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ABSTRACT

Common characteristics in the theory and process of two instructional models, one in critical thinking skills and one in library skills, were isolated in this study. Content analysis of selected materials from Robert H. Ennis's critical thinking model and Carol C. Kuhlthau's library skills model showed the absence or presence of common characteristics as well as the frequency of occurrence. Of the 72 process model characteristics analysed, 55 were present in both models of instruction. Of these characteristics, eight occurred with the most frequency in both the critical thinking model and the library skills model. Common characteristics emphasized the process nature of both theoretical bases. In the analysis of both process bases, the common characteristics pointed to the nature of thinking as focused and purposive, intentional about the process, and reflective. Another common characteristic was that the process required evaluation of information. The remaining common characteristic suggested the use of constructed response tests (essays or term papers). The commonalities linking both models appear to support a process approach to instruction, as well as a metacognitive view of the thinking process. Appended are a list of materials and the coding sheet used in the content analysis. (Contains 24 references.) (KRN)

COMMONALITIES IN CRITICAL THINKING SKILLS INSTRUCTION AND LIBRARY SKILLS INSTRUCTION

A Master's Research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

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Thanks are also extended to my husband, John, and my daughter, Carolynn for their love, patience, and support.

CHAPTER 1

INTRODUCTION

The "information explosion," a much used term for the steadily increasing amount of information in our modern society, has become an impetus for change in bibliographic instruction. Defining bibliographic instruction as the way students are taught to access and process information calls into consideration the seeming inability of many students in the educational system of the United States to apply critical thinking skills (the evaluative process of decision making) to information. These two components, the information explosion's effect on bibliographic instruction and students' inability to use a critical thinking process to make decisions about information, direct the focus of this study.

According to Kuhlthau, bibliographic instruction or library skills instruction includes location skills and interpretation skills.[1] Location skills have formed the traditional core of bibliographic or library skills instruction. Interpretation skills call upon the critical thinking process in order to evaluate and make decisions. Mancall, Aaron and Walker have called for the inclusion of critical thinking instruction within the library skills instruction process.[2] McCormick,[3] Bechtel,[4] and Bodi[5] also assert that a critical thinking component become central in bibliographic instruction in academic settings.

The study of methods of library skills instruction and

critical thinking instruction could benefit students as they learn to become information literate. Eisenberg and Brown call for research that identifies relationships between process models of library/information skills and educational processes such as critical thinking.[4]

Need for the Study

The problem of this study concerns the following questions: What commonalities in schemata of library skills instruction and critical thinking skills instruction can be found? What relationships exist in specific models of library/information skills instruction and critical thinking skills instruction? Although research has been done to study process models of library skills instruction,[5] studies of critical thinking skills instruction have been few.[6]

Purpose of the Study

The purpose of this study is to isolate those factors common to both areas of instruction (library/information skills and critical thinking skills).

Limitations of the Study

Analysis of Carol Collier Kuhlthau's research and process model theory will serve as the content for library skills instruction study. Robert H. Ennis' research and critical thinking theory will serve as the content for the critical thinking skills instruction. Analysis will be limited to two theorists and their contributions to their respective fields.

Definition of Terms

For the purpose of this study, Ennis' definition of critical thinking will be used. "Critical thinking is reasonable and reflective thinking that is focused upon deciding what to believe or do."[10] For the purpose of this study, the term "library skills instruction" will include location and interpretation skills. The use of Kuhlthau's definition will be applied: "location skills involve a knowledge of the sources and tools in libraries... interpretation skills involve how the information is used after it is located...critical thinking is involved in interpretation."[11]

CHAPTER 2

LITERATURE REVIEW

Examination of the literature of critical thinking reveals much disagreement in defining this basic term. Beyer reports that most critical thinking specialists agree that "critical thinking is the assessing of the authenticity, accuracy and/or worth of knowledge claims and arguments."[12] He also lists a core of critical thinking skills that serve as further definition:

> Distinguishing between verifiable facts and value claims.
> Determining the reliability of a source.
> Determining the factual accuracy of a statement.
> Distinguishing relevant from irrelevant information, claims or reasons.
> Detecting bias.
> Identifying unstated assumptions.
> Identifying ambiguous or equivocal claims or arguments.
> Recognizing logical inconsistencies or fallacies in a line of reasoning.
> Distinguishing between warranted or unwarranted claims.
> Determining the strength of an argument. (Beyer 1985, 272)

In Synthesis of Research on Critical Thinking, Norris, reporting on pre-1982 studies, states that "research on the effectiveness of critical thinking instruction almost invariably uses indicators of effectiveness that are insensitive to fine details."[13] Norris' quarrel with these research designs is corroborated by Craver when she notes research design flaws including "isolated research setting", "lack of replication", "context-sensitive and subjective" test instruments."[14]

Nonetheless, Craver states that:

> Despite the flaws in critical thinking research, it is clear that techniques such as questioning, tutoring, oral recitation, group discussion, and writing are successful in improving the ability of students to think critically."

