

DEVELOPING CRITICAL THINKING SKILLS

Una Kyriacos

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INTRODUCTION

It is a challenging task to explore a subject such as critical thinking which comprises a large body of knowledge and about which there is much research particularly in the area of the transferability of these skills to a wide range of subject areas and on methods of teaching critical thinking.

In this paper an attempt will be made to present one model for teaching critical thinking skills.

As a student and teacher of adult education in nursing, the writer could not help but be interested in the way adults learn. Over the years this interest had extended to curriculum development. The curriculum models which were explored and even those designed by the writer over the years seemed to provide the structure needed for effective teaching and learning situations but what was not realized was that subconsciously the search was for a framework for the development of *thinking* skills as well. This distinction is most important.

This search became evident in later years but it was not so at the time. In the 70s the nursing process and the various taxonomies of learning levels of Bloom and others were helpful as guides for personal growth in thinking for classroom and clinical teaching. Particularly the taxonomies were designed to develop more than one educational objective at a time. These educational objectives refer to areas such as knowledge, psychomotor skills and feelings and attitudes, yet they were inadequate for the educational objectives the writer had in mind for her students. But exactly why they were inadequate was not recognized because at that stage it remained an intuitive dissatisfaction.

In the early 80s the criterion reference charts were in vogue; and the writer developed a few of these for the Diploma in Intensive Nursing Science thinking that these provided all the answers to how adults learn. In the late 1980s Entwistle's work on approaches to study made a deep impression, but it was only recently that the main deficit of all of these frameworks was identified - they all lacked a specific component called **Thinking Skills**.

Thinking skills may have been implied in the knowledge domain of all these frameworks but it was not explicit and the question was: "**How does one get students to think about content and to have an intelligent discussion?**"

If rephrased, the real question actually was: "**What learning activities can be employed to develop the skills needed for thinking?**" Clearly, what was also needed was a framework that would change or develop patterns of attitudes and feelings and that would produce the necessary social and academic skills. After exploring a number of models for teaching critical thinking such as the Feeling model, the Vision model and the Examination model, the discovery of an old model dating back to the 1950s and designed by Taba for the Social Sciences Curriculum for schools in the USA was exciting. Finally a model had been found that explained how to plan learning activities to encourage critical thinking.

This being the case, the two main questions to consider can be stated as follows:-

1. Why should nurse educators develop students' critical thinking skills?
2. On the supposition that the answer to that question is affirmative, then the second question is: How should nurse educators teach critical thinking skills?

WHY SHOULD NURSE EDUCATORS DEVELOP STUDENTS' CRITICAL THINKING SKILLS?

This question can only be answered if there is an understanding of the nature of critical thinking. Critical thinking has been described as a developmental process no different from the growth developmental process and therefore it has to be nurtured in early life.

Furthermore, critical thinking is not limited to the sciences and factual subjects but also includes critical thinking in relation to feelings, values and beliefs and the social sciences, because research has shown that feelings and attitudes can be regarded as facts (Taba 1950:45).

Some useful definitions of critical thinking include "rationally deciding what to do or believe" (Norris:1985,40); or "reasonable, reflective thinking" (Bandman:1988,2); and it has been interpreted as "the extension of logic to the rational examination of controversial social, ethical, political, economic, and religious issues, such as abortion, euthanasia and terrorism" (Bandman:1988,3). The definition preferred describes critical thinking as a way of life - involving many skills and abilities in treating ideas and facts (Taba 1971:45).

One last attempt at clarifying the concept of critical thinking is the understanding that "the four types of reasoning that comprise critical thinking are deductive, inductive, informal everyday, and practical" (Bandman:1988,5). In the author's experience inductive reasoning is the most difficult and therefore the most neglected area in nursing education programmes.

In attempting to probe and ponder the question of why nurse educators should develop students' critical thinking skills, a few suggestions will be considered.

First, students have a moral right to be taught to be critical thinkers.

Second, it is essential to develop students' critical thinking skills to enable them to apply everything they know and feel already, to evaluate their own thinking, and especially, to change their behaviour as a result of thinking critically.

