The Deep Historical Roots of Inquiry Learning
Susur Galur Sejarah Tentang Pembelajaran Inkuiri

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ABSTRACT

This paper argues that, unlike many recently proposed and sometimes inaugurated educational innovations – theoretical or methodological, inquiry learning is founded on a strong historical and philosophical base. Following John Dewey's warning, about conducting education under the control of customs and traditions that have never been examined, or in response to immediate social pressures, the inquiry approach does offer some clear idea of the ends in the way of ruling attitudes or desire or purpose that are to be created. The paper first defines inquiry learning and then outlines its evolutionary history.

Keywords: Inquiry learning, philosophy, student-centered learning, theory, education

ABSTRAK

Kertas ini membincangkan tentang perkembangan pembelajaran inkuiri yang dibentuk atas satu asas sejarah dan filosofikal berbeza daripada cadangan atau inovasi pendidikan yang diperkenalkan secara teoritikal atau metodologikal. Dengan merujuk kepada penekanan John Dewey tentang pelaksanaan pendidikan di bawah kawalan budaya dan tradisi yang tidak pernah diselidik, atau dalam tindak balas kepada tekanan sosial, pendekatan inkuiri menawarkan idea tentang sikap, kehendak dan tujuan yang dibentuk. Kertas ini mendefinisikan pembelajaran inkuiri dan seterusnya membuat perkaitan dengan sejarah perkembangannya.

Kata kunci: Pendidikan inkuiri, falsafah, pembelajaran berpusatkan pelajar, teori, pendidikan

INTRODUCTION

Several decades ago, sociologist, David Riesman (1958) suggested that institutions of higher education adhered to a "snake-like procession" in developing new programs of study. Those institutional leaders who prided themselves on being in the lead would occasionally develop new vocabularies for older practices, and lesser institutions would follow the head of the snake just a few wiggles behind. As Riesman (1958) put it:

It may be illuminating to see the avant-garde [innovative], both educational and more generally cultural, as the head of a snake-like procession – the head of which is often turning back upon itself, as at present, while the middle part seeks to catch up with where the head once was. When the middle part becomes aware, as doesn't always happen, that the position of the head has shifted, it may try to turn in two directions at once.

In applying Riesman's metaphor to developments in the field of education generally, one might easily conclude that his diagnosis is apt. For example, for some years now, several teacher training institutions have touted inquiry learning as a break through form of pedagogy, but a careful reading of educational history will reveal that evolution of the inquiry approach has a history dating back to the beginnings of modern education. It is quite possible that some proponents of the inquiry method have not done their homework and are therefore simply unaware of this fact. This is too often the case when those who see themselves on the cusp of educational innovation latch on to the latest pedagogical "break-through" without realizing that it may simply constitute a re-naming of an older theory or practice. Sadly, there are educational innovations and even movements that do not have the solid historical base that inquiry learning has.

Some examples of "innovative" vocabularies that have emerged or reemerged on the educational scene during recent decades include this list – back-to-the-basics (Rickover 1959), charter schools (Manno et al. 1998), community schools (Havighurst & Neugarten 1967), constructivism (Hendry 1996), cooperative learning (Johnson & Johnson 1985), core curriculum (Parkay et al. 1995), critical thinking (Meyers 1986), educating the "whole" child (Brown 2008), education for efficiency (Callahan 1962), educational vouchers (Butts 1979), effective schools (Edmonds & Fredericksen 1979), global education (Assano 2000), home schooling (Dobson 1998), Inclusive schooling (Sefa Dei et al. 2000), individualized instruction (Grinder & Nelson 1985), learner-centered education (Weimer 2002), learning styles education (Stairs 1995), Montessori schools (Standing 1957), multiple intelligences (Gardner & Hatch 1998), nondirective teaching (Parkay et al. 1995), performance-contracting (Dickinson 1971), progressive education (Cremin 1961), reconstructionism (Brameld 1965), values clarification (Raths et al. 1978), year-round Schooling (Shields & LaRoque 1998), and Waldorf education (Nielsen 2004). Many of these thematic nuances have a short life on the educational landscape because, for various reasons, unlike inquiry learning, they simply lack a solid historical foundational base.