Other aspects in the literature of critical thinking deal with the transferability of these skills to other disciplines. The question of whether critical thinking is subject-specific and dependent on that subject's background knowledge is another area of disagreement in the field. McPeck purports that critical thinking skills are subject specific." Ennis notes that Glaser, Resnick, Sternberg hold varying positions in this debate."

Craver summarizes the state of critical thinking research especially in the area of instruction:

> Despite the fact that more than 2000 articles have been written about critical thinking since 1985, there have been few empirical studies performed to measure and evaluate it. Little progress has been made regarding the most effective way to teach critical thinking."

The literature of library skills instruction includes the rationale for a process approach as opposed to a source approach. Based on longitudinal studies, Kuhlthau purports:

> Library instruction that guides students through the levels of information needs, to solve a problem or to shape a topic, enables them to use information for learning. Instruction that helps them develop a realistic perception of an information system prepares them to be more successful searchers. They are preparing to use information in actual situations of information need and to transfer library skills to other systems."

Kuhlthau's library research process model based on her longitudinal studies of high school seniors, notes the stages of the process and strategies to expedite it." Recent study of the information

search process by Kuhlthau describes cognitive and affective aspects of the process from the user's perspective.[21]

Other models of the process approach include Eisenberg and Berkowitz, Irving, and Stripling and Pitts.[22] Unlike Kuhlthau's, these models lack a formal research basis, but were developed from practical experience.[23]

Eisenberg's comparison of these four process models (Kuhlthau, Eisenberg and Berkowitz, Irving, and Stripling and Pitts) revealed the many commonalities among them.[24] A similar pattern or schema is apparent in these process models. It should be noted that the evaluative or interpretive component which entails critical thinking is part of each model. Eisenberg's comparison is directly relevant to this proposal for research.

> Expanding on Eisenberg's initial effort to identify commonalities among the various process models as well as investigating the relationship between library and information skills processes to other processes in education (e.g., critical thinking, writing, problem solving) will greatly assist those in the field.[25]

Calls for research linking critical thinking and library skills instruction emanate from both fields. From the critical thinking area, Ennis asserts that needed research includes:

> the examination of the degree of commonality of the critical thinking aspects found in different standard existing disciplines and school subjects.[26]

From the library skills area, Craver challenges:

> While practicing librarians can easily transfer and apply critical thinking empirical studies to their own instructional methods, library science researchers face a more challenging task. At present, no empirical research has been conducted in library science and critical thinking.[27]

A study linking critical thinking skills and library skills

instruction could contribute to further development of the theoretical base of librarianship which is concerned with equipping library users with location and interpretive skills to evaluate and make decisions about information.

CHAPTER 3

RESEARCH METHODOLOGY

Content analysis will be used to isolate those factors common to both areas of instruction (library/information skills instruction and critical thinking instruction). A sample of Carol Collier Kuhlthau's research and process model theory will serve as the content for library skills area. A sample of Robert H. Ennis' research and critical thinking theory will serve as the content for the critical thinking skills area. The absence or presence of criteria will be examined through a coding sheet. The recurrence of criteria will also be noted. Criteria common to both areas will be reported. Conclusions will be drawn from an analysis of the data collected.

A list of the materials selected for the content analysis comprises Appendix A. The coding sheet is included in Appendix B.

CHAPTER 4

DATA ANALYSIS - FINDINGS

Data gathered from the selected materials listed in Appendix A was analyzed to discover the absence or presence of criteria as well as frequency of occurrence. The frequency and percentage of the total occurrences in the theoretical models of Ennis and Kuhlthau are reported in Table 1.

Table 1.--Distribution of Common Characteristics in the Theoretical Models of Critical Thinking Instruction (Ennis) and Library Skills Instruction (Kuhlthau)

Common Characteristic	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
1. Basis in cognitive psychology	0	0.0	38	6.2
2. Process approach orientation	24	30.0	246	40.3
3. Emphasizes process rather than	25	31.3	222	36.4
4. Rationale noting this process necessary for autonomous decision making	6	7.5	3	.5
5. Skills necessary for lifelong learning	3	3.7	10	1.6
6. Process emanates from an information need	22	27.5	91	15.0
Total	80	100.0	610	100.0

Table 1 shows in both models, critical thinking and library skills instruction, that of the 6 characteristics, 3 are present with the most occurrences. These common characteristics all emphasize the process nature of the theoretical models: process approach orientation, emphasizes process rather than product or outcome, and process emanates from an information need.

