innovation may have become a way of coping with public criticism. New practices are incongruously piled onto the old as consultants, school boards, superintendents, and teachers come and go (Armstrong, 1980). Criticisms that are behind the curve can be ignored because they are no longer relevant. Criticisms of the latest innovations can be ignored because they are premature and intolerant of innovation.

The Influence of Developmentalism

The thesis advanced in the following is that a longstanding but poorly recognized educational doctrine underpins the neglect of experimental evidence found in methods textbooks and in the attempt to find more effective teaching methods. It is a doctrine that pervades teacher education and one that disposes the teaching profession to favor certain practices and to ignore others regardless of empirically demonstrated merit. Termed "developmentalism" (Stone, 1991, 1993a, 1994), it is a form of romantic naturalism that inspires teacher discomfort with any practice that is deemed incompatible with natural developmental processes (Binder & Watkins, 1989). It is a view that acquired popularity as a grounds for rejecting the often harsh formalist teaching methods of the eighteenth and nineteenth centuries (Ravitch, 1983; Riegel, 1972). Today it poses an obscure but powerful restriction on scientifically informed educational improvement and more broadly on teacher and parent efforts to influence the developing child.

Developmentalism's clearest present-day expressions include the "child centered" or "progressive" teaching seen in Canadian schools (Freedman, 1993), the "progressivism" or "Plowdenism" seen in the British Primary Schools (Alexander, Rose, & Woodhead, 1992), and

the "developmentally appropriate practice" advocated by early childhood educators (Carta, Schwartz, Atwater & McConnell, 1991). The learner-centered teacher education favored by National Education Association is another expression, one that is widely known and well regarded in colleges of education (Darling-Hammond, Griffin & Wise, 1992).

Discovery learning is predicated on developmentalism (Bruner, 1966) and so is the increasingly popular constructivism (Brooks & Brooks, 1993). Although constructivism employs a distinctive terminology and a more credible theoretical foundation, its major precepts are largely those advanced by John Dewey (1916/1963) at the turn of the century and discredited in the nineteen fifties. Dewey's "progressive education" (Dewey, 1938/1963) is the best known historic form of developmentalism and one whose present day influence is remarkably underestimated. "Reflective thinking," "authentic learning," "hands-on" experiences, "authentic assessment," and many other of today's best known pedagogical terms and concepts are rooted in Dewey's adaptation of developmentalism. Other recent (but now less popular) forms of developmentalism are the "third force" and "humanistic" psychologies on which the educational innovations of the nineteen sixties and seventies were based (Weber, 1972).

A variety of other popular practices are less explicitly developmentalist but they share developmentalism's premises about the goodness of the natural--a characteristic that is key to their acceptance by the educational mainstream. Well known examples include the "whole language" and "language experience" approaches to reading (Altwerger, Edelsky & Flores, 1987), the closely related "emergent literacy" view of reading (Teal & Sulzby, 1987), and the "cognitive apprenticeship" approach to instruction (Brown, Collins, and Duguid, 1989). Stahl and Miller's (1989) discussion of whole language and language experience reading instruction highlights its appeal as a "natural" mode of instruction: "The goal of both approaches is to bring children into literacy in a 'natural' way [*italics added*], by bridging the gap between children's own language competencies and written language" (p. 88).

Developmentalism: The Term and Its Referents

Although Stone (1991, 1993a, 1994) seems to have originated the use of "developmentalism" in reference to the doctrine discussed herein, similar terms have been used to denote developmentally informed educational practice. Sprinthall and Sprinthall (1987) used the term "developmentalists" in reference to educators who base their practices on developmental considerations. A similar term-- "philosophic-developmentalists"-- was used by Lawrence Kohlberg and Rochelle Mayer (1972) in reference to the views of John Dewey (1859-1952) and Jean Piaget (1896-1980). Dewey's and Piaget's views were termed "interactionist" and those of Jean Jacques Rousseau (1712-1778), "maturationist." In contrast to these precedents, developmentalism as used by Stone (1991, 1993a, 1994) refers to a broad doctrine that presumes "natural" ontogenesis to be optimal. Such a presumption is common to both maturationist and interactionist views of development; and it is implicit in Dewey, Piaget, Rousseau, and the others here termed developmentalists. As the term is used here, the "ism" in developmentalism is the uncontested assumption that the "natural" course of development, however conceived in theory, is the optimal possibility. It is an obscure but vital form of romantic naturalism--one thoroughly embedded in the American culture.

Stated broadly, developmentalism is the view of age- related social, emotional, and cognitive change that regards the optimal progression to be a fragile result of native tendencies emerging in a world congenial to their presumed wholesome nature. It emphasizes (a) the sufficiency of a natural inclination to learning, (b) the dangers of interference with native characteristics and proclivities, and (c) the desirability of learning experiences that emulate those thought to occur naturally. Social, emotional, and cognitive attributes that may be the unrecognized result of teacher and parent intervention are presumed by developmentalism to be

manifestations of nature's normal trajectory. Man, his social contrivances, and indeed, civilization are seen as distinct from nature; and deliberate efforts to alter the course of child development are suspected of interfering with optimal developmental outcomes.

Developmentalism assumes that the developmental directions issuing from the child's native tendencies and characteristics are optimal because they are a part of "nature." Although their concepts of development differed, Rousseau, Dewey, Piaget, and all other developmentalists share this premise. For Rousseau, nature was God's work untainted by human influence. In his view, the optimal developmental progression was simply the emergence of native tendencies and characteristics unfettered and unspoiled by society. By contrast, Dewey and Piaget considered the child's tendencies and characteristics to be the product of Darwinian evolution. Native tendencies and characteristics were desirable because they had survived the process of natural selection. Unlike Rousseau, Dewey and Piaget held that the optimal progression depended not only on successful maturation but on a natural process of interaction wherein the native characteristics selected-for by evolution were enhanced by the naturally occurring experiences to which they were fitted (Kohlberg & Mayer, 1972). Thus originated Dewey's emphasis on authentic educational experience. Evolution equipped humans to learn by solving problems, therefore learning in the context of problem solving was optimal. Although Rousseau's development was more exclusively a matter of maturation, he too treated social and educational influences as having the ability to either facilitate and nurture, or to corrupt and misdirect the optimal progression to which nature was postulated to tend.

A Brief History of Developmentalism

Developmentalism's historic foundations go well beyond the writings of Rousseau, Dewey, and Piaget. Pedagogical theorists such as Johann Bernhard Basedow (1724-1790), Johann Heinrich Pestalozzi (1746-1827), Georg Wilhelm Friedrich Hegel (1770-1831), Friedrich Froebel (1782-1852), Herbert Spencer (1820-1903), William James (1842-1910), and G. Stanley Hall (1844-1924) are the best known proponents of the past 200 years. In general, their views were premised on either the maturation-only or the maturation/environmental- interaction schemes of development.

The ascendance of developmentalism in America may be related to an early belief about education as a cause of madness. According to Makari (1993), Rousseau's "education naturelle" was presaged by the writings of John Locke in 1691 and Giambattista Vico in 1709. Vico believed that children develop through a series of immutable phases and he condemned educational practices not in harmony with the "natural" progression. He considered abstract Cartesian thought to be particularly harmful. Vico's supposition that that which appears to be unnatural is apt to harmful has been echoed repeatedly even to the present day. Proponents of "developmentally appropriate" teaching practice, for example, believe that the use of incentives with young children are likely to be damaging.

Vico's belief was accepted within American psychiatry from its earliest years, and it persisted in the professional literature well into the late eighteenth hundreds (Makari, 1993). The public and professional acceptance of such thinking as enlightened and informed clearly would have lent credibility to the criticisms of formalist teaching methods voiced by Dewey, James, and others. Also it would have bolstered the acceptance of the developmentalist schooling methods imported from Europe throughout the era.

Rousseau and European Developmentalists

Rousseau argued that all that comes from the hand of the Creator must be good; and in

doing so, he substituted a doctrine of original goodness for that of original sin. He believed that formal schooling was not only unnecessary (because children tend naturally to learn) but that it harms students by violating their natural propensities (Green, 1955). Classically premised on a romanticist faith in nature, Rousseau's *Emile* was a critique of educational practice in his day.

Hegel embellished Rousseau's theme and described child development as a process of unfoldment toward a state of natural perfection (Bigge & Hunt, 1962). Basedow, Pestalozzi, and Froebel each articulated their unique vision of schooling based on Rousseau's and Hegel's concepts (Rusk, 1965). In each case, their conceptual framework required schooling to be fitted to the child in the interest of preserving the goodness inherent in nature, and in each case they were received by the European public as a welcome alternative to the often harsh teaching methods of the day. Teachers of the era typically were retired drill sergeants and their methods were adaptations of military training (Riegel, 1972).

Herbert Spencer and William James

Spencer and James similarly argued that education must be fitted to the child but their ideas were premised on an evolutionary model of nature (Cremin, 1964). The vision of natural perfection suggested by evolutionary theory differed from that of Rousseau but the ideal of education in harmony with natural perfection again was perpetuated. Optimal educational results were those that arose from fulfillment of nature's inherent order--an order shaped by the workings of evolution. Although Spencer and James both relied on an evolutionary premise, their thinking diverged as to the relationship between the natural order and desirable educational outcomes. Spencer conceived of education as subordinate to and, ideally, accommodated to the broader evolutionary process. He held that men were "infinitely more creatures of history than its creators" (Cremin, 1964, p. 93). Thus educational practice fitted to nature's dictates was the arrangement most conducive to optimal enhancement of the species. In contrast, James conceived of the human mind as having an active role in shaping the natural order and; more than Spencer, Rousseau, or Dewey, he believed that teachers should instill good (i.e., adaptive) habits.

James differed in other important ways from Dewey and other developmentalists. In contrast to Dewey, James conceived of educational outcomes as specific observable behavior change, not as a broad gaged and intangible intellectual growth. Also in contrast to Dewey and most other developmentalists, James believed that learned habits could serve to inhibit or overcome unfavorable natural tendencies. Thus he was he was not especially critical of recitation and the older "formalist" educational methods, and neither did he expect all learning to be motivated by a genuine personal interest. In James's words, the belief that learning should be motivated only by interest was "soft pedagogy" (James, 1899/1924, p. 109).

As to the relationship between human development and learning, James held that evolution had endowed humans with naturally "ripening" instincts and native interests to which successful teaching should be fitted. Unlike Dewey and other developmentally informed theorists, however, he did not insist on adherence to nature's ripening process or on an approximation of nature's interaction patterns as the optimal means of educating. Rather James' *Talks to Teachers* (1899/1924) offered practical recommendations that could be implemented largely without reference to developmental considerations. Thus in spite of his attention to human development as an educational consideration, James, unlike Dewey, did not greatly contribute to the restrictive orthodoxy that is developmentalism.

G. Stanley Hall and Arnold Gesell

G. Stanley Hall may have been the individual most responsible for infusing the American educational tradition with the maturation-only version of developmentalism (Strickland &

Burgess, 1965). Hall believed that quality teaching was that which was fitted to what he termed a "saltatory" pattern of development--a pattern he believed to have been dictated by human evolutionary history (Hall, 1907).

Hall's views are among the most explicitly developmentalist in the history of American education; and although his "general psychonomic law" (ontogeny recapitulates phylogeny) was eventually rejected, his concept of improving the educational process through the study of child development became a mainstay educational orthodoxy (McCullers, 1969). In his essay "The Ideal School as Based on Child Study," Hall argued that contrary to accepted Western educational practice, the school should be fitted to the child rather than the child fitted to the school. Teachers, he believed,

. . . should strive first of all to keep out of nature's way, and to prevent harm, and should merit the proud title of defenders of the rights and happiness of children. They should feel profoundly that childhood, as it comes fresh from the hand of God, is not corrupt, but illustrates the survival of the most consummate thing in the world; they should be convinced that there is nothing else so worthy of love, reverence, and service as the body and soul of the growing child. (cited in Cremin, 1964, p. 103).

In his definitive account of progressive education, Cremin (1964, p. 104) argues that the popularization of Hall's "pediocentric" view was "truly Copernician" because it shifted the "burden of proof" for learning from the student to the school. Coming at a time when compulsory education was becoming widespread, its impact on American education was enormous and continues to be felt.

The aim of improving the educational process through child study was further popularized by Hall's student Arnold Gesell. Although not widely read today, Gesell's developmental concepts are consistent with popularly held views of early childhood development (cited in Bigge & Hunt, 1962):

As with a plant, so with a child. His mind grows by natural stages. A child creeps before he walks, sits before he stands, cries before he laughs, babbles before he talks, draws a circle before he draws a square, lies before he tells the truth, and is selfish before he is altruistic. Such sequences are part of the order of Nature. . . . Every child, therefore, has a unique pattern of growth, but that pattern is a variant of a basic ground plan. (p. 166)

John Dewey and Progressive Education

John Dewey is another developmentalist who did not rely on a formally stated developmental sequence. Instead, Dewey believed that evolution had equipped man with characteristics fitted to certain types of naturally occurring experiences and that the learning that emerges as the individual encounters these experiences is optimal. Quality teaching was, therefore, the practice of fitting educational experiences to the emerging characteristics and proclivities of the child for the purpose of optimizing "growth." Optimal development was both

driven by maturation and nurtured by experience. In contrast to Rousseau, Dewey did not consider maturation sufficient to guide the process. Instead, he was frequently critical of progressive educators who followed Rousseau's maturational precepts, referring to their " . . . idealizing of childhood [as] . . . lazy indulgence" (cited in Axtelle & Burnette, 1970, p. 260).

Also contrary to popular belief, Dewey conceived of school as a structured experience in which teachers would ingeniously arrange student encounters with personally meaningful problems--problems which, if well chosen, would instigate self-directed learning experiences (Dewey, 1916/1963). The teacher's actions, however, were intended as a means of facilitating or enhancing a spontaneous learning process, not as a means of unnaturally or artificially inducing a preconceived outcome. In Dewey's words, the only proper aim of education is "growth" (Dewey, 1916/1963):

Since growth is the characteristic of life, education is all one with growing; it has no end beyond itself. The criterion of the value of school education is the extent in which it creates a desire for continued growth and supplies means for making the desire effective in fact. (p. 53)

Dewey argued that the right sort of experience would instigate "reflective" thinking and thereby move the student toward a meaningful and individually defined form of knowing. The problem solving experience was, in his view, nature's way of teaching--the way in which the species had been equipped for learning by virtue of natural selection. Dewey's prescriptions for teaching were designed to emulate nature's process.

Because he believed that true understanding was personalized, Dewey held that educational aims could not be dictated by any agent external to the student (Dewey, 1916/1963, 1938/1963; Feldman, 1934/1968). For this reason, Dewey's concepts severely limited the ability of teachers to insure that students acquire any preconceived understanding or knowledge. Education was a process intended to enhance the student's reflective powers. That subject-matter which a student learned incidental to the educational process was the only important or expected kind of formal educational achievement--a view clearly at odds with traditional expectations for schooling and with the concept of teacher accountability for specific academic accomplishments. An individual's familiarity with the knowledge and insights gleaned by intellectual forebearers was of secondary importance in Dewey's thinking.

Dewey's departure from traditional expectations for schooling was tied to his reliance on an evolutionary model of nature (Boydston, 1970). He believed that progressive schooling would produce varied outcomes; that the outcomes most advantageous to society would be selected for; and that society would be bettered by the process. Although he opposed preconceived outcomes as the aim of schooling, his faith in human rationality led him to expect that students would arrive at commonly held truths as a result of their personal explorations.

A similarly founded departure from conventional expectations for schooling--Dewey's emphasis on student interest as the sole legitimate source of student motivation--led to practical difficulties with his approach. Because student interests might be far removed from conventional academic pursuits, the time, effort, and resources necessary to elicit their emergence was destined to collide with economic reality. The cost-effectiveness of schooling was not a major consideration in Dewey's time. Neither was the availability of meaningful occupational opportunities for students whose natural thirst for learning was significantly delayed. Thus in spite of his pragmatic orientation, neither Dewey nor his followers seemed to appreciate the pedagogic and economic inefficiencies that would result as growing children became immersed in a world increasingly dominated by competing attractions.