Third, nursing practice is based on inductive reasoning and therefore stimulation of the thinking process is the essence of clinical instruction. Analysis of a scenario which reveals the need for clinical judgement for which inductive reasoning is required, follows:-

Nurse Smith reports that on the three occasions she gave different patients medication X for gastritis their symptoms were relieved. The teacher who is a critical thinker will help the student to make sound inferences in an attempt to determine the reasons for the success of the medication. In other words she will guide the student to develop a causal form of thinking.

Fourthly, by and large, evaluation of achievement is still confined to recall of information and academic skills quite out of balance with other important areas of achievement including critical thinking (Norris:1985,40).

The following example of the wording of an examination question for fourth year student nurses which does not require critical thinking but merely recall of information proves this point.

Question 1. A nurse was found guilty by the Disciplinary Committee of the S.A. Nursing Council of assaulting mentally ill patients.

1.1 Discuss the offences and penalties for which nurses can be sanctioned, with special reference to the Mental Health Act.....as amended.

1.2 Enumerate the penalties which the Disciplinary Committee could impose on a nurse who is found guilty of misconduct.

Thus poorly worded or low cognitive level examination questions, tests and assignments negate the purpose of carefully designed curricula.

Fifth, Paul says that "nurses who practice in a system that recognizes and supports two competing and also complementary frames of reference, the medical model and the nursing model of using evidence and diagnosing, are in a multilogical system...(having more than one logic, or alternative structures of rationality)... Yet, nurses, physicians, and most people are trained for a monological world and thrown into one that is multilogical. Nurses and physicians in particular, need to be trained to identify and analyze health care issues from the perspective of more than one point of view, to reconstruct those points of view and to argue for those issues that they actively oppose as an example of critical thinking" (Bandman:1988,3).

HOW SHOULD NURSE EDUCATORS TEACH CRITICAL THINKING SKILLS?

First, sequential development of critical thinking skills throughout the educational years, i.e. both in primary and secondary schools is essential so that this can be built on in tertiary education.

Second, the wording of assignments, tests and examination questions needs careful consideration to give students opportunities to practice critical thinking.

Third, there is a need for consistent and repetitive practice of critical thinking skills in a variety of contexts as critical thinking cannot be learned by precept (Taba 1950:47). In the context of nursing education programmes, opportunities for practising critical thinking should be provided both in classroom and clinical settings.

Fourth, the curriculum map or framework needs to indicate how the various subjects have been organized *"to consistently give students opportunities for learning to think clearly, objectively and critically. This should prove that there need not be conflict between teaching content and developing critical thinking, and that content which does not contribute to the development of concepts and which requires 'mastering' by processes other than those aiding critical thinking, is not worth its place in the curriculum"* (Taba 1950:61).

Fifth, *"presumably the development of critical thinking requires teachers who themselves can think"* (Taba 1950:48).

The TABA Model for teaching critical thinking skills is presented as one possibility for nurse education.

In the context of this model curriculum is viewed as a system consisting of a number of interrelated elements such as the overall goals and specific objectives to be obtained, the content, the selection and organization of the learning activities, the selection and organization of the teaching strategies and the selection or development of the evaluative measures to be used.

More especially, it differs from the more traditional curriculum patterns in the following respects:

1. It addresses itself to multiple objectives and provides for the implementation of each.
2. It emphasizes the acquisition, understanding, and use of ideas and concepts rather than facts alone.
3. It defines carefully the terminal behaviours expected of students.
4. It includes a number of specially designed teaching strategies which encourage the development and acquisition of certain specified intellectual skills.
5. It outlines a number of additional procedures which can be adapted to the varying circumstances pertaining in particular classrooms.
6. It encourages student examination of the attitudes and values which they and others possess.
7. It includes sequentially designed learning activities in order to encourage cumulative learning.
8. It provides for continual teacher and student evaluation of student progress (Taba et al 1971:6-7).

The Taba Model has three major categories of educational objectives:- thinking; knowledge; attitudes and feelings which include values. The supporting objectives are aimed at the development of academic and social skills. (See

Appendix A). Each of these will be discussed in turn.

i) THINKING

In the context of this model the assumption is that thinking is learned, that it is learned developmentally, and that thinking skills can be taught systematically. There are five other assumptions. Taba developed the concept of cognitive strategies as one means of implementing these assumptions, three of which include the following:-

Developing concepts, in which students list, group and regroup a number of items and then label the groups.

Inferring and generalizing, in which students make inferences and generalize about the relationships they observe among various kinds of data.