The absence and presence of criteria and the frequency and percentage of occurrence in the process models were also analyzed. These findings are presented in Table 2. Of the 72 process model characteristics analyzed, 55 were present in both models, critical thinking and library skills instruction, as shown in Table 2.

Table 2.--Distribution of Common Characteristics in the Process Models of Critical Thinking Instruction (Ennis) and Library Skills Instruction (Kuhlthau)

Common Characteristic	Ennis Critical Thinking		Kuhlthau Library Skills	
	f	%	f	%
1. Demands Piagetian cognitive development of abstract reasoning	0	0.0	15	0.5
2. Can be taught	13	1.0	16	0.5
3. Can be taught as a general set of skills	10	0.7	6	0.2
4. Must be taught in conjunction with a school/academic subject	0	0.0	1	0.0
5. Can be taught through a "mixed approach" - general skills/ applied instruction	16	1.2	92	2.8
6. Can be transferred to everyday life situations	11	0.8	1	0.0

Table 2.--Continued

Common Characteristic	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
7. Can be transferred to everyday situations if transfer inducing skills are learned	17	1.3	4	0.1
8. Requires background knowledge in a subject	41	3.1	23	0.7
9. Varies from subject to subject	7	0.5	0	0.0
10. Includes reflective thinking	28	2.1	92	2.8
11. Follows a linear path (steps are completed in order)	2	0.1	1	0.0
12. Is initiated by a need for information	15	1.1	88	2.6
13. Begins with the learner in a state of indecision	24	1.8	82	2.5
14. Includes information gathering from a variety of sources	10	0.7	92	2.8
15. Includes focused thinking that has a purpose	41	3.1	163	4.9
16. Requires intentional thinking about the process	25	1.9	161	4.9
17. Requires examination of previously held assumptions	11	0.8	12	0.4
18. Requires examination of information	23	1.7	131	4.0
19. Requires evaluation of information	31	2.3	135	4.1
20. Requires openness to new learning about self	16	1.2	49	1.5
21. Requires openness to differing points of view	24	1.8	38	1.2

Table 2.--Continued

Common Characteristics	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
22. Employs strategies to keep on task	8	0.6	23	0.7
23. Requires the disposition to use abilities to complete the process	73	5.5	12	0.4
24. Must be taught in a wide variety of contexts	13	1.0	14	0.4
25. Can be pictorially represented - flow charts, time lines	3	0.2	123	3.7
26. May involve the use of multiple choice tests	59	4.4	0	0.0
27. May involve the use of constructed response tests (essays, term papers)	50	3.7	93	2.8
28. May use the teaching strategy of classroom discussion	23	1.7	11	0.3
29. May use the teaching strategy of small group discussion	4	0.3	36	1.1
30. May use the teaching strategy of teacher-student conferences	28	2.1	48	1.5
31. May use the teaching strategy writing journals	26	1.9	67	2.0
32. May use the teaching strategy of public speaking or debate	3	0.2	7	0.2
33. May use the teaching strategy of questioning technique	19	1.4	29	0.9
34. Is dependent on the learner's reading comprehension ability	13	1.0	62	1.9
35. Advocates the use of commercially produced tests	12	0.9	0	0.0

Table 2.--Continued

Common Characteristics	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
36. Includes time for the students to think	6	0.4	40	1.2
37. Recognizes feeling levels (eg. anxiety, confusion, confidence) at different stages	0	0.0	231	7.0
38. Is characterized by growing confidence from initiation to close	0	0.0	87	2.6
39. Should include evaluation through several output modes (oral, written, group interaction)	10	0.7	23	0.7
40. Includes the initial step of identifying or formulating a question	21	1.6	38	1.2
41. Emphasizes staying focused, keeping on track	25	1.9	51	1.5
42. Emphasizes analysis of points of view	14	1.0	1	0.0
43. Emphasizes identifying assumptions	73	5.5	0	0.0
44. Emphasizes seeing similarities and differences	4	0.3	5	0.2
45. Emphasizes identifying irrelevance	19	1.4	70	2.1
46. Emphasizes fact finding	8	0.6	77	2.3
47. Emphasizes judging the credibility of sources of information	80	6.0	6	0.2
48. Includes making and judging observations	36	2.7	4	0.1