As to reliance on formal knowledge of human development, Dewey called for teachers to

be guided by the emergence of the individual student but to be informed by known developmental considerations (1916/1963):

The method of [knowing and learning exhibited by an individual student] . . . will vary from that of another (and properly vary) as his original instinctive capacities vary, as his past experiences and his preferences vary. Those who have already studied these matters are in possession of information which will help teachers in understanding the responses different pupils make, and help them in guiding these responses to greater efficiency. Child-study, psychology, and a knowledge of the social environment supplement the personal acquaintance gained by the teacher. But methods remain the personal concern, approach, and attack of an individual, and no catalogue can ever exhaust their diversity of form and tint. (p. 173)

In essence, the student's "needs" were to guide the selection and sequencing of educational experiences. Accordingly, Dewey's curriculum was comprised of the subject matter and experiences that fit the unique pursuits of the individual. Knowledge of formal subject matter was purely incidental to the educational process (Dewey, 1938/1963).

The fact of Dewey's long and prestigious career combined with the extensive influence of the progressive education movement resulted in Dewey's principles and its inherent developmentalism becoming a very potent educational orthodoxy. Cremin (1964) notes that by the late nineteen forties and early fifties, the language and concepts of progressive education were no longer thought of as representing a particular educational view. Rather they were simply considered good and sensible educational practice. For a period of fifty or so years following World War I, both the U. S. Office of Education and the National Education Association disseminated educational recommendations based on progressive principles as "best practices." Today, teaching practices inspired by Dewey's concepts continue to attract adherents despite discouraging empirical findings. The attempt to improve student achievement by matching teaching styles with learning styles and investigations of attribute- treatment interactions are examples of research that fail to support Dewey's recommendations for teaching (Slavin, 1991).

Within teacher education, progressivists were extremely influential. William Heard Kilpatrick held the senior chair in social foundations of education at Teachers College, Columbia University from 1918 to 1938. During that time he is said to have taught 35,000 teachers (Cremin, 1964). Thus even though progressive education per se eventually fell into disrepute, its concepts and jargon were so thoroughly established as "conventional wisdom" that the reasonableness and intuitive appeal of all subsequent educational theorizing was largely governed by its compatibility with progressive concepts--concepts that for the most part embodied one or another version of developmentalism.

Neoprogressive Theorists

Subsequent to progressive education's demise in the late nineteen fifties, a number of neoprogressive psychological theories, all possessing a strong developmentalist bent, gained widespread popularity within the teaching profession (Weber, 1972). Exemplars include Lawrence Frank, Daniel Prescott, Carl Rogers, Arthur Combs, Abraham Maslow, A. S. Neill,

and Erik Erickson--all of whom viewed central aim of education as a broad gauged personal development. Although their theoretical foundations and emphases diverged from those of progressive education, (for example, the liberation of human potential, the enhancement of self-esteem, the achievement of self-actualization, etc.), their recommendations for teachers were plainly congruent with progressive education's focus on facilitation of naturally developing tendencies and processes. Other theorists emphasized narrower facets of development but they too were entirely compatible with developmentalism and progressive education (Weber, 1972). These include Paul Torrence who focused on the development of intellectual creativity and Lawrence Kohlberg who articulated a moral development progression based on Piaget's general framework.

Of particular relevance to present day educational practice are the neoprogressive accounts of cognitive development that became popular in the late nineteen sixties and early seventies. Jerome Bruner and, especially, Jean Piaget are the best known exemplars in this area; and both are essentially compatible with Dewey, particularly in their emphasis of a natural, i.e., personal discovery, type of learning experience.

Jean Piaget and Lev Vygotsky

As earlier noted, Kohlberg and Mayer (1972) identified both Piaget and Dewey as exponents of "philosophic- developmentalism"--a view that holds intellectual growth to be the only defensible aim of education. Piaget's theory was grounded in his extensive observations of his three children and in a host of more systematic investigations undertaken subsequently. By training a biologist, Piaget described what seemed to be a biologically shaped sequence of person/ environment interaction--one he believed necessary to the emergence of individual intelligence. Thus, in contrast to the commonsensical and anecdotal accounts of intellectual development offered by Dewey, Piaget's work provided educators an elaborate theoretical edifice based on legitimate scientific observation.

The Russian psychologist Vygotsky (1987), a contemporary of Piaget, similarly conceived of a biologically shaped developmental progression but with an important differences in emphasis. In contrast to Piaget, Vygotsky argued that learning as a result of sociocultural experiences played a far greater role in the emergence of mature thinking and behavior. The influence of experience on behavior, however, was limited by a biologically governed zone of proximal development. Of the two theorists, Piaget was far better known and thus exerted far greater influence on educational practice.

Given the credibility of his findings, Piaget's educational recommendations were taken as substantially more authoritative and convincing than those of Rousseau, Dewey, and the others. Yet, despite its merits, Piaget's theorizing did not escape the preconceptions of its predecessors. As had Dewey and Rousseau, Piaget surveyed that which he took to be the naturally occurring developmental progression and presumed it optimal. Thus his conclusions--ones buttressed by impressive theoretical and empirical refinements-- conferred a predictable and welcome affirmation of developmentalist beliefs.

Piaget's educational recommendations were intended to preserve "natural" experiences and to facilitate that which is unique to the individual. According to Kohlberg and Mayer (1972) they include:

- . . . (1) attention to the child's mode or style of thought, i.e., stage; (2) match of stimulation to that stage, e.g., exposure to modes of reasoning one stage above the child's own; (3) arousal, among children, of genuine cognitive and social conflict and disagreement

about problematic situations (in contrast to traditional education which has stressed adult "right answers" and has reinforced "behaving well"); and (4) exposure to stimuli toward which the child can be active, in which assimilatory response to the stimulus-situation is associated with "natural" feedback. (p. 462)

Although the empirical underpinnings of Piaget's framework have been undermined by subsequent research (Siegler, 1991) and his theory significantly revised (Case, 1991), Piaget's thinking remains highly influential with mainstream educators. Its recent educational expression is the increasingly well known "constructivism" (Brooks & Brooks, 1993); and as with virtually all popular educational doctrines, its acceptance by the educational mainstream reflects its compatibility with Dewey and developmentalism. Overton (1972) acknowledges the mutually supportive relationship between Piagetian developmental concepts and Dewey. In essence, Dewey enabled popularization of Piaget, and Piaget has provided a seemingly unassailable rationale for Dewey's educational prescriptions:

. . . Piaget's functional position contributes primarily to educational foundations and methods. The implications of his major emphasis upon activity echo progressive education's assertions of intrinsic motivation, self-direction, and freedom of the learner. The detailed analysis of the nature of the activities involved in adaptation stresses the significance of discovery-oriented methods in which the teacher actively participates by presenting appropriate materials and setting appropriate problems over methods of rote drill, training, or enriched environments. Above all, there is the point shared with progressive education that learning and development occur through the experience of the child's actively confronting his social and physical world. (Overton, 1972, p. 113-114)

Thus the theoretical and empirical expressions of present day (mainly Piagetian) developmentalism may not be Dewey's but its conclusions about educational practice are largely the same (Reschly & Sabers, 1974).

Although today viewed principally as guide to teaching at the primary school level, developmentalism serves as a conceptual foundation for educational practice at all levels (Clark & Starr, 1991; Sprinthall & Sprinthall, 1987; Squire, 1972; Wlodkowski, 1986). At the preschool and K-3 levels, the "developmentally appropriate instruction" concept has so thoroughly penetrated educational thinking that it is included in the "America 2000" statement of national educational goals (U.S. Department of Education [USDOE], 1991); it is acknowledged in the school reform principles formulated by business leaders (Committee for Economic Development, 1991); and it is explicitly cited in school reform legislation (Kentucky Education Reform Act, 1990; Stone, 1993).

Developmentalism's Restrictions on Teaching and Parenting

Developmentalism's effect on educational reform must be understood in the context of its influence on teaching, parenting, and socialization as a whole. As the now popular African

proverb suggests, "it takes a village to raise a child," thus the influence developmentalism's strictures and recommendations on the actions of both parents and teachers are critical to schooling outcomes.

In general, developmentalist guidance has encouraged parents and teachers to be less assertive and to afford children greater freedom. In particular, it has encouraged lessened parent insistence on study and effort in school and on mature and responsible behavior generally. Parents are given to believe that in a developmentally accommodative world, frustration and delayed gratification are to be minimized while immediate success and satisfaction are to be maximized. For example, an NEA publication by Wlodkowski (1986), discourages teachers' from insisting on results:

We need to look more at the process and performance of our students and less at the more narrow and self-defeating emphasis of product or acquisition. If a student is responding with enthusiasm and interest, she/he will probably learn, but often without a neat, continuous, daily progress line. To lose our students' excitement and involvement for lack of immediate learning is not only a waste of effort but also a danger to the ultimate goal of any teacher--a student who is on the road to becoming a lifelong learner. (p. 16)

The National Association for the Education of Young Children (NAEYC) is more specific. Its policy statement on "developmentally appropriate practice" identifies that the following actions to be inappropriate (Bredekamp, 1988):

The teacher's role is to correct errors and make sure the child knows the right answer in all subject areas. Teachers reward children for correct answers with stickers or privileges, praise them in front of the group, and hold them up as examples. (p. 76)

Broadly speaking, developmentalism and its restrictions on teaching practice argue against intervention and, instead, favor the kind of premissiveness found in the child-rearing recommendations of Dr. Benjamin Spock (1976) and others (Brazelton, 1974; Gessell & Ilg, 1943; Warner & Rosenberg, 1976). In truth, Spock, et al and the educational developmentalists rely on many of the same theoretical foundations.

Developmentalism suggests that both teacher and parent expectations for behavior or achievement must be subordinated to concerns about optimal development. Rather than seek to shape the child to social or academic norms, developmentally informed teachers and parents are deemed responsible for affording experiences and opportunities that are compatible with the child's current proclivities. That such experiences will result in effort and achievement commensurate with individual potential is simply taken for granted. Clark and Starr (1991, p.37) exemplify this view in their textbook on secondary and middle school teaching methods: "Because learning is developmental, it follows that one learns better when one is ready to learn." Bigge and Hunt's (1962, p. 377) text is more explicit: "A young person is ready to learn something when he has achieved sufficient physiological maturation and experiential background so that he not only can learn but wants to."

Whatever the measurable impact of developmentally informed teaching and parenting on the course of child development (a remarkably little examined topic), its immediate impact on teacher and parent attempts to instruct and discipline are entirely foreseeable. Developmentalism

gives rise to a disabling hesitancy and uncertainty about how or whether adults should attempt to influence children. It strongly suggests the possibility of harm, but it offers no clear guidance as to a safe and effective course of action. It requires an estimation of a child's developmental status as a prerequisite to action yet it offers no workable means of ascertaining that status.

The requirement of correctly inferring individual development presents a substantial obstacle to the application of developmental theory. The prototypic studies of human development by Gessell (1940, 1943, 1946), Gesell, Ilg, and Ames (1956), and McGraw (1945/1969) tracked physical and motor development--both low inference constructs. The indicators of development--height, weight, number of teeth, number of steps, etc.--were visible and readily quantifiable. By contrast, the phases of social, emotional, and cognitive development to which developmentally appropriate teaching and parenting must be fitted are high inference constructs, i.e., ones said to be manifested by complex patterns of behavior. The inherent observational problem is evident in Piaget's concept of intelligence (Furth & Wachs, 1975):

For Piaget, intelligence is constructive and creative; in fact, development of intelligence is but the gradual creation of new mechanisms of thinking. It is creation because it is not the discovery or the copy of anything that is physically present. Classes and probability cannot be found in the physical world. They are concepts constructed creatively by human intelligence and cannot be handed down by means of language or other symbols. (pp. 25-26)

To add to the imprecision and uncertainty of the required inference, Piaget's theory holds that the relationship between current behavior and developmental status is neither fixed nor self-evident and that the underlying developmental progression is characterized by spurts, lulls, and uneven dispersion across the various behavioral, emotional, and intellectual domains. Again in reference to Piaget (Furth & Wachs, 1975):

This variability takes three forms, each of which is contrary to a normative ideal. First, different individuals differ on the same task and much more than an IQ mentality would have us believe. . . . A second type of variability is found within a certain individual (intraindividual variability) as he performs on a variety of different tasks [tasks requiring the same underlying intellectual capability]. . . . A third type of variability is observed both within the same individual and on the same task. In other words, the performance of a child fluctuates from day to day--an entirely normal phenomenon that all of us experience. . . . Recognition and acceptance of this variability is particularly important in the case of mechanisms of thinking which develop gradually and almost imperceptibly [*italics added*]. (pp. 28-29)

In addition to their ambiguity, estimates of developmental status are inherently conservative and restrictive of adult action. Conceptually, current levels of intellectual performance, effort, maturity, achievement, and other indicators can understate but not exceed present levels of development. For example, a child whose reasoning is concrete operational may

exhibit skills indicative of the earlier preoperational level but they would never misleadingly exhibit skills appropriate to the more mature formal operations level. Thus assessments of development based on a child's current behavior may underestimate but not overestimate present developmental status.

Given that developmentally appropriate teaching and parenting must be fitted to the child's current developmental status, and given that efforts to exhort or otherwise induce advancement beyond the child's developmentally governed potentialities are considered risky at best, teachers and parents are given to understand that expecting too little is a much better choice than expecting too much. From a developmentalist perspective, if opportunity and conditions conducive to developmental advancement have been maximized, the developmentally guided teacher or parent has done all that can safely be done.

In effect, developmentalism discourages teachers and parents from asserting expectations or otherwise acting to induce more mature behavior. Even in the face of noticeable deficiencies or problematic conduct, the developmentally appropriate course of action is that which is congenial to the child's apparent developmental status, i.e., his or her present behavior and inclinations. Continuing lack of advancement in spite of suitable facilitating conditions is taken to reflect delayed emergence of developmentally governed potentialities, not ineffective teaching or parenting.

Personal, Social, and Cultural Implications

The implications of such a perspective are far-reaching and they may be relevant to the well known concerns about the waning influence of homes and schools. In a world that affords few immediate incentives for responsible and constructive behavior, children whose teachers and parents are captivated by developmentalism may be significantly disadvantaged: They are too little influenced by those adults who have the greatest interest in their well being. To the extent that teachers, parents, and other socially ordained influences are withheld, "default contingencies" (John Eshleman, personal communication, February 26, 1993)-- i.e., influences arranged by peers, by the entertainment and recreation industries, etc.--are empowered.

Not only does developmentalism appear to undermine teacher and parent assertiveness, the view of children inherent in developmentalism may be negatively linked to the "growth" of maturity, character, and a sense of personal responsibility. Rather than encouraging parents to treat children and youth as individuals responsible for their own behavior, developmentalism encourages tolerance and acceptance of immaturity, irresponsibility, and failure. And given the belief that mature and responsible behavior simply emerges if properly facilitated, the child who fails to exhibit expected social and academic progress is excused as a victim of adverse circumstances--a rationale for individual shortcomings that has become a cultural archetype (Birnbau, 1991).

The influence of developmentalism and its philosophic foundation, romantic naturalism, may extend far beyond teaching and parenting practices. For example, the growth of so called "anti-science" (Holton, 1993; Kurtz, 1993) and of certain forms of environmentalism seem to be linked to the same romantic assumptions about the wholesomeness of nature that are integral to developmentalism. Over a 75 year period developmentalism has been a prominent feature of educational practice, and from this venue, it has had opportunity to thoroughly infuse the American culture. The degree to which popular thought in America may have been influenced by romanticist leanings within the public schools, however, is well beyond the present analysis.