ON THE NEED FOR PHILOSOPHICAL DELIBERATION

At various times proposed educational reforms readily find new adherents, but quickly fade away. This may because innovators who conceived "new" ideas or programs may not have not bothered to elaborate or were unaware of the underlying principles that could support the newly proposed approach to teaching and learning. John Dewey cautioned against such a superficial approach to educational practice. In his words:

The difference between educational practices that are influenced by a well thought-out philosophy, and practices that are not so influenced, is the difference between education conducted with some clear idea of the ends in the way of ruling attitudes or desire or purpose that are to be created, and an education that is conducted blindly, under the control of customs and traditions that have never been examined, or in response to immediate social pressures (Dewey 1961, 165-166).

A valid foundational platform for any innovative maneuver must explicate a number if important considerations, the first of which pertains to the perceived nature of learners (Friesen & Boberg 1990). A number of related questions must be raised in this context. For example, are learners perceived to be neutral, active (self-starters) or interactive players in the learning process? Is a form of moral nature attached to the interpretation of who learners are, that is, are they basically perceived as evil, good, or neutral in nature? What are their capabilities or limitations? The formation of answers to these kinds of questions should guide educators in determining procedures to be followed in teaching.

Two other foundational considerations have to do with epistemology (nature of truth) and ontology (nature of reality); in other words, what *should* be taught? How is the content of curriculum to be determined? Should it purport essentialist or progressive concerns? Essentialism holds that culture has a core of common knowledge that schools are obligated to transmit to students in a systematic, disciplined way? (Parkay et al. 1995). Progressivism holds that perceived truth may be relative and subject to the whims of society? If this is the desired objective, perhaps a more pragmatic or existential form of curriculum would be appropriate. If truth is indeed relative, is change in its perception determined by societal consensus or in accordance with scientific research? Is society always willing and ready to accept the evidence of new scientific findings? What might be the "correct" set of insights to be explored and, hopefully, adopted by students? Answers to these kinds of questions should provide assistance in formulating the subject matter of curriculum and developing a functional teaching methodology.

Still another fundamental question that challenges every progressively minded educator in preparing a foundational platform is this: what is the nature of the society for which students are being prepared? What forms of knowledge will be required of students when they become full functioning members of that society? Which skills will these individuals require? Educators in North America probably take for granted that both Canada and the United States are functioning democracies;

if this is so, the need to develop skills in critical thinking, inquiry, and problem-solving is self-evident. The reality is that there are institutional and societal sectors in both countries that function without affording individuals an authentic voice in deciding important matters. The common theme of these associations or establishments might be: "this is the way we do things around here." What kinds of insights and competencies can or should the school provide students for coping with such situations?

Finally, and this stipulation basically applies to school systems featuring moral and/or eschatological concerns, the matter of moral and/or spiritual considerations must be addressed. Assumptions growing out of this concern can also have cosmic implications for schooling. If the school curriculum emphasizes to any extent such otherworldly themes as the meaning of life, the destiny of humankind, or ultimate obligations of individuals, the curriculum will have to make adjustments to meet questions that will inevitably arise. Even schools that forge curricula that do not take a cosmological stance may still have to handle questions about the subject.

The above considerations weigh heavily in formulating the content of curricula if deductive thinking and consistency are to guide the formation of a workable curriculum. Cautions originated by John Dewey are relevant in this context, namely that curriculum framers need to exercise clarity of thought, consistency and cogency of reasoning, factual adequacy and reliability of knowledge claims, objectivity of knowledge claims, and rationality of moral and purposive behavior in their deliberations (Dewey 1916).

DEFINING INQUIRY LEARNING

The purpose of this paper is to examine the historical and philosophical developments that have provided inquiry-based learning with evidence for its pedagogical authenticity. It is possible that contemporary proponents of inquiry-based learning may not be aware of the extent to which the approach can be grounded in history, so they, and possibly some critics of the approach, will find this brief elucidation of past happenings reassuring. We begin with a definition.

