Critical thinking, Skills and Habits

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Abstract

   Critical thinking comprises of a combination of complex skills and at the same time, its habit of thought is used in society, and will pervade its entire mores, because it's a way of taking up the problems of life. William Graham's words gave a great example of critical thinking in a certain society. Men educated in it cannot be Stampeded by stump orators, they are slow to believe they can not hold things as possible or probable in all degrees, without certainty and without Pain. (William1940)

   They can wait for evidence and weigh evidence, influenced by the emphasis or confidence with which assertions are made on one side or the other. They can resist appeals to their dearest prejudices and all kinds of cajolery. Education in the critical faculty is the only education of which it can be truly be said that it makes good citizens, that is why we encourage our students to train and use critical thinking in their studies, workshops, examinations, professionals, and in debates and arguments.

   In fisher's delimitation we read: critical thinking in purposeful and reflective judgement about what to believe or what to do in response to observations, experience, verbal or written expressions, or argument.

   Critical thinking might involve determining the meaning and significance of what is observed, expressed, or a given inference or argument. This determines whether there is adequate justification to accept the conclusions as true (Alec and Scriven, 1997).

    Hence, this definition points out that 'reflective thinking' is seen as a 'skilled' active interpretation and evaluation of observations, communications, information, and argumentation. Parker and Moore define it more narrowly as the careful, deliberate determination of whether one should accept, reject, or suspend judgement about claim and the degree of confidence with which one accepts or rejects it.

   Critical thinking gives due consideration to the evidence, the relevant criteria for making the judgement well, the applicable methods and techniques for forming the judgement, and the applicable theoretical

constructs for understanding the nature of the problem and questions at hand.

  According to what had been noticed, critical thinking employs
not only logic which had been denied by Dewey and pragmatic school, but according to those it is a broad intellectual criteria comprising of clarity, credibility, accuracy, precision, relevance, depth, significance and fairness. In other words , it is complex to achieve and requires a range of skills.

Key words ; critical thinking , habits , skills , reflective thinking . Critical Dualism , induction and refutability

Introduction:

Eloquent Metaphor

Critical thinking is often seen as a new subject, despite the name being new. the subject and what it entails is not. "Those of us engaged in it are best dwarfs, standing on the shoulders of giants", as been described by Hakes In this position of course dwarfs are suppose to be able to see further than the giant especially when he owns the main features of Induction, Analysis &Evaluation. Those are different than B. Bloom's category of epistemology & knowledge objectives which been used mainly to understand thee main mental ladder steps and to answer the question what we should learn? but critical thinking direct us to answer the question how we learn? and why we should follow the steps of our mind's activities?

Historical back ground

For some people, one of the greatest thinkers of all time is Peter Abelard (1079 – April 21, 1142) and many people saw him as the greatest philosopher. Since Aristotle, Abelard was the pre-eminent philosopher and theologian of the century. He was the teacher of his generation and was a famous poet and musician. Prior to the recovery of Aristotle, he brought the native Latin tradition in philosophy to its highest level.

His genius was evident in all he did. He is arguably the greatest logician of the middle ages, and is equally famous as the first communalist philosopher. He championed the use of reason in the matters of faith, and he was the first to use theology in its modern sense. He was the first who spoke about philosophy in language (Jacobin 2004), and its partner the mind.

Aristotelian philosophy of mind offers two analyses of intentionality, the co formality theory suggests that we think of an object by having its every form in the mind, the resemblance theory then suggests that we have a mental image in the
Mind that naturally resembles the object.

However Abelard rejects these notions and instead proposed an adverbial theory of thought, showing that neither images of mental contents need to be countenanced as ontologically independent of the mind (Walks, 1993). Abelard gave contextual explication of intentionality that relies on a linguistic account of mental representation, adopting a principle of compositionality of understanding.

For us. Socrates (469-399 B.C) (best known as the Greek philosopher who drank hemlock) was the first thinker who used critical thinking in his pedagogy and arguments with students.