Implications for Schoolwork

Learning of the kind sought by schools inevitably requires very substantial commitments

of student time and effort (Tomlinson, 1992). Developmentalism, however, discourages teachers from any attempt to directly induce it. Instead, developmentalism requires that teachers endeavor to produce "learning in ways that are stimulating yet minimally obtrusive, challenging yet requiring only comfortable levels of exertion" (Stone, 1994, p. 65). An anomaly becomes apparent (Stone, 1994):

. . . schools [are encouraged] to spare neither effort nor resources in fitting instruction to students while expecting little from them in return. Student inattention and apathy are met with herculean efforts to stimulate interest and enthusiasm. Deficient outcomes are countered by reducing expectations to the level of whatever the student seems willing to do. Even the practice of [motivating students by] affording . . . accurate feedback about accomplishments is deemed questionable because of its purported detrimental effect on intrinsic motivation and self esteem. . . . recurrent failure to attain even minimal achievement is accepted as lamentable but unavoidable and treated accordingly. In short, developmentalism requires only the teacher to work, not the student. (p. 62)

In essence, developmentalism leads to schools in which attendance is compulsory but study is not. Students are expected to make an effort only if they feel interested and enthused. Study is expected to be more like fun than work. If students waste time and educational opportunity because they find schoolwork boring, their behavior is not merely tolerated, it is understood and excused as the product of insufficiently stimulating instruction, i.e., instruction that fails to facilitate the emergence of the postulated ideal.

In the end, teachers are burdened with an unattainable expectation. They, their employers, and the public are encouraged to believe that if a teacher is sufficiently creative and ingenious in harnessing each individual student's potentialities, expected learning outcomes will emerge in a way that the student will experience as spontaneous, natural, and comfortable. It is an ideal founded wholly on developmentalist supposition but it has come to define good teaching.

Developmentalism's ideal of taking the work out of schoolwork may be responsible not only for poor work habits and attitudes beyond the classroom--a problem widely noted by employers (Mandel, Melcher, Yang & McNamee, 1995; Survey, 1991). So long as study and effort are expected only if the student feels so inclined, the self discipline necessary to putting school "work before pleasure" is largely omitted from the academic regimen. Instead of a work ethic, students are given to expect significant accomplishments with minimal effort (Shine, 1993).

Educationally Appropriate Practice

A vital distinction must be drawn between developmentally appropriate instruction and educationally appropriate instruction, i.e., those teaching practices that accommodate teaching to the learner without regard to the hypothetical constraints posed by developmental theory. Developmentally appropriate instruction (a.k.a. developmentally appropriate practice) seeks to optimize the development of the "whole child" (Johnson & Johnson, 1992) irrespective of academic norms. It is a "learner centered" (a.k.a. "student centered" or "child centered") approach

to teaching (Darling- Hammond, Griffin and Wise, 1992) meaning that the teaching process is constrained by developmental considerations but the product is open ended. It is an approach that rejects both expectations for accomplishment based on curricular benchmarks or peer referenced norms as well as any "artificial" means of insuring that they materialize.

In contrast, "educationally appropriate" instruction (Stone, 1994) seeks to meet recognized standards and to otherwise maximize academic achievement. Both developmentally appropriate and educationally appropriate instruction rely on present levels of demonstrated performance as a starting point for instruction and both seek to optimize intellectual advancement. Educationally appropriate teaching (or practice), however, does not treat present performance as a marker for a child's developmental limits. It is "learning centered" in the sense that observed performance, not presumed developmental limitations, guides academic advancement. Although sensitive to student comfort with teaching practice, educationally appropriate practice holds achievement, not developmental suitability, to be its top priority and neither does it presume high expectations or teacher insistence on effort to be developmentally hazardous.

In conclusion, developmentalism appears to discourage teacher and parent intervention while simultaneously promoting the belief that academic achievement and responsible behavior will spontaneously emerge if only given time and facilitating conditions. Contrary to developmentalist expectations, however, it may be that awaiting the emergence of wholesome behavior is an open invitation to default contingencies and the growth of unfavorable habits--ones that might have been precluded by the acquisition of appropriate patterns. By the time the realities of such deficits and/or inappropriate conduct make the need for action inarguable, remediation is likely to be more difficult. Well ingrained patterns of faulty behavior must first be eliminated before constructive alternatives can be established--a situation all too familiar to special educators and school psychologists.

The Developmentalist Neglect of Experimentally Vindicated Teaching Practices

Developmentalism influences teacher acceptance of experimentally demonstrated teaching practices in much the same way it impacts teaching and parenting generally. It argues against intervention on the grounds that it is likely to detract from the more optimal outcome that presumably will emerge when natural developmental processes are permitted to run their course.

Some Neglected Methodologies

Over the last thirty years, a variety of experimentally vindicated teaching methods have been developed and disseminated only to be ignored or discarded in favor of less well tested practices that better fit developmental thinking. Mastery learning and Personalized System of Instruction may be the best known examples (Kulik, Kulik, & Bangert-Drowns, 1990). Direct Instruction (Becker & Carnine, 1980)--also known as DISTAR (Kim, Berger, & Kratochvil, 1972) and as "systematic instruction" (Slavin, 1994)--is another. Direct Instruction is little used despite having been as thoroughly validated and field tested as any methodology in the history of education (Watkins, 1988). These and a large group of structured and sequenced teaching methodologies termed "explicit teaching" (Rosenshine, 1986) are among the most clear instances of experimentally supported approaches to teaching that have failed to gain widespread acceptance and/or have been abandoned.

Programmed instruction (Skinner, 1958) is another example of an abandoned methodology and one that uniquely appears to demonstrate how developmentalism's hold on the teaching profession influences teaching practices in public schools. Despite its initial acceptance and evident promise, K-12 educators rejected programmed instruction in favor of less structured, more naturalistic, "real-world," "hands-on" approaches (Skinner, 1986). However, among

educators less influenced by developmentalism, i.e., private sector business and industrial trainers, military trainers, designers of computer-based instruction, etc., it remained well established (Ellson, 1986; Vargas & Vargas, 1992).

Many of the experimentally validated methodologies are behavioral because behavioral approaches to teaching and learning are derived from the experimental analysis of behavior. However, mastery learning (Bloom, 1976) and the "explicit teaching" methodologies discussed by Rosenshine (1986) are not behavioral and the same can be said for most of the "productive" methodologies discussed by Ellson (1986) and Walberg (1990, 1992). Ellson (1986) listed seventy-five studies of teaching methods all of which report learning effects that are at least twice as great as control comparisons. Most of these methods were popular at one time but none are in widespread use today. Walberg (1990, 1992) summarized the results of nearly 8000 studies that point to the efficacy of a brief list of powerful and teacher- alterable classroom interventions, most of which are supported by experimental evidence. High expectations for effort and achievement is one, the use of incentives is another. In general, the neglected methodologies identified by Walberg and Ellson are structured and teacher directed; they aim to instill preconceived academic and intellectual outcomes; and most of them employ practice, feedback, and incentives.

Developmentally Inspired Concerns, Reservations, and Objections

Teaching methods textbooks and other sources of recommendations about teaching practice seem to sanction the disuse of experimentally vindicated methodologies either by giving them little or no attention or by discussing them in the context of various concerns, objections, and reservations (Jacobsen, Eggen, & Kauchak, 1993; Ornstein, 1992; Wlodkowski, 1986). These remarks are especially noticeable when contrasted to the uncritical treatment given developmentally compatible methodologies. Typical cautions and criticisms involve claims that the experimentally vindicated methods are insufficiently individualized (Armstrong, 1980), too artificial and mechanical (Bailey, 1991), excessively reliant on extrinsic motivation (Kohn, 1993a, 1993b), suited only to lower forms of learning (Ornstein, 1992), or simply boring (Henson, 1993; Lemlech, 1994). Virtually all of these reservations and objections are premised on a developmentalist view of learning.

Developmentalists hold that adherence to that which is developmentally appropriate is more important than educational achievement thus they favor educational experiences that are well accepted by students over those that are known to produce results. In the developmentalist view, teachers should seek methods that produce results but they should select them only from among those methods that maximize student satisfaction. Judged by priorities so ordered, experimentally vindicated teaching methodologies are suspect at best because they are built around the notion that learning is the primary consideration. If the authors of methods textbooks were to suggest that teachers should prefer methodologies that have been experimentally vindicated, they would be in disagreement with developmentalist doctrine, i.e., with the view that student satisfaction is primary and learning secondary. The same consideration applies to teacher expectations for student effort and achievement. Developmentalism suggests that teachers should expect a commitment to schoolwork that is commensurate with the student's lifestyle and developmentally determined inclinations, not with external and artificial requirements that are based on arbitrary or socially derived academic standards.

In effect, developmentalism requires experimentally vindicated practices not only to be attractive, interesting, and engaging, it obliges them to overcome the belief that they are likely to be risky or harmful, i.e. that they interfere in unknown or unsuspected ways with a virtually boundless range of developmental considerations (Elkind, 1981). The test of usefulness to which demonstrably effective interventions are subjected is not one of observed cost and benefit

compared to the observed cost and benefit of an existing alternative, it is one that entails suspected hidden cost versus the perfection that hypothetically emerges in the absence of human interference.

For example, when "whole language" proponents express concern about skill-sequence approaches to reading (Goodman & Goodman, 1979), they worry that the interest in reading that otherwise naturally emerges might be lessened. Criticisms of drill, corrective feedback, and the use of incentives are typically founded on the same argument. If, however, nature is permitted the opportunity (i.e., a "developmentally appropriate" opportunity) to work its effects, developmentalists assume that the expected skills and interest will emerge and without exposure to the hazards inherent in intervention (Clark & Starr, 1991; Lemlech, 1994; Jacobsen, Eggen, & Kauchak, 1993; Stone, 1995).

The Alleged Threat to Intrinsic Motivation.

Some developmentally inspired reservations about experimentally vindicated methodologies are based on more than theoretical extrapolations. For example, the concerns about reductions in intrinsic motivation due to positive reinforcement reported by Deci & Ryan (1985), Lepper, Greene, & Nisbett (1973), and Schwartz (1990) appear to be supported by credible empirical findings. Even these claims, however, seem to have been exaggerated without challenge perhaps as a result of developmentalism's enormous influence within the educational community.

For the past seventy-five or so years, the teaching profession has idealized learning that is motivated by interest as the only "true" learning. Led by Dewey (1916/1963; 1938/1963), the mainstream teaching profession has held that such "intrinsic" or naturally occurring interest will express itself provided that the student is confronted with a sufficiently meaningful or relevant or lifelike problem. Thus teaching that relies on extrinsic sources of motivation is, according to Dewey's concept, inherently poor teaching, i.e., insufficiently creative, innovative, and stimulating, and its use of extrinsic incentives a concession to faulty educational practice. The widespread acceptance of Dewey's developmentally informed vision seems likely to have contributed to the positive reception given the reports of Deci, Ryan, Lepper, et al. and, more recently, to Kohn's (1993a, 1993b) wholesale derogation of positive reinforcement, incentives, rewards, and competition.

The technical foundations of these reports, however, have been the subject of scholarly disagreement, and the exaggerated nature of their claims has become evident in the recent meta-analysis by Cameron and Pierce (1994). Reviewing the literature from 1971 to the present, they conclude that the empirical findings with respect to intrinsic motivation simply do not warrant exclusion of incentives from the classroom.

One other telling observation may be made about Kohn's (1993a, 1993b) criticisms. Positive reinforcement and other extrinsic sources of motivation have been successfully employed by school psychologists, special educators, and teachers of remedial and "at risk" students for many years (Hallahan, Kauffman, & Lloyd, 1985; Hammill & Bartel, 1990). Apparently that evidence has been overlooked or discounted. Perhaps such applications are considered exempt from developmentalist strictures because students to whom they are applied have acknowledged developmental imperfections.

Despite their success, however, interventions that are known to benefit the disabled are not entirely immune from criticism. For example, there is ongoing debate among early childhood special educators regarding "early intervention" versus "developmentally appropriate practice." Again, the question is one of whether successful experimentally founded intervention strategies are producing some subtle but as-yet- unnoticed developmental harm (Carta, Schwartz, Atwater & McConnell, 1991; Johnson & Johnson, 1992).

The Alleged Inattention to Thinking.

Of the developmentally inspired concerns pertaining to experimentally vindicated teaching methods, their alleged neglect of student thinking is, by far, the most frequent criticism (Armstrong & Savage, 1994; Callahan, Clark, & Kellough, 1992; Clark & Starr, 1991; Henson, 1993; Jacobsen, Eggen, & Kauchak, 1993; Kim & Kellough, 1995; Lemlech, 1994; Ornstein, 1992; Sheperd & Ragan, 1992). These concerns and the current pedagogical emphasis on cognitive processes, higher-order intellectual skills, critical thinking, reflective thinking, etc., again, reflect Dewey's (1916/1963) view of learning:

The sole direct path to enduring improvement in the methods of instruction and learning consists in centering upon the conditions which exact, promote, and test thinking. Thinking is the method of intelligent learning, of learning that employs and rewards the mind.
(p. 153)

The same can be said of the present day emphasis on hands-on, authentic, real-world learning experiences as a means of facilitating learning:

Only by wrestling with the conditions of . . . [a] problem at first hand, seeking and finding his own way out, does . . . [the student] think. When the parent or teacher has provided the conditions which stimulate thinking and has taken a sympathetic attitude toward the activities of the learner by entering into a common or conjoint experience, all has been done which a second party can do to instigate learning. The rest lies with the one directly concerned. (Dewey, 1916/1963, p. 160)

Both Dewey (1916/1963) and Piaget (Siegler, 1991) considered human learning capabilities the product of evolutionary demands for intellectual adaptation to the natural world. Formal knowledge and skills were held to be important only to the extent that they were integrated with applications to problem solving. If natural circumstances required humans to learn and employ knowledge in the context of problem solving, Dewey reasoned that schools would optimize learning by doing the same. Thus in Dewey's scheme of education, thinking in service of problem solving is primary to education and acquisition of formal knowledge and competencies is secondary and incidental.

What Dewey may not have adequately considered is that traits evolved under one set of conditions can prove useful under other conditions and in service of entirely different ends. For example, human hands were not initially selected- for because of their usefulness in writing or musical performance but they subsequently served that purpose. Analogously, the ability to acquire and retain knowledge may have been selected-for under conditions where knowledge was wholly contextualized, yet today the same ability can be usefully employed to acquire knowledge that is partly or wholly decontextualized.

Given the advantages that industrial and technological cultures appear to derive from formal instruction afforded in a classroom setting, it seems evident that a profitable use has been found for the human ability to acquire factual, abstract, and decontextualized knowledge and that acquisition of such knowledge is a useful prerequisite to real-world, problem solving experiences. In fact, it would seem that schooling in societies which make use of the formal knowledge cumulated from the experiences of innumerable ancestors would necessarily entail a

substantial amount of decontextualized learning. Thus the achievement of preconceived objectives through experimentally vindicated teaching methodologies may afford socially, economically, and pedagogically advantageous gains in educational efficiency despite its inconsistency with the ideals inherent in Dewey, Piaget, and other popular theorists.

Why Non-experimental Research is Better Accepted

In contrast to the skepticism typically encountered by experimentally founded interventions, teaching practices informed by studies of naturally occurring social and educational processes are relatively well received by the educational community. Even if not adapted to developmental considerations, such practices do not suggest artificially imposed alterations of "natural" conditions. Thus if peer interaction processes or certain teacher or student characteristics are found to be correlated with student achievement, teachers can be safely encouraged to take advantage of these "natural" (and presumably causal) relationships by creatively interpreting and selectively employing them as developmental considerations permit. Studies of relationships between educational outcomes and student learning styles (Dunn, Beaudrey, & Klavas, 1989; Shipman & Shipman, 1985) are a good example. The recent surge of recommendations favoring greater sensitivity to multicultural diversity in the schools also seem founded on this type of research (Boykin, 1986; Thompson, Entwisle, Alexander, & Sundius, 1992). In each case, these studies encourage teachers to shape instruction to the preferences and inclinations of the student in order to enhance achievement to the extent that student proclivities will permit.

Unfortunately, of course, the causal inferences suggested by descriptive and correlational studies can be grossly misleading and their misinterpretation has led to some of the most egregious instances of faulty teaching practice. The attempt to improve learning by boosting self-esteem is a prime example (Scheirer & Kraut, 1979).