Basically inquiry-based learning is a student-centered strategy during which use groups of students inquire into an issue, or seek answers to posed content questions within a clearly outlined procedure and group structure (Kourilsky & Quaranta 1987. The conditions essential to adopting an inquiry approach include two elements, the first of which is that students will need to demonstrate a genuine interest in discovering something new or in providing solutions or alternatives to unsolved questions or problems. Weimer (2002) cautions that students may not always be ready to adopt a new approach to learning, and therefore suggests a number of ways in which such a situation can be anticipated and remedied. The introduction to inquiry-based learning must be presented opening, frequently, and explicitly. It should be presented positively and encouragingly. Another approach that may work is simply to meet possible student disinterest with firm resistance, so the teacher will announce, "we *will* try this approach."

A second preparatory requirement will be for students to develop the various processes associated with inquiry, including being responsible for planning, conducting, and evaluating their own efforts. Students will need to accept the fact that not all answers or solutions are readily available in books or on the internet. Thus, any conclusions or solutions they pose will have to be viewed as relative or tentative, but not final. Time cannot be a factor in this enterprise because in the operations of the real world things can become quite complex (Orlich et al. 1980).

Research engaged in by inquiring students can be of two kinds – discovery-based and policy based. Discovery-based refers to academic situations in which groups of individuals pursue answers to posed questions. On the other hand, policy-based inquiry is a more proactive form of inquiry that deals with the establishment of propositions of policy and involves "what should be" considerations as opposed to a proposition of fact. The basic purpose of this kind of research is to provide students with the experience of taking the initiative in defining social problems, then discussing and/or formulating and recommending a policy by which to resolve those problems.

Eggen and Kauchak (1988) propose that inquiry learning may be understood on three levels. In the

broadest sense, it may be viewed as a systematic way to investigate a question or problem of intrigue. In this context scientists utilize the process of inquiry to generate and validate knowledge, and although the process may seem a bit casual, it can have serious consequences in everyday life. For example, areas such as nutrition and identification of diseases are often studied via inquiry in order to improve the human condition in those arenas. Government fact-finding missions into such areas as mismanagement of financial resources or probes into related sectors all raise questions of inquiry. The objective of such a search is to ascertain the facts that relate to the case. In a school related case one might ask, "Why do the students in one class perform better than those in another class?"

A third level of inquiry relates directly to personal functioning and therefore has added implications for the teaching/learning process. It is a process of asking and answering questions or resolving problems related to individual functioning – based on facts and observations (Posner & Rudnitsky 1997). The personal learning inquiry model essentially proceeds according to five steps: (1) identifying the question or identifying the problem; (2) formulating an hypothesis; (3) gathering data: (4) assessing the hypothesis through data analysis; and, (5) generalizing to a conclusion (Eggen & Kauchak 1988). We will later illustrate how this particular procedure has its roots in the writings of Johann Friedrich Herbart (1776-1841) and John Dewey (1859-1952).

Jerome Bruner's book, *The Process of Education,* is sometimes credited with providing the basis for the development of "methods of inquiry" towards effective teaching, although there is ample evidence that the assumptions he posited have deeper historical roots. Bruner's work is essentially a synthesis of then known ideas about intelligence and motivation with the recommendation that schools adhere to an inquiry-based curriculum. Bruner suggested that the various academic disciplines function according to unique principles, and successful students would find it necessary to learn the appropriate principles for each discipline. The result would be that a spiral-like curriculum be developed for each discipline beginning with elementary forms of knowledge for earlier grades with ever increasing levels of complexity as students progressed through school (Parkay et al. 2009). Using the example of mathematics, Bruner explained his approach in this way:

The three fundamentals involved in working with [mathematical] equations are commutation, distribution, and association. Once a student grasps the ideas embodied in these three fundamentals, he is in a position wherein "new" equations to be solved are not new at all, but variants on a familiar theme. Whether the student knows the formal names of these operations is less important for transfer than whether he is able to use them (Bruner 1960: 7-8).