He laid the early foundations for western philosophical thought, his 'Socratic method' involved asking and probing questions in a give and take which would eventually lead to truth.

Through his portrayal in Plato's dialogues, Socrates has become renowned for his contribution to the field of ethics, and it is this Platonic Socrates who lends his name to the concepts of Socratic irony, and the Socratic Method. The latter remains a commonly used tool in a wide range of discussions, and in a type of pedagogy in which a series of questions are asked not only to draw individual answers, but to encourage the fundamental insight into the issue at hand.

Epistemology & Logic

It is Plato's Socrates that also made important and lasting contributions to the fields of epistemology and logic, also the influence of his ideas and remains strong in providing a foundation for much western philosophy that followed (Kaufman 1998).

One of those was John Dewey (1859-1952) the first philosopher who used the term reflective thinking in the 20th century; his theories in education had a profound influence on public education, especially in the U.S.A. During his distinguished academics career, which began in 1884 at the University of Michigan, Dewey was a strong promoter of what was called instrumentalism (related to the pragmatism of Charles Pierre and William James) and the radical reform of the public education system.

His view held no room for eternal truth outside human experience, and he advocated an educational system with continued

experimentation and vocational training; in order to equip students to solve practical problems. This was done by
using his method of critical thinking, or reflective thinking.

Dewey in his theory of instrumentalism was influenced by his teacher George S. Morris; under his direction Dewey studied Hegel, whose all encompassing philosophical system temporarily the Dualism of traditional philosophy. And turn from logic and inductive to deductive thinking.

Critical Thinking in Dewey's-Popper's-&Holmes' Methodology of Thinking

John Dewey (1859-1952) was a leading proponent of the American school of thought known as: pragmatism: Such theory focused on: experimental logic: rather than what was called Dualistic epistemology. Dewey rejected the old concepts of grasping knowledge in favour of a naturalistic approach, which viewed knowledge as arising from the motive adaptation of the human organism to its environment (John Dewey, Encyclopaedia of philosophy, 1).

Dewey has been influenced by Darwin's theory of natural selection which concentrated on the complex interrelationships between organism & environments. Such concept led Dewey to the idea of persistent & changeable society & world. Dewey's pragmatic theory of truth has conceded red as central to the pragmatic school of thought.

The second element of Dewey's theory of thought is Reflective thinking, he maintained that processes of reflective thinking to the educative process were scientific. (Dewey, 1979 p.145)

In the same line, but from a different intellectual perspective, Karl Popper (1902-1994) had rejected the theory of logic & inductive thinking in favour of deduction and reflective thinking. Popper coined the term critical rationalism accordingly and to describe his philosophy: logic for Popper was part of ancient history and closed societies which developed and nourished by Plato, Marx, Hopes etc.
His view been converted to open society and liberalism, based on human rights (Carr, 2006 p.113). Such vision of a new wide scope , a new life , a new liberal society ,science and education led Popper to the idea of critical dualism and scientific rationalism in his book 'the open society and

its enemies , (Popper, 1966 p.p. 59-73) . The new terms indicate his rejection of classical empiricisms of the observation list - inductivity account of science that had grown out of it. Popper argued strongly against the later holding that scientific theories are abstract in nature, and can be tested only indirectly by reference to their implications. He also held that scientific theory and human knowledge generally is irreducibly conjectural or hypothetical and is generated by the creative imagination in order to solve problems that have arising in specific historic- cultural settings. (Popper's philosophy, Encyclopaedia of philosophy).