The Incompatibility of Developmental and Experimental Views

Given the nature of the developmentalist view, experimentally demonstrated teaching practices are bound to invite a great degree of skepticism. The object of experimental research is to demonstrate the impact of an independent variable as an agent of change. Contrary to such an objective, developmentalism requires that social, emotional, and cognitive change emerge, not as an effect induced by an external agent, but as an independent expression of the student. Thus experimentally tested methodologies are automatically considered suspect if not outrightly objectionable depending on which developmental limitations are presumed applicable. In effect, developmentalist doctrine discourages reliance on the most important and most credible research educators have at their disposal (Bloom, 1980 as cited in Gage & Berliner, 1992; Cook & Campbell, 1979).

Because they claim an applicability that never seems adequately tempered by developmental considerations, experimentally validated methods tend to encounter an impassable gauntlet of questions and reservations. In a reference to Walberg's (1984) report of generalizable, robust, and teacher-alterable influences on learning, Ralph Tyler (1984) expressed the forlorn hope that the (developmentalist) notion that each student and each circumstance is so unique that it can only be understood (i.e., effectively taught) by a teacher deeply immersed in the situation would be dispelled.

Armstrong (1980) raised the same issue in discussing teacher demand for educational research:

Given the nature of undergraduate teacher preparation programs and the cultural

milieux of large numbers of schools, many teachers have come to believe that teaching is more art than science. Exposed to much talk about "individual differences" and "unique characteristics" of every classroom, many view teaching and teaching problems as situation-specific. Through their training and interactions with many colleagues, large numbers of teachers are more predisposed to acknowledge the differences than the commonalities characterizing the human condition. Consequently, many teachers suspect any generalized statements about human behavior. This orientation prompts many to doubt the value of educational research efforts that, by design, seek generalizable knowledge. (p. 59)

The restrictions on effective practice posed by developmentalism have largely precluded many otherwise credible attempts to improve education through applications of science. The contrast between the degree of scientifically founded progress in medicine versus that found in education attests this conclusion. To a large extent, medical science has benefitted man by employing scientifically informed means of intervening in nature. The artificial creation of immunities through the use of "unnatural" and invasive vaccination is an historic example. In contrast, educational improvements on "natural" patterns and processes of learning have been severely restricted by a doctrine of developmentalism. Instead of using experimentally validated teaching methods, teachers have been encouraged to emulate nature and thereby preserve the perfection assumed to exist in natural developmental processes.

Conclusion

Developmentalism presumes typical patterns and processes of social, emotional, and cognitive change to be optimal because they are "natural." It fails to recognize the extent to which valued social, emotional, and cognitive attributes may be induced and sustained (not merely facilitated) by the purposeful actions of teachers and parents. Indeed, it seems to underestimate the importance of civilizing influences generally. By default, developmentalism ascribes the positive effects of unrecognized environmental influences to "natural" processes and argues that attempts to alter their effects are likely to be harmful.

Present day developmentalism frames the process of socialization and, specifically, that of teaching as one of influencing the child in such a way as to avoid disruption of a postulated optimal outcome. It transforms teaching from an endeavor straightforwardly concerned with achievement to a search for naturalistic conditions that will fit the learner's tendencies in a way that permits the unfettered and, therefore presumably optimal, emergence of intellectual growth. Developmentalism assumes that teaching which deviates from this general prescription is, at best, naive and, at worst, dangerous and destructive of the learner's best interests. Thus teaching practices uninformed by developmental considerations are persistently rejected by the teaching profession regardless of demonstrated educational effectiveness and otherwise wholesome impact--a pervasive and powerful but largely unrecognized restriction on scientifically founded educational improvement.

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Contributed Commentary on Volume 4 Number 8: Stone Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement

June 10 1996

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I have some sympathy with the position taken by Prof. Stone, and given the opportunity and the time, would like to discuss further with him the many claims he makes about moves in education over the past twenty or so years, whether in the United States or Australia.

Having said that, I must protest that in applying 'developmentalism' as an umbrella term, Stone has ignored the distinctions between the various sub-sets of developmentalism. In the abstract accompanying the paper, Stone concludes:

... its [developmentalism] most recent expressions include "developmentally appropriate practice" and "constructivism". In the years during which it gained ascendancy, developmentalism served as a basis for rejecting harsh and inhumane teaching methods. Today it impedes efforts to hold schools accountable for student academic achievement.

The inference seems to be that constructivism, being a more recent expression, is the impediment.

Prof. Stone's claim that 'constructivism discourages teachers and parents from asserting themselves with children' indicates a failure to understand the importance for education of the shift not only to a practice that takes account of something more than behavioural outcomes, but to one where the provision of quality experiences establishes the mental connections that enable learners to construct more satisfactory understandings of their individual realities.

I concede that the early varieties of developmentalism based on stages of development or stages of cognitive growth served as a basis for rejecting inappropriate (harsh and inhumane) teaching methods, and that many of the practices of the so-called child-centred movement failed because of complete lack of structure. However, I would need further convincing before agreeing that developmentalist (constructivist) practices constitute an impediment to strategies that might be applied to hold schools accountable for student academic achievement. There is of course the problem that professor Stone and I would probably be in considerable disagreement on the definition of both the terms, "academic" and "achievement."

Perhaps the opening of the abstract could have more accurately have read: 'Because of continuing and justified criticism of public education, much of the so-called "experimentally demonstrated" teaching methodology ought to have been rejected and abandoned long ago.'

"Constructivism" has developed from a rediscovery of the importance of "mind" in the teaching-learning equation. The resultant shift of emphasis has been from teaching to learning with teachers now having to ask themselves what must I do so that my students can learn *with understanding*, rather than asking what I must do to teach (instruct)?

Lauren Resnick (1983) asserted that:

... the accumulated body of cognitive task analysis and the emerging work on cognitive theories of acquisition clearly signal the need for a constructivist theory of instruction. It now seems absolutely certain that our task is to develop a theory that places the learner's active mental construction at the very heart of the instructional exchange. Instruction cannot simply put knowledge into people's heads. Instead, effective instruction must aim to place learners in situations where the constructions that they naturally and inevitably make as they try to make sense of their worlds are correct as well as sensible ones. (Resnick's emphases)

My own contribution since the late seventies is accepted as essentially constructivist. As one of the pioneers, I applied the emerging theory to the development of curriculum in social education, providing an expanded form of social studies incorporating aspects of anthropology, economics, politics, the life sciences, earth science, some mathematics as well as the more traditional history and geography at levels suitable for children in years K through 6. The curriculum was developed on what has become known as the 'logical sequential' model, taking into account the need for higher order language skills and the factors of mental growth, development of concepts, the need for quality experiences, values education, scope and sequence and spiral development of experiences and concepts.

The theorising supporting its development and the original curriculum matrix chart, published in 1981, have generated numbers of articles, papers and presentations which since 1984 have been delivered in all States of Australia and on visits to London, various cities in the US and Toronto. A teacher handbook with a revised version of the chart, published in 1989 (2nd edition 1990) is widely dispersed and has received approval from educators in many other countries.

A presentation for the 10th World Congress on Gifted and Talented Education (1993), Toronto, Canada, encapsulates something of the theory and practice developed since 1981, and I include with this commentary the first few pages of that paper:

A CURRICULUM THAT LIBERATES THE LEARNER

Presentation for the 10th World Congress on Gifted and Talented Education, Toronto, Canada August 8 to 13, 1993

Don E Tinkler, Consultant in Education, Melbourne, Australia

... the gulf between the mature or adult products and the experience and abilities of the young is so wide that the very situation forbids much active participation by the pupils in the development of what is taught. Theirs is to do - and learn... that which is taught is thought of as essentially static. It is taught as a finished product, with little regard either to the ways in which it was originally built up or to changes that will surely occur in the future. It is to a large extent the cultural product of societies that assumed the future would be much like the past, and yet it is used as educational food in a society where change is the rule, not the exception.

The problem for progressive education is: What is the place and meaning of subject-matter and of organization within experience?

It is not enough to insist upon the necessity of experience, or even the activity in experience. Everything depends upon the quality of the experience which is had.

While attacking traditional schooling which imposed knowledge on students in a 'kind of institution sharply marked off from any other form of social organization', Dewey was also strong in his criticism of the 'progressives' for the way they had distorted his theory of experience to the extent that any school experience was accepted as being as good as any other. Although approaching eighty years of age, to set the record straight, Dewey wrote *Experience in Education* from which these quotes are taken.

It is a matter of history (Samples 1976) that Dewey fell from favor when the United States was beaten in the space race by the Russian Sputnik in 1957. Called to account for what was accepted as a national disgrace, a conference of scientists and educators at Woods Hole in Massachusetts the following year, chaired by Jerome Bruner, looked to the ideas of Jean Piaget to redirect U.S. educational philosophy. So it was that Piaget's 'stages' theory was released on the educational world in 1964. Piaget emerged as the dominant theorist, while Dewey faded into relative obscurity.

This paper will assert that it is time the learner was freed from the constraints imposed by traditional schooling as claimed by Dewey, and yet offered more than 'progressive' education as an alternative.

It will present an overview of more than fifteen years effort which has resulted in the generation of a 'constructivist' theory of learning, a new curriculum design, the publication of *The Humanities Core Curriculum* (1981, 1989), a curriculum chart dealing with an expanded view of social education, and a teacher handbook which explains how that curriculum can be individualized for regular classroom use or for pull-out programs for 'gifted' students.

The innovative approach emphasizes learning with understanding and provides new relevance to social education. At the same time it offers an opportunity to teachers to make more effective use of their developed skills in curriculum planning, facilitating, monitoring, and evaluation.

The handbook *Social Education for Australian Primary Schools* (2nd Ed. 1990) takes a fresh look at a wide range of educational and curriculum issues, unpacks some of the emerging theory about learning with understanding, and converts it into sound practice in social education. Subtitled *A 'Futures' Perspective*, it was written for teachers and others engaged in helping young people make sense of a very complex world—both in the present and into the longer term future.

Skills Building For the Future

Since no one can know the future, the plural form 'futures' is used. We can talk of 'possible', 'probable' and 'preferred' futures. Possible futures take in anything that could possibly happen; probable futures refer to those that are likely to happen on the probability of certain things occurring or not occurring; and preferred futures refer to those that might be selected from the 'probable' futures as being more desirable.

Professor David Suzuki of the University of British Columbia in a broadcast in 1987 claimed that 'human beings have become the most reliable failure component in technology today'. Educators must ask why we should accept a future where human beings continue to be the most 'reliable failure components' in our

advancing technology?

Attention of the world several years ago was focused upon literacy and the problems of illiteracy. However, we should perhaps then have been asking whether the level of literacy considered satisfactory in 1950, or even as recently as 1980, will be suitable for the nineties and beyond.

The theme for the Australian Reading Association First International Conference (1993) was *Literacy For The New Millennium*. Most speakers seemed to think that literacy for the new millennium meant little more than holding to the status quo—All students being expected to develop the skills of reading, writing and listening. While conceding that there was much that we could do to develop more effective skills in these areas, there seemed little awareness of the recent reports of the OECD where reference was made to 'enterprise skills' as being like a 'third passport' enabling students to cross from school to the world outside. Nor did it seem that speakers knew of the parallel work of UNESCO and the call of its Symposium in Beijing late in 1989 for:

- * a new view of knowledge;
- * a greater integration of knowledge;
- * a renewed commitment to lifelong learning;
- * an education system with shifts of emphases from conformity to creativity and innovativeness,
 - from competitiveness to co-operativeness,
 - from private benefits of learning to public benefits,
 - from instruction to learning how to learn,
 - to nourishing the higher-order skills,
 - to positive aspects of personal development,
 - to promote tolerance in interrelating with others.

Taking account of the emerging ecological and global threats to survival, the UNESCO Symposium cautioned that educational planners will need to restructure education to fit people for the twenty-first century, which, in their words, 'now will probably be rather different from what we would have predicted as recently as five years ago'.

In the mid 1980s a 'Creative Cities' conference in Melbourne was told by its Keynote speaker, Dr. Rashmi Mayur, Director of the Urban Development Institute in Bombay and advisor to the United Nations and the U.S. Congress, that what was really needed was 'creative people', that is, people who could think creatively about future needs and about future directions. It is certain that the most important resources in any future will be the human resources. Tomorrow's people will need greater capacity for creating choices, and thinking through the choices between competing options. They will need also a wider range of personal skills--some of which we can only guess at today.

All this points to the need perhaps to look at literacy in a different way as we approach the new millennium.

Learner Monitored Learning

In England the Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA), has adopted 'Education for Capability', a program with major focus upon secondary schools and tertiary institutions. According to the RSA, 'Education for Capability is a practical nationwide campaign to develop the talents of

all young people and give them the confidence that comes with success.'

The RSA joined with the World Education Fellowship and several other institutions in convening the First International Conference on Learner Managed Learning in April 1990.

At the conference, experiences were shared by those who had allowed learners to apply their 'enterprise' skills in programs of self directed learning and decision making. There were reports of learner contracts, experiential learning, peer tutoring, inquiry and problem solving approaches having been trialed.

With time to reflect upon the issues of the conference, I am convinced that, at least in the formative years of primary and secondary school, and maybe even in tertiary education, the learner does not 'manage' but rather 'monitors' his/her learning processes. Just as in the one-teacher school, the monitor works as a mediator under the guidance and supervision of the teacher, we could look at self-directed learning as the learner mediating the learning processes with the teacher as manager or facilitator.

Some years ago, Paul Brandwein (1977) suggested that 'the child comes to school with a comprehension consisting of a world of constructs, which we know to be somewhat faulty. But he comes, nevertheless, with an idiosyncratic way of learning'.

It seems that the teacher's task is to discover the idiosyncrasy, to help correct the faults in the constructs, and lead the child forward towards increased comprehension about the world. Teachers can help children become aware of their own learning--referred to as 'metacognition' or 'awareness of awareness.'

Monitoring one's learning will require the development of a range of competencies for problem solving, research and data processing. Those competencies in turn will depend upon establishing the sub-skills of reflection, analysis, comparing, inference, classification, and synthesis--the so called 'thinking skills.'

Thinking skills can be taught. Parents can encourage the development of a range of basic thinking strategies, but perhaps the most appropriate time to start training in thinking skills is when the child reaches the primary school.

The Search for an Alternative Theory of Knowledge Acquisition

The search for answers to questions arising from years of classroom teaching led me to look at various theories of knowledge 'acquisition,' and then to examine what teachers might do to speed up and strengthen the processes of acquisition.

In the late 1960s I had been involved in the implementation of a new science approach derived from the Nuffield Science curriculum developed in the U.K., and had been impressed by the theories of Jean Piaget which underpinned that program. A short time later, I took up a study of the writings of Immanuel Kant and his impact upon education. In challenging Kant's notion of a priori concepts, 'knowledge absolutely independent of all experience', I developed the idea of 'mental abstraction', explained then as the 'activity of the brain/mind in matching, comparing, analyzing and synthesizing the mass of impressions coming in through the various sense receptors and leading to the formation of concepts'.

Piaget's 1960s theory had four factors affecting cognitive growth. They were:

- (i) Nervous maturation
- (ii) Experience
- (iii) Social transmission

(iv) Equilibration

That theory I refer to as the 'autonomous' model--autonomous, because growth was determined by 'equilibration', Piaget's invented term for a self-regulatory mechanism which acted to correct any disequilibrium brought about by new experiences. Equilibration also raised an individual to higher 'stages' of cognitive growth.

In struggling to apply Piaget's 1960's theories to the design of a new social studies curriculum in 1978, I came to a similar conclusion to that later reported by Lauren Resnick of the Learning Research and Development Center at the University of Pittsburgh when she commented in 1983 that 'Piagetian theory provides a very weak guide for instructional efforts'.

I returned to my notion of 'mental abstraction' as a likely theoretical foundation to resolve the dilemma.