Weimer (2002) goes further than Bruner and proposes that acquiring the skill of inquiry is more important than producing results or establishing findings. Weimer also suggests that pedagogical power in the teaching/learning process needs no longer to be shared by teachers and students, but should be shifted entirely to students themselves. The ultimate goal is to equip students with learning skills so sophisticated that they can teach themselves and eliminate the need for teachers. Olson (2003) suggests that an inherent difficulty may arise in this context; for example, when students are asked if they understand something, they may reply in the affirmative. There is a possibility that they may do so in order to satisfy what they interpret to be a request for compliance. When this occurs, it follows that students may need practice and encouragement to learn to recognize and trust the feeling that they *do* understand, so they are not merely trying to please or placate their teacher. Olson (2003) carefully distinguishes between understanding, with its implication of correctness, from interpretation, with its implication of personal subjectivity. Understanding in an educational context carries a normative standard and implies a responsibility for judging correctness, not only in generating an appropriate subjective feeling.

THE HISTORICAL ORIGINS OF INQUIRY LEARNING

Turning over aspects if not all of personal learning to students themselves goes back to the beginning of the modern period of education, at least to the writings of Jean Jacques Rousseau (1712-1778) and Johann Heinrich Pestalozzi (1746-1827). Rousseau began his musings on education based on these assumptions:

everything is good as it comes from the hands of the Maker of the world, but degenerates once it gets into the hands of man…. We are born with the capacity to learn…. The pretence is made that when children are left free they are likely to acquire wrong postures and to get misshapen limbs from their movements. This is one of the rationalizations of false wisdom, and is not borne out by experience. Let the mothers nurse their children and a general reform of morals will follow as a matter of course (Boyd 1962. 11, 21, 16)

Rousseau's concept of natural education had little to do with the physical world, but was rather to be viewed as a natural unfolding of human powers. In elaborating his thesis, Rousseau divided his description of his imaginary pupil's (Emile) educational growth into five parts, each of which dealt with a stage in the child's life – infancy, boyhood, the approach of adolescence, adolescence, and marriage. Rousseau emphasized that children are naturally curious, always pursuing new learnings for themselves. This is the basis of natural inquiry – that individuals take responsibility for their own discoveries. Rousseau was adamant that this pursuit not be interrupted or intimidated by the wiles of civilization. Unfortunately, as time has advanced Rousseau's recipe for "training" Emile has been overshadowed by Rousseau's emphasis on negative education – namely, keeping the child way from the degrading influences of civilized society with it's pre-patterned program for educating individuals (Bayles & Hood 1966). In Rousseau's thinking, society is the result of conscious designs, and educational opportunities are designed into them (Illich 1971: Postman & Weingartner 1969). Freed from the tyranny of societal imposition, Rousseau contended that Emile's quest for knowledge and experience would flourish. In Rousseau's words:

Come, my happy pupil, and console us for the departure of the wretched boy. Here comes Emile, and at his approach I have a thrill of joy in which I see he shares…. Health glows in his face. His firm step gives him an air of vigor. His complexion is refined without being effeminate; sun and wind have put on it the honorable imprint of his sex…. His manner is open and free without the least insolence or vanity…. His ideas are limited but precise. If he knows nothing by heart, he knows a great deal by experience (Nash 1968: 268).

Rousseau could properly be called the first proponent of child-centered education. He would not accept the notion that the child is a miniature adult, but perceived children as growing, developing human beings, capable of formulating ideas on their own. These were Rousseau's conditions for inquiry, namely to observe and guide without undue interference the unfolding of the child's natural powers. Later, Brazilian educator, Paulo Freire echoed these principles:

There is no such thing as a neutral educational process. Education either functions as an instrument which is used to facilitate the integration of the younger generation into the logic of the present system and bring about conformity to it, or it becomes "the practice of freedom," the means by which men and women deal critically [inquiry?] and creatively with reality and discover how to participate in the transformation of their world (Freire 1992: 15).