Applying generalizations, in which students are asked to apply previously learned generalizations and facts to predict what might logically occur in a new situation (Taba et al 1971:10-11).

ii) KNOWLEDGE

This has been further subdivided into three additional categories of levels of knowledge namely: -

1. Key concepts (words which represent highly generalized abstractions eg justice, cooperation);
2. Main, organizing and contributing ideas; main ideas refer to generalizations, usually less abstract in nature than the key concepts and expressed in the form of sentences; organizing ideas represent a special case of one of the main ideas);

Specific actual samples.

Each of these levels serves a different function in curriculum development and all three levels are chosen on the basis of specific and clearly identified criteria which include:

- a. Validity
- b. Significance
- c. Relevance
- d. Relationship
- e. Depth
- f. Breadth
- g. Ability of the content to lend itself to the development of the other objectives (Taba et al 1971:11-12).

iii) ATTITUDES, FEELINGS AND VALUES

This category places particular emphasis upon helping students to develop their own values, and to understand and to analyze the values of others.

Three specific teaching strategies need mentioning:

1. Exploring feelings
2. Interpersonal problem solving
3. Analyzing values (Taba et al 1971:13-14)

For each of the categories of objectives, curriculum planning must take into account both content and learning activities. To design learning activities to serve multiple ends it is essential to plan for incremental learning. In each of the three categories of objectives, each learning activity should build on those activities that have been developed earlier. For example, it is necessary to ensure that the learning activities focus on the key concepts and main ideas selected, and develop them in increasing breadth and depth from unit to unit and from year to year.

If the Taba Model has been interpreted correctly then the essence of successful learning activities seems to centre around effective questioning. "Often the mistake is in starting analysis too soon by pressing 'why' questions after each student's statement" (Taba 1950:46). She explains that discussion is cut off at this point as only one person in the class is involved and could respond, and it is suggested that the discussion should be kept open by asking several students to add on the same level as the first one so that more people can make connection with the idea, enabling them to have a fuller content from which to respond and to think about the 'why'.

To make this possible students' responses to questioning must be recorded in writing or on tape for careful analysis in an attempt to evaluate the student's progress in the three categories of educational objectives as well as in the supporting objectives. Taba suggests a number of criteria for evaluating this progress in an attempt to eliminate objectivity.

But the challenge is how to prevent group discussions from becoming a disorderly battle of wits and of differing opinions. Taba suggests that "*more experimentation is needed on how to harness differences in knowledge, experience and attitudes towards evolving richer more realistic ideas, how to introduce comparisons and contrasts to give validity to group thinking and how to integrate conflicting ideas and experiences into fuller comprehension*" (Taba 1950:46).

What has been explained so far applies to classroom teaching, but the challenge for nurse educators is to reinforce classroom with clinical

learning. In an excellent article Malek describes how the Taba model can be adapted and applied to enable students to "develop the ability to make guided decisions drawn from the sound, rational bases in order to respond appropriately under the stress of fast-paced clinical environments". (Malek:1986,20). (See Appendix B)

CONCLUDING REFLECTIONS

The writer is relatively certain of only two things. One is that the development of critical thinking is an important educational objective. The other is that teaching critical thinking is not an easy task.

With somewhat less assurance, the writer is persuaded that the Taba Model for teaching critical thinking should be applied to clinical teaching. Evidence of the exercise of complex conceptual thought and judgement in clinical nursing and therefore of the transferability of critical thinking skills to these areas is the clearest indication of this.

Where does this leave us? As the writer sees it, with these three conclusions:

First, nurse educators and clinical instructors must themselves be critical thinkers if they wish their students to develop these skills.

Second, learning to think critically is a developmental process that requires careful planning of learning activities to serve multiple ends, centering around main ideas across subjects rather than content.

And finally, the success of the learning activities depends upon effective questioning. Effective questioning is dependent upon critical thinking.

REFERENCES

- BANDMAN E.L. AND BANDMAN B. Critical Thinking in Nursing. San Mateo, California: Appleton & Lange; 1988.
- MALEK C.J. A model for teaching critical thinking. *Nurse Educator*. Nov/Dec 1986; 11(6):10-23.
- NORRIS S.P. Synthesis of research on critical thinking. *Educational Leadership*. 1985; May:40-45.
- TABA H., DURKIN M.C., FRAENKEL J.R., AND MCNAUGHTON A.H. A teacher's handbook to elementary Social Studies. An

inductive approach. Reading, MA: Addison-Wesley Publishing Co.; 1971.