In developing an alternative 'supportive' model of cognitive growth, I discounted Piaget's 'stages' in favor of the idea that the growth is continuous, though irregular; the irregularity being influenced by four factors:

- (i) The total state of the brain and the central nervous system;
- (ii) the level and the quality of experience;
- (iii) the level and the quality of social interaction; and
- (iv) 'sound pedagogy' (the art/craft of teaching--something that can be applied by a parent, a peer, or some other person, as well as the professional teacher)

'Equilibration' is no longer needed, since the process of cognitive growth can be more parsimoniously explained as due to the activity of 'mental abstraction.'

The following is a further explication of the 'supportive' model and the four factors which influence cognitive growth:

Factor (i) **the total state of the brain and the central nervous system:**

Rather than being looked at simply as the 'nature' aspect in the long running nature-nurture debate, the model takes into account the information being generated by brain scientists in their attempt to analyze and synthesize what happens as the billions of cells and neural connections in the brain respond to information inputs. No one has yet made the link between input and learning, except to suggest that there is both chemical and electrical activity within the brain in response to input.

Chemical imbalance, physical or emotional trauma, fatigue, boredom, illness, prescription or other drugs, hunger and dehydration, may affect brain efficiency. Therefore 'total condition' seems to be a more adequate descriptor for what is a major variable. Piaget's 'maturity' factor, as presented by him in the 1960s, seems by comparison to be a less satisfactory alternative.

Factor (ii) **the level and quality of experience**

Although concepts are generated by experience, not all experiences are of equal value. Recalling the statements of John Dewey on the importance of experience, it is suggested that in the contrived environment of the classroom teachers should select experiences largely on the criteria of quality.

Factor (iii) **the level and quality of social interaction**

In recent years there has been an increasing concentration upon self concept as being important to effective learning. Of major importance in the development of positive self concepts are the kinds of relationships that have already developed in student personal social interaction in groups, whether that might have been within the family, among peers, or with children and teachers in previous classes.

Factor (iv) **'sound pedagogy' (the art/craft of teaching)**

The dictionary defines 'pedagogy' as the 'science or profession of teaching; also as the theory of teaching how to teach'. As this was the nearest to the idea of 'teaching craft', the term was adopted as the factor which it seemed had been ignored by Piaget in his 1960s theories on cognitive growth.

It should be noted that 'sound pedagogy' consistently involves deliberate interventions that also involve factors (ii) and (iii). To put it another way; sound teaching craft can, among other things, supplement personal experience and social interaction as influences on mental (cognitive) development.

'Sound pedagogy' is much more than 'instruction'. In applying sound pedagogy the teacher's task extends beyond simply providing and managing experiences. The role of the teacher expands to include all of the following:

*** selecting experiences using 'quality' as a measure of appropriateness;**

*** organising, timing, monitoring and managing the experiences;**

*** providing order in the experiences presented** (giving consideration to scope and sequence in what is presented as curriculum);

*** attempting to reduce some of the complexity of the material or information being presented;** (The world for both children and adults is indeed complex, but if some of the complexity is reduced in presenting ideas initially, the learnings often make more sense when later placed back into their original complexity);

*** Drawing learners into purposeful two-way communication;**
(generating a climate where learners are free to inquire, to explore issues, to formulate questions, to express ideas, to debate points of view, and to seek solutions to problems);

*** extending the learners' interaction with the learning environment**
(extending the range and variety of the learning context).

Classrooms are by nature busy places. There is such a variety of factors operating; so many things going on simultaneously; so much that is completely unpredictable; decisions to be made immediately; events that are very public, some embarrassingly so - both for students and for teachers; and each of the human elements enter with a personal background and contribute to a class history that is completely unique. In spite of the 'busy-ness', care should be taken to establish a climate built on concern for and a warm acceptance of each member, a classroom climate in which honesty, open-ness and mutual trust can develop.

Constructivist Theory

The theory that developed is essentially 'constructivist' in nature, suggesting that we each construct our own 'reality' or 'world picture' through the processing by the brain of sensory input. The reality is dependent upon both the range and the quality of that sensory input--a limited experiences results in a limited reality, a broad range of experience generates an elaborated reality.

'Constructivist' theory provides a rationale for many of the recent innovative approaches to learning. It explains why students seem to do better through such strategies as experiential learning, inquiry learning, problem solving, cooperative group learning, and student-negotiated curriculum. Further, constructivism underpins the importance now being attributed in education to self-esteem and to 'metacognition.' The theory is also consistent with many of the conclusions of recent research into novice-expert representations of knowledge.

(A more detailed explication of 'mental abstraction' and the resultant 'constructivist' theory has been given in various papers since first presented in 1981.)

Although the theory developed from the re-think of the late 1970s it parallels the work later reported by Lauren Resnick, and the Caine and Caine publication for the Association for Supervision and Curriculum Development (ASCD). Several quotes will suffice:

The human mind has been rediscovered, or at least re-affirmed; reasoning and thought are central objects of scientific study ... It seems evident that a cognitive theory of instruction should be emerging alongside our increasingly elaborated theories of cognitive performance and development.

Lauren Resnick (1983)

Brain research establishes and confirms that multiple complex and concrete experiences are essential for meaningful learning and teaching. Optimizing the use of the human brain means using the brain's infinite capacity to make connections and understanding what conditions maximize this process.
Caine and Caine (1990)

Reinforcement for the direction taken was accepted to come from a further Resnick statement:

It now seems absolutely certain that our task is to develop a theory of intervention that places the learner's active mental construction at the very heart of the instructional exchange.

In a recent yearbook of the ASCD, Cawelti makes the comment that the most critical ingredient of successful schools is the teacher and the quality of the teaching in the classroom. Referring briefly to the dominance of behaviorists over the past several decades, he draws attention to the chapter by Peterson and Knapp. In Cawelti's words:

They record the important work of the 'constructivists' who are seeking to demonstrate how students must be helped to create their own meaning out of the learning experiences the school provides.

He adds a further comment:

The constructivist movement in learning will do much to help get students more involved, particularly if students can be helped to see that in adult life they will need to know what they are being asked to learn.

The 'Logical Sequential' Model of Curriculum Design and Development

From the outset, I had accepted social studies to include aspects of anthropology, economics, politics, natural and applied sciences, as well as history and geography, and set the following objectives:

The curriculum should:

- emphasize the need for children to develop an understanding of self, the relationship of self to others, and from that an understanding of society;
- provide a structure of scope and sequence from Kindergarten to Year-six;
- present a core of suggested experiences and learnings in social studies Y-K through Y-6;
- provide children with quality experiences;
- position the experiences and concepts over the seven year period based on an appropriate theory of cognitive growth;

- give weighting to both content and process;
- allow experiences and concepts to be interrelated within the structure;
- be constructed of selected categories of social studies rising as expanding experience spirals, providing later reinforcement for earlier experiences;
- give prominence to the ideas developed at a seminar in 1976 with Professor Jack Fraenkel of San Francisco concerning an education in values.

When published as a research document in 1981, the *Humanities Core Curriculum (HCC)* fold-out chart was extremely well received by teachers, administrators, parents and academics in all States of Australia. Visitors from overseas and representatives of national publishers also showed considerable interest.

The HCC Chart and the handbook are an outcome of applying the "Logical Sequential Model" to the design of curriculum.

[then followed a statement explaining how the curriculum was applied in developing class programs]

The need to shift theory and practice is becoming more apparent as schools move to include convergent communications and information technologies in their delivery of curriculum.

During the past four years, I have been working with colleagues on a series of investigations for governments in Australia into the application of state-of-the-art technologies in the delivery of education at all levels, from schools to universities. The findings recorded in three major reports endorse the importance of the shift to constructivism made both by educators at the leading edge and the instructional designers responsible for developing quality educational software in opening up a future of new learning opportunities.

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

2 May 1996

John Stone

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On May 2, 1996 (#2) Sherman Dorn wrote:

*Educational researchers conduct surveys of principals and teachers all the time about such things, and it seems to me one could try to have a *rough* gauge of such influence. Having evidence of its influence back to the 1960s is what I doubt one could have. But that is what Stone is suggesting, and I doubt it is true. When reasonable people differ on questions like this, anecdotes are insufficient. One needs detailed case studies or broader evidence.*

I will see if I can find some survey evidence. Surprisingly, I think I can produce a great deal in the way of neoprogressive exponents of developmentalism. The 1962 ASCD Yearbook "Perceiving, Behaving, and Becoming" featured Abe Maslow, Earl Kelly, Art Combs, and Carl Rogers-- all claiming that the central purpose of schooling was the personal (i.e., psychological) development of the student. The 1972 ASCD yearbook edited by J.R. Squire is titled "A New Look at Progressive Education." It favored many of the same authors and presented approvingly most of the developmentalist concepts that underpinned the then discredited progressive education movement.

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Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement*

2 May 1996

John Stone

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Sherman Dorn writes:

*I would also bet that many people who use developmentalism as an *excuse* not to change teaching methods are doing so, at least in part, for other reasons. Intense instruction, even to small groups of students, is even more exhausting than poor teaching.*

I agree with you entirely. Although I have not carefully examined this hypothesis, I suspect developmentalism may be appealing for economic reasons. So long as teaching is a matter of fitting instruction to highly individualized developmental patterns and the danger of inappropriate intervention is great, teaching is bound to require lots of teachers and take lots of time. Also if intangible developmental limitations bar progress, teacher accountability measures must be questioned.

As to your point about the work involved in intensive instruction and for that matter, the work in learning research based modes of instruction, there is no question that resistance on such grounds does exist. However, I must hasten to say that there is very little to encourage teachers to work hard and to insure learning because achievement outcomes are typically given so little attention.

*As to published reports of intervention oriented programs discarded or rejected on account of differences with what seems to be developmentalist thinking, I can refer you to the following off the top of my head:
Thanks for posting these.*

I will see if I can locate more. I'm confident they exist.

On the influence of Dewey:

As to Cremin's account of progressive education, it is reasonable to contend that the Progressive Education Association did lose connection with Dewey's philosophy... That the Association changed is one thing, that "progressive education" changed is another.

The criticism of progressive education after WWII was focused on the PEA and the Life Adjustment Movement -- most incisively (as in Arthur Bestor) the curriculum of

high schools. I've read Bestor, and I don't recall where developmental psychology was an issue, either explicitly or implicitly.

I agree with your understanding of Bestor's critique and you are right that the life adjustment movement was not explicitly premised on developmental psychology. In my view, however, that which Bestor found objectionable was consistent with the developmentalist thinking that had been inherent in the progressive education movement since its earliest days. Marietta Johnson, for example, had been greatly influenced by developmental ideas in her formulation of the Organic School and much of her thinking entered into the early expression of principles by the PEA. A key idea was that education cannot stress only the intellectual aspects of growing and developing without doing violence to the other areas. The idea of educating the "whole child" was, thus, a centerpiece of progressive thinking throughout the twenties and thirties and much of the life adjustment concept seems entirely consistent. For example, the 1948 Commission for Life Adjustment Education for Youth described life adjustment education (in part): "It is concerned with ethical and moral living and with physical, mental, and emotional health." Bestor's criticism of this kind of thinking (in a 1953 New Republic article) was that schools have a far narrower and more intellectual mission and that church, home, and other institutions and agencies should minister to the other needs of youth. "The idea that the school must undertake to meet every need that some other agency is failing to meet is a preposterous delusion that can wreck the educational system without contributing anything to the salvation of society."

More relevant to the matter of doctrine and the ideas imported to the schools are the progressive and neo progressive nature of therecommendations about sound teaching practice issued by the National Education Association and the U. S. Office of Education (also by the U. S. Bureau of Education).

I would take this with a grain of salt, sort of like the mothering recommendations put out by the Child Bureau (or, later, Spock). Some portion of the population saw them as bibles, but they're not evidence of actual childrearing practice or even widespread philosophies.

I agree that the fact of such recommendations are not the same thing as observed practices and as I mentioned in my reply to Rick (and some others, off-list), my thesis is not that developmentalist practices such as progressive education have thoroughly captivated the schools. Rather my thesis is that the developmentalist premises have served to encourage the adoption of a variety of practices that are consistent with such thinking and, moreover, that they have discouraged the adoption of practices that seem to have high promise of effectiveness.

Thanks again for your thoughtful commentary.

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

2 May 1996

Sherman Dorn

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On April 30, 1996 Rick Garlikov wrote:

It is very difficult to give evidence of a pervasive but unconscious attitude in a field.

Educational researchers conduct surveys of principals and teachers all the time about such things, and it seems to me one could try to have a *rough* gauge of such influence. Having evidence of its influence back to the 1960s is what I doubt one could have. But that is what Stone is suggesting, and I doubt it is true. When reasonable people differ on questions like this, anecdotes are insufficient. One needs detailed case studies or broader evidence.

Rick Garlikov writes:

I thought that what J.E. Stone said "fit" many of the teachers I know who DO adhere to some of the pedagogical philosophies that he calls "developmentalist."

Yes, and it agrees with my impressions of some teachers, too. However, that is not nearly as persuasive an explanation of resistance as other, more mundane, and more widespread forces.

I thought the paper was important, but it is difficult to characterize what "kind" of scholarship effort it represents if one is into such categorizing. Still I think it was a good, worthwhile, and scholarly article.

Oh, I think so, too, and I will certainly recommend it to students alongside other works about resistance of teachers to change. One does not have to think a work is unscholarly to disagree with it.

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

2 May 1996

Sherman Dorn

dornsj@CTRVAX.VANDERBILT.EDU

J. E. Stone writes:

I agree that the present paper offers no empirical evidence of developmentalism as a barrier. My primary aim was to bring into focus a phenomenon that, in my view, pervades education in such a way that it has veritably become part of the air we breathe. I have named it and sought to show its educational significance.

I think it's provocative and a plausible thesis and, as I wrote Rick, I will suggest people read it. However, I'm more cautious about it, because resistance to change is more widespread than the people who adhere to what you call developmentalist philosophies. I would also bet that many people who use developmentalism as an *excuse* not to change teaching methods are doing so, at least in part, for other reasons. Intense instruction, even to small groups of students, is even more exhausting than poor teaching.

As to published reports of intervention oriented programs discarded or rejected on account of differences with what seems to be developmentalist thinking, I can refer you to the following off the top of my head:

Thanks for posting these. You may want to use this type of evidence in future articles. It would be more persuasive (at least to me) than citing methods textbooks.
On the influence of Dewey:

As to Cremin's account of progressive education, it is reasonable to contend that the Progressive Education Association did lose connection with Dewey's philosophy... That the Association changed is one thing, that "progressive education" changed is another.

The criticism of progressive education after WWII was focused on the PEA and the Life Adjustment Movement -- most incisively (as in Arthur Bestor) the curriculum of high schools. I've read Bestor, and I don't recall where developmental psychology was an issue, either explicitly or implicitly.

More relevant to the matter of doctrine and the ideas imported to the schools are the progressive and neo progressive nature of the recommendations about sound

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Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement*

1 May 1996

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I think the discussion of Stone's paper misses some important considerations. I don't think resistance to change has anything to do with "isms". It has to do with people and what asking them to change means to them. The following is an excerpt from a reflective essay I wrote after shadowing several principals. It is a bit long. For those who want the essence in 25 words or less.

Change requires:

- a perceived need
- an effective alternative
- the resources to implement it

Effecting Change in Schools: School are About People:

My last two school visits were to schools where change was causing or had caused conflict. The visits brought home the notion that schools are about people and that bringing about change in schools is bringing about change in people. I was also reminded that the people we want to change may resent being told they can do better. Then there is the part that really hurts, perhaps what is being done is best for the school and shouldn't be changed. The corollary is there are times the students don't and shouldn't come first.

There are times when it is important for the school and hence the students to give teachers time to change even when you are sure the needs of students currently in the classes aren't being met. Today's student is disadvantaged to benefit tomorrows. In one school, changes in instructional methods had been put on hold. Change had been imposed on the teachers and been resisted. During this respite, the students are in a structured environment. This may or may not be what the students need, but it is what the teachers need, immersion in a comfortable, familiar environment to gather the confidence to face change.