Were these revolutionary thinkers ahead of their time or simply out of touch with educational reality? Looking back at their concerns establishes that today's inquiry approach to learning was in incubation at that time. Freire may have rebelled a bit too strongly to what was really going on in schools, but he did bring to the table the concept that the deschooling of at least *some* students might well be beneficial (Winchester 2004). North Americans like to think that we live in very liberal times, but even such an admission might be just a bit too much, politically speaking.

Having delved deeply into Rousseau's *Emile,* Swiss educator, Johann Heinrich Pestalozzi (1746-1827) decided to apply the theory to raising his five year-old son, Jacobli. The founder and manager of several failed orphanages, Pestalozzi outlined his ideas for child-centered education in a novel called, *Leonard and Gertrude.* The book sold well, but not because of Pestalozzi's subtle insertion of educational theory into the dialogue, but because it was a novel – a form of entertaining reading. Unfortunately, Pestalozzi sold the copyright for his book for one hundred pounds before it became popular. It was for this reason and the failure of his orphanages that he is sometimes called "education's most successful failure."

Pestalozzi's theory was this; according to *Leonard and Gertrude*, at bedtime Gertrude would gather her offspring around her and carefully guide them into analyzing the various sense data they experienced during the day. Then, in accordance with Gertrude's questioning supervision, the children would evaluate and appropriate their

experiences. The intrigue of Pestalozzi's book for its many readers, however, was that she also managed to influence her usually inebriated husband, Leonard, to dry out.

The educational strategy that Pestalozzi developed by following Rousseau was premised on the perception that children are to be treated as human beings, and educated in accordance with their needs by use of their senses. He believed that children were fundamentally self motivated, and quite capable of developing personal insights on their own. Since most of the children in Pestalozzi's orphanages were beggars or came from broken homes, Pestalozzi felt it necessary to set an atmosphere of mild discipline and acceptance in his orphanage schools. Unfortunately, Pestalozzi's idea that his first orphanage become economically self-supporting through labor undertaken by his protégés led to its soon demise. The fifty or so little street urchins he gathered around him provided neither the determination nor the manpower to keep the institution functioning. Despite these failures, interest in Pestalozzi's ideas continued to flourish.

The label for Pestalozzi's educational theory, originated by himself, was called the art of sense impressionism, based on the assumption that children learn best through personal discovery (inquiry?), with encouragement to discuss and evaluate their experiences. Roger de Guimps (1889), one of Pestalozzi's pupils, penned a biography of his mentor and noted that one of the latter's favorite teaching exercises was to place large drawing or objects before his students and as them to observe and describe them. Often he did not even look at their finished work, assuming that they should judge for themselves whether or not their labors were successful. The school operated in accordance with these principles: intuition should be the basis of instruction, teaching should emphasize development, not dogmatic exposition, and the chief end of teaching is not to impart knowledge to learners, but to develop and increase their powers of intelligence. Pestalozzi also insisted that relations between teacher and students be based on love.

Pestalozzi may have been a failure on many counts, but his ideas were sought after both in other parts of Europe as well as in the United States.

Between 1835 and 1845 both Horace Mann, an American education reformer, and Henry Barnard, America's first commissioner of education, visited one of Pestalozzi's schools and on returning to America, helped launch the child centered education movement. As additional educators gained interest in the idea, in 1919 a group of them gathered in Washington to form the Progressive Education Association (PEA). To their credit as individual thinkers, these educators often disagreed about the application of Pestalozzi's pedagogical concepts and practices, but sometimes too often. As a result, the association officially dissolved in 1955.