Table 2.--Continued

Common Characteristic	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
49. Includes inference through deduction	97	7.2	0	0.0
50. Includes inference through induction	66	4.9	0	0.0
51. Includes inference through value judgements	24	1.8	0	0.0
52. Includes defining terms and judging definitions	19	1.4	32	1.0
53. Emphasizes group interaction	24	1.8	24	0.7
54. Emphasizes trying to put students at ease	3	0.2	13	0.4
55. Emphasizes active student participation	13	1.0	69	2.1
56. Includes evaluation of student strengths and weaknesses	9	0.7	13	0.4
57. Includes defining the requirements of the task	6	0.4	56	1.7
58. Extends beyond the curriculum materials	33	2.5	25	0.8
59. Uses an organized collection of information	3	0.2	140	4.2
60. Includes presentation of findings	9	0.7	74	2.2
61. May use the teaching strategy of brainstorming	0	0.0	6	0.2
62. Requires teacher involvement which encourages without overwhelming	3	0.2	25	0.8
63. May progress at each individual's pace	1	0.1	37	1.1

Table 2.--Continued

Common Characteristics	Ennis Critical Thinking f	Ennis Critical Thinking %	Kuhlthau Library Skills f	Kuhlthau Library Skills %
64. Includes prediction making by students	19	1.4	54	1.6
65. Includes student confusion	0	0.0	54	2.7
66. Is more likely to succeed if students are aware of the feelings they might have during the stages of the process	2	0.1	22	0.6
67. Includes active searching for differing points of view	11	0.8	1	0.0
68. Includes knowledge of the organization of information in libraries and networks	2	0.1	162	4.9
69. Advises general to specific use of sources	0	0.0	52	1.6
70. Requires determination on the part of the student	2	0.1	12	0.4
71. Demands prompt teacher feedback	0	0.0	5	0.2
72. Becomes increasingly successful with practice and maturity	3	0.2	30	0.9
Total	1344	100.0	3301	100.0

Further analysis of the data presented in Table 2 included isolating the 17 most frequently occurring characteristics in each process model.

Table 3 shows the 17 most frequently occurring characteristics of Ennis' critical thinking process model.

Table 3.--Distribution of Characteristics of the Process Model of Critical Thinking Instruction (Ennis)

Characteristic	f	%
Includes inference through deduction	97	11.9
Emphasizes judging the credibility of sources	80	09.9
Emphasizes identifying assumptions	73	09.0
Requires the disposition to use abilities to complete the process	73	09.0
Includes inference through induction	66	08.1
May involve the use of multiple choice tests	59	07.3
May involve the use of constructed response tests (essays, term papers)	50	06.2
Requires focused thinking that has a purpose	41	05.0
Requires background knowledge in a subject	41	05.0
Includes making and judging observations	36	04.4
Extends beyond the curriculum materials	33	04.0
Requires evaluation of information	31	03.8
Requires reflective thinking	28	03.5
May use the strategy of teacher-student conferences	28	03.5
Uses the teaching strategy of writing journals	26	03.2
Requires intentional thinking about the process	25	03.1
Emphasizes staying focused, keeping on track	25	03.1
Total	812	100.0

Table 4 shows the 17 most frequently occurring characteristics

of Kuhlthau's library skills instruction model.

Table 4.--Distribution of the Characteristics of the Process Model of Library Skills Instruction (Kuhlthau)

Characteristic	f	%
Recognizes feeling levels (eg. anxiety confusion, confidence) at different stages	231	11.8
Includes focused thinking that has a purpose	163	08.3
Includes knowledge of the organization of information in libraries and networks	162	08.3
Requires intentional thinking about the process	161	08.2
Uses an organized collection of information	140	07.2
Requires evaluation of information	135	07.0
Requires examination of information	131	06.7
Can be pictorially represented	123	06.2
May involve the use of constructed response tests (essays, term papers)	93	04.8
Includes reflective thinking	92	04.7
Includes information gathering from a variety of sources	92	04.7
Can be taught through a mixed approach - general skills and applied instruction	92	04.7
Includes student confusion	89	04.6
Is initiated by a need for information	88	04.5
Is characterized by growing confidence from initiation to close	87	04.4
Begins with the learner in a state of indecision	77	03.9
Total	1956	100.0

Analysis of the data presented in Tables 3 and 4 show that of the 17 most frequently occurring characteristics in both process models, Ennis' critical thinking instruction and Kuhlthau's library skills instruction, 5 are common in the materials examined. These 5 common characteristics are:

1. Includes focused thinking that has a purpose
2. Requires intentional thinking about the process
3. Requires evaluation of information
4. May involve the use of constructed response tests (essays, term papers)
5. Includes reflective thinking

Of these common characteristics, 3 appear to define the type of thinking that are part of the process, i.e. focused thinking, intentional thinking, reflective thinking. The other 2 common characteristics describe an action (evaluation of information) and a type of output measure (constructed response test).