The other school had a teacher who was experiencing difficulty. The principal was working with the teacher to overcome these problems. In the meantime the students don't have a teacher with a full range of competencies. If teachers are going to acknowledge their weaknesses and provide an opportunity to overcome them, they must be confident that they will be treated fairly. In many cases this involves remaining in the classroom, while acquiring new skills. Demonstrated fairness is needed to make substantial changes to how teachers work together and instructional approaches. A significant change will involve giving up an approach that has been mastered and is familiar and learning a new skill. There needs to be assurance that time will be given to learn the skill and help will be provided so the teacher can gain a new competency to replace the one abandoned. If teachers aren't confident of their abilities or are unsure of expectations they may resist change even when it doesn't directly affect them.

Because of the high personal cost and risk, change isn't adopted lightly. To have a teacher change instructional approaches, three conditions must be met. First the teacher has to believe the change is necessary. Second the teacher has to be confident enough to attempt the change and third, the teacher has to believe the new approach will be effective.

To establish a desire for change in instructional methods teachers must recognize a need for change. Most teachers care about their students and use teaching methods they feel are best for them. Suggesting that student needs are not being met is a comment on the teacher's competency. If the class isn't performing well the teacher will probably be seeking help, but if the class is doing reasonably well establishing the value of change will be more difficult. This can be done in two ways, both of which rely on the professional ethics of the teacher. If there is an identifiable group of students who aren't doing well, the teacher can be asked to develop a strategy to meet those students' needs. The other approach is to examine the curriculum and compare the requirements to student learning. Deficiencies are reason to ask for changes in approach. Allowing the teacher to try to meet these needs using existing techniques establishes the need for a different approach in the teacher's mind. If the student needs can be met with current approaches, you have to ask yourself why change is needed.

Confidence to attempt change comes from respect, self respect and the respect of others. The approach to establishing a need for change respects the teachers skills and integrity. The change isn't being suggested because of lack of competence, the change is being made because expectations have been changed. Involving the teacher in defining the need and suggesting an approach to meet the need recognizes and respects the teacher's competence.

If the teacher has identified the approach as a better way to meet student needs, technical effectiveness has been established. To believe that the approach is practical the teacher needs to know that professional development opportunities are available to gain the required competencies. The teacher will also need assurance that curricular and other resources will be available to enable success. Finally the teacher will want to know that parents and the community will support the change.

Which brings up a sticky point. The teacher isn't alone in the classroom and the school isn't alone in the community. We looked at gaining the support of the teacher first, because it is a necessary condition for change. If the teacher doesn't support the change it won't happen. The parents need to understand the change and why it is being made. They will need to know that their child's learning will not be harmed and that learning can be demonstrated. Parental support gives the teacher confidence, a third party thinks the approach is reasonable. The parents can also protect the program from outside interference, since the principal can point to the parents and say they won't support altering the program. The group that never gets asked is the students. They should be involved because they have to live with the changes. In some schools students are made aware of the curricular expectations, but I have never seen a situation were students are asked how they would like to be taught. I suspect it is because deep down we know we won't like the answer.

.....

Need can be demonstrated in a number of ways. Principals can use professional development create a desire for change. Professional development provides an opportunity to see and explore other ways of doing things. These are important for the changes that don't directly affect student performance, but are just better ways of working together. Request from the community and survey results can lead to an examination of practice. Assessment results can be used to show a need for reorganizing the school as well as changing instructional practice. This is particularly true if the assessment is broadened to cover all of the curricular requirements.

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

30 April 1996

Aimee Howley

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On April 30, 1996 Benjamin Levin wrote:

Sherman Dorn's comments on Stone's paper are very appropriate. We've heard a great deal about the baneful influence of progressivism on educational outcomes, but all the studies of classrooms continue to show the vast prevalence of traditional teaching techniques - teachers talk, kids sit and listen or write notes or do seat work. I wish Dewey had had as much impact as his critics say he did!

The prevalence of traditional methods may suggest that developmentalism doesn't have an important effect on resilient practices, but it doesn't adequately counter the claim that developmentalism serves as a rhetorical impediment to certain other practices. Acceleration of bright students provides a case in point. Despite rather convincing evidence of the benefit of this practice, teachers and administrators routinely disallow it. The most typical reason given is that acceleration will interfere with the healthy social and emotional development of bright students. Educators invoke the "whole child" argument as a way to keep from engaging in an educational practice that they find unacceptable. Having dealt with this argument again and again, I am convinced that, no matter how misdirected the argument may be, educators usually are committed to it out of an earnest regard for students' well-being. Here, an ethos of developmentalism restricts educators' consideration of reasonable alternatives. I do not think that in most cases the argument is offered cynically or in a calculative manner.

EPAacommentary

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

30 April 1996

Rick Garlikov

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It is very difficult to give evidence of a pervasive but unconscious attitude in a field. I thought that what J.E. Stone said "fit" many of the teachers I know who DO adhere to some of the pedagogical philosophies that he calls "developmentalist". I would be hardpressed to prove empirically it fits, but that is in part because when you spell it out as he does, they tend to deny having that view. Yet many of the things they say logically lead to it.

I thought the paper was important, but it is difficult to characterize what "kind" of scholarship effort it represents if one is into such categorizing. Still I think it was a good, worthwhile, and scholarly article; and I think (as the letter in his post exemplified) that it in some sense explains the resistance of many developmentalists to other sorts of methods --and it explains it to people who have presented such empirically based methods and been rejected in ways that did not make sense to them at the time, but which make sense (or are consistent with) Prof. Stone's analysis/characterization.

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

30 April 1996

John Stone

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Sherman,

Thanks for posting a reaction. My hope had been to stimulate some thought about developmentalism as one piece of the puzzle about how and why it is so difficult to improve educational outcomes. In the following, I will try to respond to your several points.

On April 29, 1996 Sherman writes:

*Like Rick Garlikov, I found it appealing in the sense that I have witnessed some of the dynamics which Stone claims dominates teaching.
Yet ultimately I find the article unconvincing for several reasons.*

I. In an article which espouses empiricism, Stone presents remarkably little concrete evidence that developmentalist philosophy is a primary barrier to more effective teaching. The following are two generalizations which would need evidence to convince me of Stone's thesis:

(a) Developmentalism has been important to teachers since the late 1960s (when, if I recall correctly, the first studies of Direct Instruction and other quasi-experimental intervention programs were published).

(b) Developmentalism has been a barrier to the use of research-based interventions:

(1) A developmentalist philosophy has blocked the implementation of research-based intervention programs in specific locations; or

(2) A substantial number of teachers across the country have considered research-based intervention programs and have discarded them explicitly because of developmentalist principles.

*Evidence of these is nonexistent in the article. Instead, Stone presents what some teacher education texts say about teaching, and what some constructivist researchers have said about specific teaching methods (or about reinforcement in general) -- which reflect on *those texts* but which says little either about teacher education in general or about how*

teachers make decisions in classrooms.

I agree that the present paper offers no empirical evidence of developmentalism as a barrier. My primary aim was to bring into focus a phenomenon that, in my view, pervades education in such a way that it has veritably become part of the air we breathe. I have named it and sought to show its educational significance. As to evidence of its existence or studies showing how it has served as a barrier, I would hope that individuals who have attempted to implement various experimentally demonstrated interventions might assess their experiences in light of this report.

Happily, one such a assessment came to my attention yesterday. The following is a quote from an educational researcher who has been attempting to implement technological improvements:

Prof. Stone:

Your recent article on Developmentalism is an excellent and instructive contribution. I have circulated it to many of my colleagues who must confront these questions daily. Would you please also send other of your reprints that relate to the general topic?

We have worked for several years on the Florida Schoolyear 2000 Initiative, the intention of which is to redesign public education in Florida. We find it a daunting task, for all the reasons that you cited.

As to published reports of intervention oriented programs discarded or rejected on account of differences with what seems to be developmentalist thinking, I can refer you to the following off the top of my head:

Binder and Watkins (1989) Promoting effective instructional methods. FUTURE CHOICES 1(3), 33-39.

If I recall correctly, Binder and Watkins make reference to a "developmentalist bias" in the thinking of school personnel.

Watkins (1988, July) Project Follow Through: A story of the identification and neglect of effective instruction. YOUTH POLICY, pp. 7-11.

Herbert Walberg at U of IL Chicago has written a number of pieces on the rejection and disuse of experimentally grounded interventions, notably those employing a mastery learning approach.

Sherman writes:

*2. Others are more persuasive in explaining why teachers don't change their methods much. Larry Cuban and Seymour Sarason have each argued that teaching is innately conservative and that schools create a conservative work culture. The most common teaching methods, especially in secondary schools, have changed relatively little over the past century compared to more experimental models which have existed side-by-side with more "traditional" classes. In *every single case*, traditional classes are more influential on the next generation of teachers and on teachers asked to change. It hasn't really mattered whether those experimental models were the Lab School run by Dewey*

or DISTAR, the Eight-Year project of the NEA or something else. Schools and teachers just have not picked up on new methods easily or faithfully. It does not require the inculcation of constructivism to have continued that pattern in the last few decades.

I do not disagree with the observation that schools employ traditional methods and are generally reluctant to adopt new approaches. As I indicated yesterday in my reply to Rick Garlikov, I find teacher attitudes entirely understandable. Teachers have to deal with classroom reality on a daily basis and, in my opinion, it is the realities of this environment shapes their practices. Much of that which they are taught by schools of education or in the context of inservice training has not been well tested. Also much of what they are expected to implement--even in those cases where the ideas are workable--is not compatible with funding patterns or other organizational arrangements. Teachers are frequently given a brief introduction and left to fend for themselves. In an environment in which there is no particular premium on consistently high educational outcomes and given the dearth of realistic (cost-effective and labor saving) advice about how to change, teachers stick with that which they are familiar--but with one critical caveat: the strictures posed by developmentalism.

Developmentalism in its many incarnations has, in my opinion, succeeded in restricting the practices that teachers consider to be acceptable. For example, teachers believe that motivation to learn must stem from interest; that pressure, demands, and expectations for performance are apt to be harmful; and that punishment is to be avoided. Broadly speaking, my point is not that developmentalism has influenced the schools through the widespread adoption of progressive, constructivist, or other such programs. Rather, I contend that in setting informal but virtually inviolable strictures on teaching practice, developmentalism has impeded the adoption of effective practices.

Sherman writes:

*3. Stone's chronology implies that Dewey and other "developmentalists" were far more influential on educators than they actually were. As Ellen Lagemann wrote in Teachers College Record several years ago, Thorndike won the battle of educational philosophies in the early twentieth century. Dewey essentially lost, and it wasn't until decades later that someone else (and you can argue whether it was Piaget, Robert Coles, or others) became an effective rhetorical advocate of treating children as having mental lives of their own. Stone cites Lawrence Cremin's history of progressivism but omits a key message: while becoming a dominant professional force, the Progressive Education Association lost virtually every connection it had with Dewey's educational philosophy -- including, critically, the parts of Dewey which Stone identifies as developmentalist. Similarly, I have my doubts about the reaches of constructivism. Visible in many schools of education, sure. Identifiable among individual teachers and principals, absolutely. But right next to constructivists you'll find other teachers who may fail their students *just as much* as constructivists and refuse to change even more.*

I am aware of Lagemann' view, but I am not sure she takes into account the kind of strictures I believe result from Dewey's thinking.

As to Cremin's account of progressive education, it is reasonable to contend that the Progressive Education Association did lose connection with Dewey's philosophy--Counts' "Dare Progressive Education be Progressive" speech in 1932 being a watershed event (actually, of course, Counts' views were never adopted). That the Association changed is one thing, that "progressive education" changed is another. Citing Cremin: Pondering the relationship between the PEA and progressive education and like pondering the relationship between religion and a church or between ideology and a political party. The PEA changed, but did "progressive education?"

More relevant to the matter of doctrine and the ideas imported to the schools are the progressive and neo progressive nature of the recommendations about sound teaching practice issued by the National Education Association and the U. S. Office of Education (also by the U. S. Bureau of Education). Although not developmentalist in the Rousseauian sense (in later years), they were clearly premised on what I have termed Dewey's interactionist form of developmentalism. One could argue that Rousseauian views went into eclipse (only to reemerge in the late sixties), but the "developmentalism" to which I refer is a broader doctrine.

Again, thanks for your comments.

Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement*

30 April 1996

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Sherman Dorn's comments on Stone's paper are very appropriate. We've heard a great deal about the baneful influence of progressivism on educational outcomes, but all the studies of classrooms continue to show the vast prevalence of traditional teaching techniques - teachers talk, kids sit and listen or write notes or do seat work. I wish Dewey had had as much impact as his critics say he did!

**Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

29 April 1996

Sherman Dorn

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In general, I found Stone's paper, arguing that a philosophy of developmentalism blocks many teachers from using effective teaching methods, provocative and interesting. Like Rick Garlikov, I found it appealing in the sense that I have witnessed some of the dynamics which Stone claims dominates teaching.

Yet ultimately I find the article unconvincing for several reasons.

1. In an article which espouses empiricism, Stone presents remarkably little concrete evidence that developmentalist philosophy is a primary barrier to more effective teaching. The following are two generalizations which would need evidence to convince me of Stone's thesis:

(a) Developmentalism has been important to teachers since the late 1960s (when, if I recall correctly, the first studies of Direct Instruction and other quasi-experimental intervention programs were published).

(b) Developmentalism has been a barrier to the use of research-based interventions:

(1) A developmentalist philosophy has blocked the implementation of research-based intervention programs in specific locations; or

(2) A substantial number of teachers across the country have considered research-based intervention programs and have discarded them explicitly because of developmentalist principles.

Evidence of these is nonexistent in the article. Instead, Stone presents what some teacher education texts say about teaching, and what some constructivist researchers have said about specific teaching methods (or about reinforcement in general) -- which reflect on **those texts** but which says little either about teacher education in general or about how teachers make decisions in classrooms.

2. Others are more persuasive in explaining why teachers don't change their methods much. Larry Cuban and Seymour Sarason have each argued that teaching is innately conservative and that schools create a conservative work culture. The most common teaching methods, especially in secondary schools, have changed relatively little over the past century compared to more experimental models which have existed side-by-side with more "traditional" classes. In **every single case**, traditional classes are more influential on the next generation of teachers and on teachers asked to change. It hasn't really mattered whether those experimental models were the

Lab School run by Dewey or DISTAR, the Eight-Year project of the NEA or something else. Schools and teachers just have not picked up on new methods easily or faithfully. It does not require the inculcation of constructivism to have continued that pattern in the last few decades.

3. Stone's chronology implies that Dewey and other "developmentalists" were far more influential on educators than they actually were. As Ellen Lagemann wrote in Teachers College Record several years ago, Thorndike won the battle of educational philosophies in the early twentieth century. Dewey essentially lost, and it wasn't until decades later that someone else (and you can argue whether it was Piaget, Robert Coles, or others) became an effective rhetorical advocate of treating children as having mental lives of their own. Stone cites Lawrence Cremin's history of progressivism but omits a key message: while becoming a dominant professional force, the Progressive Education Association lost virtually every connection it had with Dewey's educational philosophy -- including, critically, the parts of Dewey which Stone identifies as developmentalist.

Similarly, I have my doubts about the reaches of constructivism. Visible in many schools of education, sure. Identifiable among individual teachers and principals, absolutely. But right next to constructivists you'll find other teachers who may fail their students *just as much* as constructivists and refuse to change even more.

I am not denying here either the dangers of not intervening in failing educational dynamics or the real contradictions in Dewey's or Piaget's philosophy. But one must put it in perspective.

**Contributed Commentary on
Volume 4 Number 8: *Stone Developmentalism: An Obscure but Pervasive Restriction on
Educational Improvement***

29 April 1996

John Stone

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Rick, thanks for your very thoughtful analysis of my recent *EPAA* article on "developmentalism." It would have been advantageous to see your thinking while I was reviewing and revising. I won't be able to address your concerns as thoroughly as they deserve in this post, but let me begin by making 2 points:

* As you say in your last paragraph, "I believe that it is not age development that generally creates readiness, but development through meaningful exposure or experience." In general, I agree and I wrote about developmentalism in an attempt to counter what I see as a widely assumed (not necessarily well understood) doctrinal limitation on how educators go about improving their practices.