A number of experimental schools were initiated in the United States in accordance with the principles of the PEA. The association managed to attract a variety of educational practitioners who became nationally known through their research, among them William H. Kilpatrick, Charles A. McMurry, Harold Rugg and John Dewey. Kilpatrick (1926) and his colleagues developed a procedure called the project method which consisted of four student-led steps: pupil purposing, pupil planning, Pupil executing, and pupil judging. Each project was to be initiated by student motivation, and the students were then expected to carry out the entire process. A colleague in the PEA, Charles McMurry (1920), developed "consumer-type" projects that were to be completed in accordance with a five step plan outlined some years before by German educator Johann Friedrich Herbart. Herbart's (1901) five step plan predates Eggen and Kauchak's (1988) five step personal learning inquiry model by nearly a century. Herbart's outline for the presentation of new data was follows: (1) clearness, or presentation of ideas; (2) association, or relating new ideas to old compatible ideas; (3) system, or arrangement of association ideas in logical order; (4) generalization, or the development of the new concept to the highest, most intricate level; and, (5) method, or application of the new ideas to some problem or new situation (Bayles & Hood 1966).

Another educator attached to the PEA, Harold Rugg, boldly produced a book, *The Child-Centered School* (1928) so as not to be misunderstood where he stood on the matter. Rugg emphasized two curricular components of education, namely human thinking and human feeling, the latter intended to emphasize the arts – music, painting, sculpture,

poetry, and dance to encourage the "human feeling" part of the curriculum. The thinking part of the curriculum was designed to engage student in developing plans to build-a-new-social-order. This would be done through inquiring (not his term) into and analyzing a series of concepts, generalizations, trends, problems, and issues.

John Dewey is perhaps the best-known proponent of progressive education. In his interpretation, students were to be responsible for personal engagement in relevant educational themes, and in alignment with the notion of inquiry, defined education as the continuous reconstruction of experience. He conjectured that sights gained by students at any time would naturally be refined and reconstructed through later experiences. This predates and coincides with Orlich et al. (1980) notion that any conclusions or solutions posed by students at any time would have to be viewed as relative or tentative, but not final. In the operations of the real world things can become quite complex.

In 1896 John Dewey established a child-centered school in connection with the University of Chicago in which to test some of his ideas. In order to arrange the classroom to a more congenial, interactively conducive atmosphere, he trudged the streets of Chicago in hopes of locating schools desks that were not designed as long straight rows and not nailed to the floor. The search was to no avail, but persistence and creativity prevailed and the school achieved its goal. It also served as a model for other progressive schools begun in other American states.

One of the more recent vocabularies to appear on the educational scene is constructivism which may parallel other terms often attributed to Dewey's philosophy, namely, experimentalism, instrumentalism, pragmatism, or progressivism. The foundational bases of Dewey's thought are sometimes described as relativity taken seriously as well as being based in Gestalt psychology. Though they may not often be aware of it, the philosophical underpinnings of constructivism are essentially pragmatic in nature, that is, knowledge exists in the minds of individuals only, and is constructed from within, in interrelationship with the world. The meanings that learners attribute to phenomena which they experience will depend on their previous experiences. Thus knowledge is constructed or reconstructed through perception and action. The good news is that there is a vat of knowledge "out there" that derives from a common brain and body that are part of the same universe. In terms of educational application, this means that fundamentally teachers and students can share the same perceptual knowledge that forms the basis of school curricula. Granted that the perceptions of younger students may not be as "accurate" as those of trained scientists, but since they will be functioning in accordance with their personal perceptions, their accumulated perceptions may be deemed an equally valid form of knowledge. In order for those perceptions to constitute a fuller comprehension of reality, it is suggested that teachers encourage students to discuss, explain, and evaluate their ideas and procedures (Hendry 1996). The objective is that in such a milieu, all participants may come to a more comprehensive knowledge of "the truth."

Dewey's work is still often referred to by educators, particularly by philosophers of education who insist that unless the underlying epistemological, ontological, and metaphysical principles of any proposed educational practiced are clearly explicated, educators may very well find themselves, as Dewey put it, proceeding "… blindly, under the control of customs and traditions that have never been examined, or in response to immediate social pressures" (Dewey 1961). The promotion of inquiry learning, as practiced today, need not be so handicapped so long as it is based on a clear idea of the ends in the way of ruling attitudes or desire or purpose that are to be created. Its substantial evolutionary history offers such a base.

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