Popper's ideology affected his educational theory especially in the field of curriculum planning. Because any discussion of education is political and ideological in other meaning education reflects the broader framework of values in a certain society and reflects the framework of the philosophers and their ideas about the educational system and methodology .Politically, values according to the liberalism for example come closer to the actual political and economic circumstances that prevail within a certain liberal society .Those values contrast of course with the values in a non – liberal world such as totalitarianism.(Carr 2006 p.111)

Popper argued; Instead of encouraging the student to devote himself to his studies for the sake of studying, instead of encouraging in him a real love for his subject and for enquiry, he is encouraged to study for the sake of his personal career – he is led to acquire only such knowledge as is serviceable in getting him over the hurdles which he must clear for the sake of his advancement.. I do not know a better argument for an optimistic view of mankind, no better proof of their indestructible love for truth and decency …than the fact that this devastating system of education has not utterly ruined them. (Lawton 1986 p.145).
 Brian Holmes (1920 -1993) based his methods of problem solving on the reflective thinking of Dewey and the critical dualism of Popper. The problem approach 'has transformed the study of education from the description of traditional systems to an analysis of problems .

The three opinions of Dewey , Popper and Holmes have important implications for the educationist who wishes to attempt to make method and technique in his research and study more precise (Gezi,1971 p .p 15-16).
The scientific approach has turned away from history and the traditional social sciences . In Holmes' words " there has been a movement away from searching for historical factors or antecedent causes of contemporary events to an interdisciplinary endeavour to explain and predict behaviour

and institutional changes " (Holmes,1965p.51) , and these "trends reflect not so much a shift of emphasis away from identification and description , but rather an increase of interest in the role they play in explanation which are held to be important in the social sciences" .(Holmes, 1973 p.8).

In other wards . the reflective thinking of Dewey ,the critical dualism of Popper and the problem approach of Holmes are sophisticated in their theoretical assumptions and clear in their purposes . Some brief account of these assumptions and purposes is advisable in this paper .

Reflective thinking

Holmes adopts the idea of reflective thinking offered by John Dewey . According to Dewey where reflective thinking occurs , there is always a sense of confusion. This confusion is reduced by reflective thought which "is an adjustive mechanism " (Skilbeck, 1970 p.p 26-27).

Thinking and reflective enquiry are thus for Dewey and Holmes not merely processes of description or explanation , but processes by which an indeterminate situation is transformed into a determinate situation. Such wide scope and understanding of the reflective thinking role in education left its fingerprints on the moderate theories of education , especially concerning reflection in learning , for Mezirow , Brookfield , Habermas & others. In Habermas's words "Reflection in the transformative learning stage enable the learner to take a critical overview and amass further understanding of a professional or social situation or the self or their knowledge , which can lead to emancipation. In other words . it can operate in a Meta – cognitive manner, enabling a view to be taken of the cognitive structure and it's functioning or of the whole self .Reflection in the stage is in accord with the emancipator level of human interests" (Habermas 1971) .Mezerow (1990) provides examples of ways in which reflection of this type can enable transformative learning such as consciousness raising groups and the use of critical incident analysis . (Moon ,2007 P153).

Thus , in Holmes's work , the selection of the problem, the choice of starting point for analyses and especially the clarifications of one problem are interrelated and grounded in theory. Similarly solutions to problems are to be understood in terms of Dewey's ideas . Dewy in his reflective thinking approach concentrated on anticipating the consequences of deferent ways and lines of action. The hypothesis in reflective thinking represents a possible solution. About the consequences Dewey said " by putting the consequences of deferent ways and lines of action before the mind , it enable us to know what we are about when we act" (Skilbeck,1970 P.26) .

Thus, within this frame - work , in the Holmesian problem approach the hypothesis is formulated as the policy designed to solve the problem. Hence the term "the problem – solving approach ".Successful explanation occurs when the logical deduction of consequences from the hypothesis as solution are correctly predicted . Holmes argued about this scientific formula " the problem approach implies that understanding of social educational processes comes form successful prediction rather than as in some epistemologies through the discovery of antecedent causes (Holmes,&Edwards1973 P.53) .