* Please bear in mind that my principal objective was the relatively narrow one of trying to identify and describe a set of assumptions about learning and the nature of human development and to show that they have considerable educational importance. Obviously, my account has numerous implications for educational (and parenting) practice--chief among which is the matter of how experimental research is used and what that has to do with more effective schooling. A more complete treatment of how and where developmentalist assumptions intersect with social and educational issues would require much lengthier treatment.

In the following, I will try to respond briefly to a number of your points:

(1) does not sufficiently explain or take into account the rationales, and philosophical points, of other people for some of the approaches he refers to as "developmental"

I agree. Much more could be said but I was only trying to show that they intersect and likely implications.

(2) My chief concern in writing this is that the good aspects of some of the approaches Prof. Stone considers "developmental" not be thrown out with those elements he effectively argues are bad.

I too would not want to banish everything associated with those approaches identified as developmental. I say, let's look at evidence of effectiveness.

3. ...the purpose of school is to give students a broader range of knowledge and skills than whatever the workplace may likely demand... (snip) ...where schools do not teach well enough to adequately prepare students for the workplace, that signifies a

problem on my view only because that should be a minimal outcome of the sort of education I seek for students.

I agree that meeting the demands of the workplace is a minimum and I too would want schools to go well beyond. However, it is well to bear in mind that it is failure to meet the minimum that has critical personal, social and economic implications, and that failure to meet this minimum is a matter of central concern to the people who are paying most of us to teach. I think if the many surveys of public opinion in the matter of educational objectives tell us anything, they say to public elementary and secondary schools: First and foremost, do a vastly better job of insuring that everyone has the literacy, numeracy, communication, etc. skills necessary to the workplace (and necessary to preparedness for postsecondary learning) in the information age.

(4) ...teachers (like anyone else) are disposed to favor specific practices with which they are familiar and comfortable -- frequently teaching as they have been taught, rather than teaching as they have been taught to teach in ed schools.

Having spent a career in teacher education, I will be the first to agree with the point that teachers make only limited use of that which they have been taught in the colleges of education. However, the truth of that assertion does not mean that teacher education (and its doctrines) is having no effect. Rather, in my judgement, teacher training has a substantial restrictive effect. What I have observed and learned from the relevant literature (surveys of teachers, etc.) is that teachers frequently find that that which they are taught in the colleges of education does not work in the classroom. For this reason, a perennial reform in teacher education is more apprenticeship type training and less time spent on theory and methods. A companion reform in TN has been to require education professors to spend so many days per year in the schools. I teach the required developmental psychology courses (for teachers and non teachers), and teacher surveys find that such courses are among the most inapplicable.

Confronted with the daily reality of having to find something that does work, teachers use the kind of teaching that enabled them personally to learn; they rely on that which other teachers have found to work; and they rely on that which seems to work with their students. For lack of any better information, they are forced to continually "reinvent the wheel" (i.e., innovate) and over the years the same innovations and the same faulty initiatives (uncharitably called "fads") come around again and again--all at student and taxpayer expense.

In my opinion, teacher training further contributes to this situation by a) failing to train prospective teachers in any experimentally vindicated approaches to teaching (that might be used or adapted) or by b) affording such little training in a given approach that implementation is almost bound to fail. From what I have seen over the years, well demonstrated teaching practices have been neglected or abandoned because (inadequately trained teachers) could not make them work (after having a few classes or a workshop). Over time, most teachers become so jaded about the latest "innovation" that they understandably ignore new ideas regardless of merit.

Finally, developmentalist teacher training effectively encourages teachers to believe that good teaching requires whatever approach they devise to be, first and foremost, well received by students and, second, effective in producing academic achievement. This order of priorities is more or less the reverse of the public's. Schools that fail to produce acceptable degrees of conventional academic achievement are nonsense to the public. It is my suspicion that this stricture combined with the uncertainty about whether an untested innovation will produce results markedly limits that which teachers and schools are willing to attempt with students. In other words, there is a boundary based on doctrine and effectively reorders educational priorities. I might add that this is a terribly expensive way to go about education. Teachers are sent on a perpetual quest for the perfect fit between teaching practice and the individual student's

developmental attributes on the theory that an excellent fit will be both well received and successful. Again, in my opinion, the public would prefer schooling that succeeds in producing learning whether or not students find it entirely to their tastes.

(5) ...there being grounds besides "natural development" for advocating methods other than those research has shown effective

I do not disagree. My point is that the "natural" attribute is important to the appeal of these approaches, perhaps a critically important attribute. Neither am I arguing that all traditional or unnatural approaches are effective.

(6) The first problem is that there is much published which seems quite clearly to be flawed research, or interpretations of research, in that it does not isolate an independent variable and show its effect.

Yes, there is plenty of flawed research--experimental and otherwise; and yes, it is difficult to isolate the effects of independent variables in complex situations. However, I do not take these considerable difficulties as arguments for abandoning experiments. Instead, I ask whether there is better avenue to credible knowledge of teaching effectiveness.

It seems to me that teacher education and the teaching profession generally has some obligation to assure that the skills with which teachers are equipped actually work. I think the obligation is largely parallel to that had by medical schools and the medical profession. Experimentally validated and field tested findings have enabled enormous advancements in medicine and many other areas of human endeavor. That they would fail so completely in education would be odd indeed.

My point here is that if the teaching profession has an obligation to equip teachers with practices that work and that experiments are the best way of making such a determination, then experimental evidence should play a prominent role in our thinking about how to teach. If we reject experimentation on the grounds that it is less than perfect, it seems to an unfair comparison--the perfect hypothetical is made the enemy of the best real option.

(7)*IF* you can make the practice fun, is that not better than making drill tedious --if you achieve the same learning. Not better because it is more effective in the short run, but because it may be more effective in the long run for students' schooling in general, and is more humane. I am not against memorization, nor am I against drill. The argument is over the specifics and the outcomes with regard to a reasonable span of time. If you teach kids to read, but make them hate to read, what of value have you accomplished?

I wholly favor making learning fun and interesting, and if students generally learned the way Rousseau's Emile did, for example, the educational issues that concern us would be largely nonexistent. It is worth remembering, however, that Rousseau's real children were shipped off to an orphanage.

The point I am making is that in those cases where teachers find something that "clicks" with the student, the resulting learning can be ideal. Your personal examples are great; and to all who can find similarly thoughtful and creative ways of achieving results, I offer my complements. The great problem of education, however, is what to do about the very substantial numbers of students who do not respond.

My question is: Must teachers be limited to methods that are immediately gratifying and well received by students? I am suggesting that developmentalism, in effect, sets such a limit. As would be true of any reasonable and humane individual, I favor the most gratifying methods we

can devise and I certainly would exclude intervention that goes beyond the bounds of decent and humane treatment. Where I probably would part company with many members of the teaching profession, however, is that I would balance the privations attendant a student's effort during his or her school years against the catastrophic prospect of failure to learn. Learning takes study (defined broadly) and study takes time and effort. Almost inevitably in our day and age, study time comes at the expense of some far more attractive activities. Either children discipline themselves to the task as a result of the enthusiasm inspired by their teacher or the teacher (and the parent) somehow insure that the necessary time and effort is allocated. To me, letting children become much less than they can be is truly abusive.

Another area in which I would part company with many teachers and teacher educators is in the matter of how patient we should be in expecting students to progress. I think that individuals whom I would term developmentalists see time and expected progress as largely open ended. My view is that time is money and there are finite limits to both. Schools are enormously expensive. When college level remedial programs have to re-teach basic skills to high school graduates (even ones with above average GPAs), I think we need to take a careful look at whether students are making good use of the educational opportunity they are provided. Schooling is plenty expensive even without waste. Permitting students to advance without learning wastes their time as well as the taxpayer's money. What we know as adults is that there is only a brief period in one's life when one's parents provide a place to live and pay the bills. Sooner or later most people are on their own; and as many of the students I see every day will tell you, they wished their parents and their teachers had pushed them while the opportunity was there.

In addition to believing that many in teaching fail to balance present deprivation and discomfort against the catastrophic effects of failure to learn, I think the supposed dangers of teaching practices to which students are not immediately receptive is greatly overrated--a point I tried to address in the present paper. My two sons dislike wind sprints in basketball practice, but such activities do seem to get them ready for play and neither one of them have talked about quitting basketball. As an educational psychologist, I would argue that people frequently learn valuable lessons under adverse circumstances. They may strongly dislike the experience that taught them, but knowledge or skill acquired became valuable and attractive because of its functionality under other circumstances. For example, many people hate English composition classes but later learn to love writing.

In truth, structured and result-oriented teaching methods are not inherently unpleasant. For example, Direct Instruction (Engelmann, Becker, Carnine, et al) entails drill, recitation, and choral responding--all practices that are anathema to many educators. Kids, however, seem to love it.

(8) When Stone says "Led by Dewey...the mainstream teaching profession has held that such 'intrinsic' or naturally occurring interest will express itself provided that the student is confronted with a sufficiently meaningful or relevant or lifelike problem" Stone seems to think that this precludes all sorts of what he refers to as "purposeful actions of teachers and parents".

I must not have made myself clear on this point. In my view, Dewey does not restrict all purposeful actions of teachers and parents, rather he limits their options to approaches that would pique a youngster's interest. My reading of Dewey is that his great break with educational tradition of his day was his insistence that true learning had to be motivated by the genuine interest of the student, not by the insistence of a teacher/taskmaster. For example, Dewey would have opposed a teacher insisting that an unengaged student complete an assignment before going to recess. In fact, Dewey would have objected to the idea of the teacher making an assignment purely on the basis of the teacher's assessment of the student's educational needs.

I realize my responses are not as complete and as nuanced as your contentions deserve, but for the time being this is the best I can do. Again, I appreciate your thoughtful response because I believe this issue may be at the heart of whether public schools as we know them survive.

Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement*

27 April 1996

Les McLean

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Thanks to Rick Garlikov for taking the time to respond to John Stone's "Developmentalism" article. Among the good qualities of Rick's response is that it is an illustration of how to follow the Edpolicy Guidelines! I hope all who took the time to read Stone's article will also take the time to read Rick's response (the response is only about one-quarter as long!). My purpose in this post is to branch off from both of them to follow the question, "In any given situation, just WHAT is being taught?" In the direct instruction lessons I have observed, myself or via videotape, I was convinced that the overriding outcome, the one that would last (if anything did) was, "Do what the teacher says, believe what the teacher believes; don't think too much because it will slow you down."

YES--I know that is not what most instructors intend. I know that is not all that happens. But I have been convinced by the tasks and the methods that it is mainly what happens. Rick's example of Saxon math and the follow-up questions illustrates my point. No teacher can take the questions seriously and keep to the essence of direct instruction; nor should they, any more than whole language teachers should avoid word/sound correspondences. My question, "What is taught?", however, came from Rick's "statistics" example. I put in the quotation marks because I argue that Rick's 100-box problem does not teach statistics in any meaningful sense of the term. I will argue that it teaches, "None of the most important and difficult problems in life are statistical, but sometimes you can use statistics to understand them better, maybe even solve them". Here is the task, as set out in Rick's response to Stone:

"Likewise, here is a statistics question that might work better to help teach statistics. I have been trying to work out ways to get kids to see that one must take into account not only probabilities, but the value of outcomes, when assessing choices. For example, should you play a game where you get to choose a box to open if there are 100 boxes to choose from, \$1000 in each of 99 of the boxes, but a bomb that will be fatally detonated in one of the boxes? If kids say, "yes, because those are good odds", I lower the amount of money in each box, which does not change the odds, but which starts to make them reconsider, and get the point.

My stats question derives from different variations on this game: Is there any difference between having 100 kids who think this is a good game to play each choose a box (all at the same time, so that all the boxes are spoken for), and having 100 kids play the game separately? Why or why not?" (Rick goes on to explain...) "If they play simultaneously one kid will for sure get killed, which seems like it makes the game not a good game for any of them, since they will be guaranteed to lose a friend, if not their own life. But if they play individually (with different sets of boxes, replacing the chosen box each time), maybe no one will get killed, and maybe two or eight or 100 of them will be killed. Yet the game may still seem like a good risk to some kids

to play on this basis. IS THERE a statistical difference between the two ways of playing the game? If so, what? And if not, why does it seem okay to play it one way to a kid but not another way? This is the sort of thing I consider to be a purposeful interventionist, proactive sort of teaching question, but one which is consistent with Dewey and which would perhaps lead to students learning about statistical analysis better. Yes? No? It is not a "natural" question, but one which I think is of the sort that works "naturally" to get kids more interested and thinking about statistics issues and more readily receptive to learning them, however else they are taught."

My point: Except for the first, simple situation (one person choosing one box from 100), people I know (from 'kids' to graduate students), cannot or will not learn enough probability to arrive at the correct odds themselves. Even if they arrive at an intuitive acceptance of the odds as stated by the teacher, the crucial question remains, "How do you put a value on human life?" Even as a class exercise, this belongs in Decision Theory, and here again, "kids" and graduate students I know will not gain more than an exceptionally superficial feeling for the "statistics". If the teacher can engage their interest, however, they WILL see how crucial the value question is and how, IF they can answer that question THEN they can apply some simple statistics to arrive at an answer. My prediction is that most people will decide that they should not play the game at all, any more than they would play Russian roulette. If you really want to teach statistics, there are, IMHO, better examples, e.g., error estimates in opinion polling, bias resulting from non-random sampling in comparative studies.

Here is an example from the National Pilot Mathematics Test, elementary school, in the U.K., 1992. (The 'sign' was presented in a box so it looked like a sign. Use of a calculator was allowed. 'lift' = 'elevator')

This is the sign in a lift at an office block:

This lift can carry up to
14 people

In the morning rush, 269 people want to go up in this lift.

How many times must it go up?

The expected answer is 20, but notice how many assumptions are required for this to be correct (always full when people waiting, no one takes the stairs, no large parcels...). The best approach is to assume maximum simplicity, divide 269 by 14 and round up, still not an easy question for young people. But what is being assessed? What is being taught? The example appeared in the article by Patricia Murphy (1995), "Sources of inequity: understanding students' responses to assessment" (Assessment in Education, 2(3), 249- 270), where she presents evidence that girls pay more attention to context than boys and hence take more time with this task, maybe get it wrong, maybe omit it. Mathematics tests are full of such examples, and the successful student has to learn to ignore most of the contextual information and get directly to the simple calculations. Few would argue that mathematics teachers should be teaching this. Just one more example of an item that might be authentic in some circumstances but not desirable in any:

Billy steals Joe's skateboard. As Billy skates away at 15 mph, Joe loads his 357 Magnum. If it takes Joe 20 seconds to load his Magnum, how far away will Billy be when he gets whacked?

Best to end with another quotation from Rick's response: "I think teachers need to be able to recognize and create teachable moments and then know what to do with them when they have them." Right on, Rick.

Contributed Commentary on
Volume 4 Number 8: Stone *Developmentalism: An Obscure but Pervasive Restriction on Educational Improvement*

26 April 1996

Rick Garlikov

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While I believe Prof. Stone's analysis correctly characterizes and chastises the views and (often mistaken) pedagogical philosophical understanding of some teachers and school districts with which I am familiar, I think it (1) does not sufficiently explain or take into account the rationales, and philosophical points, of other people for some of the approaches he refers to as "developmental", (2) does not fully appreciate some of the objections to experimentally demonstrated teaching methods, and (3) relies in crucial places on an ambiguity or vagueness in what it means for a teaching/learning method to be "natural" --a concept he argues is central to "developmentalist" philosophy. While that concept may be central, it seems to me that his objection to its involvement in pedagogical philosophy depends effectively only on one sense of what it means to learn something "naturally", and not on a different, more important sense. While I do appreciate Prof. Stone's distinction between "educationally appropriate" instruction and "developmentally appropriate" instruction, I think more needs to be said about what that means. I also believe that his paper makes some extremely important points and is substantially correct about the way many teachers and administrators conceive of what they are doing. This response is meant more as a supplement than an attack. My chief concern in writing this is that the good aspects of some of the approaches Prof. Stone considers "developmental" not be thrown out with those elements he effectively argues are bad.