TABA H. The problems in developing critical thinking. *Progressive Education* 1950:45-48, 61.

BIBLIOGRAPHY

BAUWENS E.K. AND GERHARD G.G. The Use of the Watson-Glaser Critical Thinking Appraisal to Predict Success in a Baccalaureate Nursing Programme. *J Nur Ed*. September 1987; 26(7): 278-281.

BENNER P. From Novice to Expert - Paths to Excellence in Nursing Practice. *American J Nursing* March 1982:402-407.

BEVIS E.M. O. AND MURRAY J.P. The Essence of the Curriculum Revolution: Emancipatory Teaching. *J Nur Ed*. September 1990;29(7):326-331.

BROOKS K.L. AND SHEPHERD J.M. The Relationship Between Clinical Decision-Making Skills in Nursing and General Critical Thinking Abilities of Senior Nursing Students in Four Types of Nursing Programmes. *J Nur Ed*. November 1990; 29(9):391-399.

PARDUE S.F. Decision-Making Skills and Critical Thinking Ability Among Associate Degree, Diploma, Baccalaureate, and Master's-Prepared Nurses. *J Nur Ed*. November 1987;26(9):

PAUL R.W. Critical thinking research: a response to Stephen Norris. *Educational Leadership*. 1985;May:46.

DE TORNYAY R. The Curriculum Revolution. *J Nur Ed*: September 1990;29(7):292-293.

WOODBIDGE N.B. Facing ethical issues in adult education: utilizing the "dimensions of ethical practice" model. *SA J. Higher Ed*. 1990;4(2):90-95.

Una Kyriacos
B. Cur A RN RM Dip
Intensive Nursing Science
Senior Lecturer
Department of Nursing
University of Cape Town

APPENDIX A
The nature and function of learning activities - a graphic presentation of the learning activities

	Means				Rotations				Objectives								Supporting Objective					
									Knowledge			Thinking			Attitude Feeling		Skills Academic/Social					
Main Idea: 1st Year																						
Organizing Idea:	Doing / Dramatizing	Looking / Listening	Talking / Reading	Writing	Intake	Organization	Inferring / Generalizing	Descriptive facts	Concepts	Ideas	Developing Concepts	Inferring / Generalizing	Hypothesizing	Applying Generalizations	Descriptive Learning	Sensitizing	Interpreting maps	Interpreting pictures, charts	Understanding time	Locating information	Organizing information	Evaluating information
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Opening Question:																						
Specific questions:																						

Conclusion: Adapted from Taba et al 1971

APPENDIX B
Teaching guide: alteration in skill integrity related to impaired circulation

Teaching Strategy	Teaching Methodology	Teaching Rationale	Student Activities
1. Concept Formation	<p>A. Opening Question(s) What do you notice about the skin textures of Mrs A. and Mr. B? What are the similarities in texture?</p> <p>Do any of these seem to belong together? Which observations appear to be significant? Would you group any observations together?</p>	<p>1. Allows many students to enter the discussion at the least demanding cognitive level.</p> <p>2. Creation of a balance between openness and focus.</p> <p>3. Should you avoid closed/factual questions: establishes teacher-student-teacher-student sequence. Determine a hierarchical order of observations.</p>	<p>1. Enumeration of a list of patient observations. Identification of separate items.</p> <p>2. Grouping of observations Identification of common properties.</p> <p>3. Develops labels or categories of observation.</p>
2. Interpretation of Data	<p>If so, what would this group be called?</p> <p>A. Lifting Question(s) What did you find while assessing the skin of Mrs.A and Mr.B? What differences did you notice?</p> <p>What is being reflected in these observations? What do you think made this occur?</p>	<p>1. Seek relationships among the clinical data and student observations.</p> <p>2. Avoid initiating dialogue between the teacher and only the brightest student.</p> <p>3. Encourages tentative opinions about present observations. Promotes realization that clinical data are not static.</p>	<p>1. Identify objective data from subjective assessments.</p> <p>2. Determine the cause and effect among observations.</p> <p>3. Relate the patient diagnosis to presenting clinical symptoms.</p>