Critical Dualism , induction and refutability

Holmes also draws the concept of 'critical dualism from Karl Popper . In his book 'The open society and its enemies 'Popper took a post, relativity view of science.   His methodology asserts and assumes that some regularities operating within a social environment are similar to those found to man's physical surroundings. Such sequences of social events can be stated in sociological laws. Commenting on the assumption of critical dualism, Holmes has stated "Within any society there are causal relations whose operation can be understood through the establishment of sociological laws.
These relationships are functional and constitute a deterministic element. It is the study of the relevant sociological laws that constitutes the science of education or if preferred the scientific study of education." (Holmes & Edwards,1973 P.53).

Sociological laws refer to those aspects of man's social environment which are outside his immediate ability to control , they have the same kind of relationship to the world that natural laws bear to man's physical environment.
However, according to critical dualism, in any society there can be identified and distinguished two types of law-normative and psychological. The important characteristic of norms and normative laws is that they can be either accepted or changed by man. They are statements about what ought to be. "In practice normative laws find most obvious expression in a legal code or a written constitution like those of the USA, France and previous USSR. They are statements of what ought to be the case'. But innumerable codes of behaviour, taboos, values, beliefs, ideas are more or less formalised by rules of behaviour or commands, and are accepted (or challenged) by individual members of a society in which they are found." (Holmes& Edwards1973 P.51)

The two kinds of law can be used to understand the operation of social institutions or organisations such as schools, insurance companies, industrial concerns, trade unions an so on.

There is another pattern – the environmental – which does not arise directly from the assumption of critical dualism. This pattern may be constructed from the data relating specifically to the natural resources of a country, e.g. demography. Holmes then offers through these three types of statement, a general social taxonomy for problem analysis, the base of which is critical dualism: "The general and comprehensive classification scheme is based upon the distinction. Popper draws between Normative statements about institutional relationships in society. A third category of data includes information about the natural environment." (Holmes. 1973 P.52)

In turn, this social taxonomy is based on methodology which rejects induction. Popper argues that the whole method of induction is the wrong way round, answers can be given only to questions, they do not emerge in some mysterious way from the assembly of data." (Johnson & Wason, 1979 P.258).

Thus, according to Popper, whenever we collect data we do so with an explicit or implicit question in mind about data. Data should be used to refute a falsify theory. Here Popper was influenced in his views by Einstein. Popper wrote "my main idea in 1919 was this. If somebody proposed a scientific theory, he should answer as Einstein did, the question, under what conditions would I admit that my theory is untenable? In other words, what conceivable facts would I accept as refutations, or falsifications of my theory." (Johnson & Watson, 1979 P.74).

Overall, Holmes adopts and adapts the three themes – critical dualism, a rejection of induction as a proper basis for scientific work, and a stress on the testing of hypotheses for the problem approach. It is equally true of Holmes that generally speaking " In his hypothetic-deductive view of science there is no place for inductive logic." (Johnson &Wason,1979 P.258).

Theory of Social Change

Holmes 'theory of social change stresses asynchronous change in society, which is useful in the identification and intellectualisation of problems in comparative studies and in the formulation of hypotheses. In general Holmes argues that "in the light of many theories of social change, problems arise from asynchronous change in society. " (Holmes,1965 P.74) .

Thus, if all the relevant parts of the social order change at the same time and the same place, then no problem arises. From inconsistencies in the rates of change in a) Institutions, b) Norms, C) General environmental circumstances.

Holmes points out that "Here social change is considered to be the sequence of events initiated by configurations." (Holmes 1965 P.74)

Change in any one aspect of social life is considered to be a sequence of events initiated by innovation in (any one of) the three social configurations while other aspects of these patterns lag behind. In such situations, social problems may arise because of inconsistencies in the lag between theory and practice, norms and institutions or, institutions and environment. Concretely Holmes argues thus "One institution may have changed more radically that another, which is functionally related to it, or the aims of education (norms) may change before institutions have been revised to achieve the new aims, or the natural environment may place obstacles in the path of achieving stated goals." (Holmes , 1965 P.P.74-75).