First, as I have written repeatedly on AERA-C and EDPOLYAN, *I* believe it is wrong not to teach students in some way far more actively than just letting them discover things on their own as they happen to come to them. Pat Clifford used an expression I liked when she asks of teachers who let students work things out on their own whether they are doing anything "other than hosting the event". As I have put it, it would likely take students collectively 5000 years if they had to discover on their own what civilization has discovered collectively in the last 5000 years. Surely the point of "teaching" is to somehow more efficiently pass on to others the learning that is otherwise painfully slow to come about. The issue is what the most effective, and best, means of doing that is -- where what is "best" may involve elements other than mere effectiveness. So none of what I write below is meant in any way to imply or say that I think children should not be actively taught things they may not come to on their own. And while I believe it is helpful for students to be ready to learn what you are teaching, I believe an important element of teaching is purposefully "making" or getting them ready.

Second, I did not come to my ideas about education by training in education schools, so none of the (methods) books Prof. Stone mentions as being potentially influencing had any effect on me DIRECTLY. The possible exception is Dewey, some of which I have read; but I read Dewey after most of my educational ideas were already formed, and tended to either agree or

disagree rather than, I think, simply being influenced or inculcated. As Prof. Stone says, however, there is no way to tell how much indirect influence Dewey or others before me may have had on my thinking.

Third, MY criticism of schools is not "their continuing failure to equip students with the academic and workplace skills needed in an era of increasing economic competition." My personal view is that there are far more efficient ways of doing this than school, and that the purpose of school is to give students a broader range of knowledge and skills than whatever the workplace may likely demand, so that they can do well in life as well as work, and so that they themselves can bring about important changes in society and the workplace rather than just being able to adjust to those changes. Plus, I take the view that learning things is a great thing, often just because they are interesting to learn -- whether they have any known application at the time or not. Too much of great importance has been discovered just because people followed "idle" curiosity or interests instead of spending their time learning what was already known to be useful, to make school just be a place where information that is known to be applicable at the work place is taught.

In those places where schools do not teach well enough to adequately prepare students for the workplace, that signifies a problem on my view only because that should be a minimal outcome of the sort of education I seek for students. But the problem may not be solely that of the schools' in those cases, or at least not of the teachers in those schools. It may be a larger social problem, even in affluent suburban school districts.

Prof. Stone says that developmentalism is a "doctrine that pervades teacher education and one that disposes the teaching profession to favor certain practices and to ignore others regardless of empirically demonstrated merit." My understanding from reading, discussion, and from personal experience is that teachers (like anyone else) are disposed to favor specific practices with which they are familiar and comfortable -- frequently teaching as they have been taught, rather than teaching as they have been taught to teach in ed schools -- and that any practice which differs from what they are comfortable with is difficult to get them to accept on the basis of ANY kind of theory, whether overt or underlying. I have even found that you can demonstrate a method to teachers which is consistent with any philosophy of education they may have and still NOT get them to adopt that method in their own teaching. I did one lesson with a third grade classroom one time that worked out so much better than any teachers thought possible (and even better than I thought likely) that the teacher's mouth literally dropped open as kids were answering questions and making inferences that all the teachers and administrators had said was impossible for them to do. Yet the teacher's understanding of what had happened was not about the method, but about how good *I* was. NOTHING I could do or say convinced her she could do the same thing using the method.

Further, it took many of the theories, such as whole-language, a lot of "promotion and selling" to win acceptance at all; so I am not quite ready to accept that teachers have some underlying disposition to accept the approaches Prof. Stone refers to as developmentalist (in what might be facetiously referred to some sort of conspiracy theory of developmentalism in education). I think salesmanship, whether based on merit or not, is perhaps more important than (underlying) philosophy or demonstrated effectiveness.

With regard to (1) above --there being grounds besides "natural development" for advocating methods other than those research has shown effective:

I am familiar with the rationales of some math constructivists and some whole language advocates. I have read Constance Kamii (who worked with Piaget) and frequently discussed her writing with her, and I have read some of the Goodman's works on whole-language. Their claims are that just knowing algorithms in the case of math, and just being able to PRONOUNCE words out loud is not the same thing as understanding or doing math, or as reading. They are not making claims about what is natural, but about the ultimate ineffectiveness of certain kinds of

direct instruction that have SEEMED to work, but which they argue have failed, or at least failed large numbers of students. I won't go into the validity of their evidence here, but the point is their argument is quite different from anything about what is natural.

Now Dr. Kamii in some cases does seem to make the further claim that children CANNOT learn certain things before certain ages; but at other times she backs off from that and says that the direct methods often used in schools DO NOT teach children, even though children can be trained to perform certain tasks that make them look like they are doing math. She and I differ quite frequently about what children have learned and what they understand, and how to tell. But that is a very different matter from her having some sort of disposition toward what is "natural". And we both agree that direct methods of teaching math traditionally do not help kids understand it, though we have different evidence for that conclusion.

As to reading, even the "Hooked on Phonics" adds showing kids pronouncing big words makes it fairly clear that they are not reading with any comprehension. And many elementary school teachers can point to cases where students can pronounce even familiar words from a page of print without having any understanding of what they mean in the context of "decoding them from print". I have constructed such a phonetic example for adults, where the person reading it out loud does not know what he is reading, but anyone listening to him will understand it perfectly. Further, although SOME practitioners think teaching via whole language means they are not supposed to teach any sound-symbol correspondence, the whole language approach as I have read about it and heard it advocated, DOES espouse the teaching of sound-symbol correspondence as necessary but not sufficient for teaching reading. But moreover, even teaching sound-symbol correspondence is done in a way different from mere drill. There is a difference between practice and drill in teaching anything, and I will get to that in a moment.

The references to "natural learning" that I have seen in Whole Language tracts have been merely to point out that it is possible to learn to read without certain kinds of drill and "instruction" just as we learn to talk without drill and "instruction" (other than the kinds of things parents do sort of "naturally" in "teaching" kids to talk or teaching them particular words). I don't remember reading anything that argued teaching reading in this way was better because it was natural, just that it was possible. The "better" had to do with other sorts of claims.

(2) Objections to experimentally demonstrated teaching methods: Prof. Stone says "The object of experimental research is to demonstrate the impact of an independent variable as an agent of change." This gives rise to two different kinds of problems for a practitioner, one of which Stone thinks is irrelevant, but which I want to try to give more force. The first problem is that there is much published which seems quite clearly to be flawed research, or interpretations of research, in that it does not isolate an independent variable and show its effect. Recently on AERA-C Barak Rosenshine, himself, raised the issue of why the evidence for direct instruction, etc. was ignored by so many people. He pointed to research and claims about the Saxon direct instruction teaching in math. As the discussion progressed, someone posted a sample lesson from a Saxon math textbook. The lesson included a number of questions after the text or explanatory part. It seemed quite clear to me that the nature of the questions was extremely important for fostering understanding and for any application other than mere memory in closely similar circumstances. (And my argument is that you can only memorize so much math; and if that is the way you learn it, you will be much more limited in your math ability than if you understand it AND can do much automatically from practice.) I told Barak that I would be very surprised if Saxon math books WITHOUT the questions could yield anywhere near the same test results the Saxon math books as they are WITH the questions did. But THAT experiment has not been done. The point is that "direct instruction" is not an isolated independent variable in whatever studies were done on the Saxon method. So that even if the Saxon method is a good method for teaching math (which it seems to be, according to Barak), that does not show "direct instruction" is what is the key element for math instruction or for the Saxon method. The problem in general

is that in any complex situation such as a classroom, it is very difficult to isolate variables and test them with controls, even if one does this through various meta-analyses simply statistically.

Second, I assume Prof. Stone would not advocate use of drugs or electric shock therapy if these were shown by research to drastically increase learning. What is sought in schools is effective teaching that is also not Draconian in some way. The argument against some forms of drill (and drill alone) is that it IS Draconian, not physically as drugs or electrical shock would be, but in other important ways, primarily in its killing all interest in the subject so that whatever is gained in the short run by making kids drill is lost in the long run by their never wanting to take any more math, or read any more books, than they have to in order to get a grade. It is not that drill is conceived of as bad because it is unnatural, but that it is conceived of as bad because it is ultimately counterproductive to learning though it may help kids who work in stores count change back better.

I would argue that drill in things which are unimportant (e.g., learning state capitals in alphabetical order of states) is bad because it takes time away from learning more useful things (even if they also are memorized) and because it makes kids lose interest in school, since it is a place where "stupid stuff", or stuff to be done in stupid ways, is arbitrarily assigned for no good reason. Further, as I said, drill is different from practice; and there are lots of ways to give practice without doing mere drill. For example playing "21" or Blackjack gives plenty of crucial adding/subtracting practice. Playing team "War" with cards, where pairs of opponents turn over pairs of cards, and the higher pair sum wins the opponent's cards, gives addition practice.

IF you can make the practice fun, is that not better than making drill tedious --if you achieve the same learning. Not better because it is more effective in the short run, but because it may be more effective in the long run for students' schooling in general, and is more humane. I am not against memorization, nor am I against drill. The argument is over the specifics and the outcomes with regard to a reasonable span of time. If you teach kids to read, but make them hate to read, what of value have you accomplished? If you teach kids lower level math skills in such a way that they hit the wall in algebra, what of value have you accomplished? Research that is important is research that will take into account these longer term issues, not just tell which methods help 3rd graders add or subtract the fastest and most accurately. This is not an issue about "development"; it is an issue about what gives the best results, where results are not narrowly construed.

Now there will be disagreement about WHICH things need to be learned automatically, but that is a different issue. E.g., Bernice Wolfson and I used to argue about the point of teaching multiplication tables. I say it is crucial so that you can have more chance at recognizing potential common denominators when working with fractions, and more chance at solving algebra problems that require factoring, etc. If you cannot readily see these things, you may not even think of the right method for solving a problem, let alone not be able to do the actual calculations very well. She had her own ways of doing multiplication and had never learned the multiplication tables. But she did not go on to higher level math, and she admittedly took forever to multiply in her head or on paper. She thought that was sufficient; I thought it deficient, and that she had perhaps missed a lot of neat stuff because of her inability to automatically recognize combinations involving multiples.

(3) What "natural" teaching methods are:

There is an ambiguity here that is important. In the medical example Stone gives ("The artificial creation of immunities through the use of 'unnatural' and invasive vaccination is an historic example."), such vaccines are only unnatural in that they may not occur in nature (in the amounts needed for vaccinating everyone -- since cowpox virus did exist in nature), but they work by using the body's quite natural response to invasive molecules. So, although polio vaccine is "unnatural", the way it works is not.

When Stone says "Led by Dewey...the mainstream teaching profession has held that such

'intrinsic' or naturally occurring interest will express itself provided that the student is confronted with a sufficiently meaningful or relevant or lifelike problem" Stone seems to think that this precludes all sorts of what he refers to as "purposeful actions of teachers and parents". I don't see this. I don't see that if I get kids to play "21" that is somehow different in terms of purposeful action on my part from trying to make them do worksheets for a grade. One might even make a game out of the worksheets. The point is not whether the teacher is doing anything invasive or unnatural or purposeful, but whether whatever the teacher is doing is more likely to induce learning. If you can INDUCE learning to occur naturally, that is quite different from waiting for learning to occur naturally.

Now, SOME teachers do nothing (but "host the event") when they teach, but surely that is not what Dewey meant for teachers to do. Am I being less instructive or less purposeful or more "natural" when I tell a kid "if you play in the street and get hit by a car, it will squash you in the same way you squash a bug with your shoe; and you will be just as dead as the bug" and the kid UNDERSTANDS that, than if I say "I'll spank you if you go near the street to play." I say the former may be much more effective with some kids at some times; and it is not less purposeful or more intervening than the latter. And it is consistent with what Dewey was describing. Likewise, here is a statistics question that might work better to help teach statistics. I have been trying to work out ways to get kids to see that one must take into account not only probabilities, but the value of outcomes, when assessing choices. For example, should you play a game where you get to choose a box to open if there are 100 boxes to choose from, \$1000 in each of 99 of the boxes, but a bomb that will be fatally detonated in one of the boxes? If kids say, "yes because those are good odds", I lower the amount of money in each box, which does not change the odds, but which starts to make them reconsider, and get the point. My stats question derives from different variations on this game: Is there any difference between having 100 kids who think this is a good game to play each choose a box (all at the same time, so that all the boxes are spoken for), and having 100 kids play the game separately? Why or why not? If they play simultaneously one kid will for sure get killed, which seems like it makes the game not a good game for any of them, since they will be guaranteed to lose a friend, if not their own life. But if they play individually (with different sets of boxes, replacing the chosen box each time), maybe no one will get killed, and maybe two or eight or 100 of them will be killed. Yet the game may still seem like a good risk to some kids to play on this basis. IS THERE a statistical difference between the two ways of playing the game? If so, what? And if not, why does it seem okay to play it one way to a kid but not another way? This is the sort of thing I consider to be a purposeful interventionist, proactive sort of teaching question, but one which is consistent with Dewey and which would perhaps lead to students learning about statistical analysis better. Yes? No? It is not a "natural" question, but one which I think is of the sort that works "naturally" to get kids more interested and thinking about statistics issues and more readily receptive to learning them, however else they are taught.

The notion of what is natural, developmentally appropriate, interventionist, or "constructivist" is not clear. I have presented NCTM with a socratic method that I say gets kids to understand "place-value" in math, and they say it is nothing but a prescription for teaching; and they reject it. I say it takes thought and skill and art and understanding to use the method properly; they say it doesn't. I say it shows kids understand place-value; they say kids only give the answers I am prompting. I say those answers can't be prompted without the kids' understanding.

The point is that there is no clear cut distinction between what is natural and what is purposeful intervention in the way that either constructivists or Stone seem to think. And sometimes it is not clear what is intrinsic or extrinsic. If my students just don't like me, than they may not respond interestedly to my above stat problem; if they do, they may. There is an element of the extrinsic in making something interesting perhaps.

Isn't the real issue trying to avoid the Draconian or the harmful, and also finding what is

most effective in a way that does not have some kind of harmful "side-effects"? What is the point of trying to argue whether a method is teacher directed or not? Surely that is irrelevant. But on the other hand, my experience indicates to me that if you can get students to see the point of a procedure or exercise, or if you can make it interesting in some way (or not kill interest in it), then whatever other sort of instruction you need to use to help or get them to learn it, will work better. I just don't see any of this as an either/or sort of thing for most subjects.

In quoting Armstrong, Stone says with disapproval that "many teachers have come to believe teaching is more art than science". There are important "art" aspects to teaching. One of these is figuring out what kids already know that might help them learn new concepts better. One of these is figuring out what kids do know or just seem to know, or don't know/understand at all AFTER you have "taught" them. There is, after all, an art to communication in general. And one of the art aspects of education is figuring out what you need to try to get the significance of what you are teaching through to students. And one is being able to make something interesting to students.

I write all this because I can't imagine that mere drill and mere lecturing and merely holding the threat of a grade over a kid's head (or promising a reward) is the best way to teach much even though it makes some short term gains in some cases; but on the other hand, I think what Prof. Stone writes is true about too many teachers. And, like him, I don't think merely being there to try to wait for readiness or that right teachable moment is the best way to teach anyone anything. I think teachers need to be able to recognize and create teachable moments and then know what to do with them when they have them.

One pet peeve: the holding of Benjamin Spock responsible for the permissive society. What Spock advocated in *Baby and Child Care* was that babies did not need to be on a rigid feeding schedule whereby they were given a certain amount of formula every four hours even when not hungry and denied food when they displayed signs of hunger just because it happened to be three hours or three hours and a half. Spock recommended firm discipline where it was needed, but did not think (as I do not) that discipline for the mere sake of rigidity or arbitrary or average scheduling was warranted. Surely recommending more flexible feeding times has not undone our society.

Finally, I believe it is not age development that generally creates readiness, but development through meaningful exposure or experience. I suspect that if you can expose kids to things earlier in ways that are meaningful to them, you can teach kids a lot more than most people suspect without "pressuring" them, and without thereby being "unnatural" in the sense of cramming it down their throats.