To such identified and intellectualised problems, hypotheses are policy solutions and may involve identifying both change and relative non-change. Holmes says "for the purpose of analysis it may be assumed that a change (or innovation) occurs in any societal aspect and the task of intellectualisation involves identifying both the change and relevant (or perhaps relative) not change.(Holmes,1978 P.89).

Finally , and according to Holmes' theory of social change social problems may arise because of lags between elements classified as normative, institutional or environmental.

How we think?

   *According to Classer, the ability to think critically involves three things;

1) An attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of ones experiences.

2) Knowledge of the methods of logical inquiry and reasoning.

3) Skills in applying those methods. (Classer 1941).

*According to the previous points, a well cultivated critical thinker should;

    1) **Raise vital questions and problems formulating them clearly and precisely.**

    2) **Gather and assess relevant information using abstract   ideas to interpret it effectively**

    3) **Come to well reasons conclusions and solutions, testing   them against relevant criteria and standards.**

    4) **Think open-mindedly within alternative systems of thought, recognising and assessing, as need be, their assumptions, implications and practical consequences**

    5) **Communicate effectively with others in figuring out solutions to complex Problems without being overly influenced by others thinking on the topic.(William .S. 1940)**

<u>Critical Thinking as an Applicable methodology</u>.

  One of our main aims in education is to cultivate such habits in our youngster's minds, to be part of their skills in thinking. One may asks if the teacher can train his pupils in the early stage using this kind of thinking.

  I say yes, we as teachers can let our youngsters in the kinder gardens & primary schools to use critical thinking in order to solve their problems in learning.
  I give an example here of a three years old child, playing with a puzzle on the floor , in some cases he puts one peace of the puzzle in the wrong place, when you ask him if he thinks it's in the right place, he will try to justify his position and correct the game.

  The child usually responds to the question after the following:
Acting, problem emergence, trial & error, then he uses his thinking to solve the problem or what we identify reflective thinking then the learner feels relaxed.

  These five stages are very important in promoting critical thinking skills to be habits in child's acts; behavior & conduct according to Dewy identification to reflective thinking.

Another example would be to ask your pupil what 2 +4 is, he answers 5, he will write down the figure 5 without hesitation, but when you ask him if his answer is right or wrong, he will go back to the answer and double check, then would write the correct answer 6. This is what we call reflective thinking as the first step to reconstruct & build up critical thinking in learners mind & personality.

But this is not the case; we need in the coming years, for the child to discover his mistakes & try to solve his problems by himself, without any intervention from anyone even from parent's teacher or mats….etc. We as teachers can use such methods in solving pupil's problems in mathematics, language reading & writing …etc

We can use the same method throughout the pupil's educational growth through to his higher education.

Conclusion

The question here is how we, as teachers put these elements into practice in the classroom?

The key to seeking the significance of critical thinking in the classroom understands the significance of critical thinking in learning. There are two aspects to the learning of this content, the first comprises of the learner constructing the basic ideas, principles and theories that are inherent in content for the first time.

The second occurs when the learners effectively use those ideas, principles, and theories as they become relevant in the learners life, this would be referred to as habits.

The Reflective thinking of Dewey, The Critical rationalism of Popper and the Problem solving of Holmes are scientific approaches for teaching and learning, especially in the field of research and facts discovery and investigation. Knowledge for the three thinkers is not absolute, and is not logic.

According to Popper, knowledge is not absolute and it may be falsified. Things and concepts such as values , traditions ,facts ..exc., might be understood in one way in a cretin society but it have a different perspective in another . Natural, social, cultural and political phenomenon could be handled in different ways

according to their situation , visibility, circumstances ,understanding and general system.

 In Dewey's thought there are three kinds of experiences, educative,
non educative and diseducative . For Experience to be educative a process of reflective thinking is required . according to Holmes deductive theory rather than inductive thinking has to be endorsed to establish a new vision in educational methodology

Hence, the researcher can utilize and use a problem solving approach rather than description and historical in a liberal or in a pragmatic method which have been clarified in Dewey's. Popper's, Holmes' work.

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