In summary, from the materials selected for content analysis in the critical thinking instruction model of Ennis and the library skills instruction model of Kuhlthau, 8 characteristics were shown to be the most common of the 78 examined. In the theory analysis, the 3 common characteristics emphasized the process nature of both models (process approach orientation, emphasis on process rather than product or outcome, and process emanating from an information need). In the process analysis, 3 of the common characteristics emphasized the nature of thinking as focused and purposeful, intentional about the process, and reflective; the other 2 common characteristics noted that the process required evaluation of information and the possibility of the use of constructed response tests (essays, term papers).

CHAPTER 5

CONCLUSIONS

Although several criteria were shown to be present in both the critical thinking skills instruction model of Ennis and the library skills instruction model of Kuhlthau, the criteria with the greatest frequency may merit further inquiry. These commonalities linking critical thinking skills instruction and library skills instruction support a process approach to both areas in response to an information need.

A metacognitive view of the thinking process seems apparent in the commonalities found. These common characteristics define thinking as focused, purposeful, intentional, and reflective. It could be concluded that student awareness of the thinking process increases growth toward mastery in both critical thinking and library skills.

The evaluation of information and the presentation of findings in the form of a constructed response test, such as an essay or term paper, were also a common element in both models of instruction. Both of these elements are currently in courses of study in secondary education. The appearance of these as common to both critical thinking instruction and library skills instruction could indicate further emphasis on these components of the curriculum.

Recommendations for Future Research

Recognizing that this study was limited to one theorist in each area, the data collected can apply only to those specific materials selected. Further study is warranted to identify commonalities among other instructional models for critical thinking skills and library skills. Defining the relationship between these areas could result in more effective models of instruction to help students deal with the information explosion through their abilities in library skills (accessing and processing information) and critical thinking.

APPENDIX A

LIST OF SELECTED MATERIAL

CRITICAL THINKING AREA

Ennis, Robert H. "Critical Thinking and Subject Specificity: Clarification and Needed Research," Educational Researcher 18, no. 3 (April 1989): 4-10.

_____. "Critical Thinking and the Curriculum," National Forum: The Phi Kappa Phi Journal 65, no. 1 (Winter 1985): 28-31.

_____. "The Extent to Which Critical Thinking Is Subject-Specific: Further Clarification," Educational Researcher 19, no. 4 (May 1990): 13-16.

_____. "A Logical Basis for Measuring Critical Thinking Skills," Educational Leadership 43, no. 2 (October 1985): 44-48.

_____. "A Taxonomy of Critical Thinking Dispositions and Abilities". In Teaching Thinking Skills: Theory and Practice, ed. J. Baron and Robert J. Sternberg, 9-16. New York, Freeman, 1987.

Norris, Stephen P. and Robert H. Ennis. Evaluating Critical Thinking. The Practitioners' Guide to Teaching Thinking Series. Pacific Grove, Calif.: Midwest Publications Critical Thinking Press, 1989.

LIBRARY SKILLS AREA

Kuhlthau, Carol C. "Developing a Model of the Library Search Process: Cognitive and Affective Aspects," RQ 28, no. 2 (Winter 1988): 232-242.

_____. "An Emerging Theory of Library Instruction," School Library Media Quarterly 16, no. 1 (Fall 1987): 23-28.

_____. "Information Search Process: A Summary of Research and Implications for School Library Media Programs," School Library Media Quarterly 18, no. 1 (Fall 1989): 19-25.

_____. "The Information Search Process of High-, Middle-, and Low-Achieving High School Seniors," School Library Media Quarterly 17, no.4 (Summer 1989): 224-226.

_____. "Inside the Search Process: Information Seeking from the User's Perspective," Journal of the American Society for Information Science 42, no. 5 (June 1991): 361-371.

_____. "Perceptions of the Information Search Process in Libraries: A Study of Changes from High School through College," Information Processing and Management 24, no. 4 (1988): 419-427.

_____. "A Process Approach to Library Skills Instruction," School Library Media Quarterly 13, no. 1 (Winter 1985): 35-40.

_____. Teaching the Library Research Process. West Nyack, N.Y.: Center for Applied Research, 1985.

APPENDIX B

CODING SHEET

THEORY	ENNIS	KUHLTHAU
The theory:		
1. has a basis in cognitive psychology.		
2. has a process approach orientation.		
3. emphasizes the process rather than the product or outcome.		
4. has a rationale noting this process as necessary for autonomous decision making in a democratic society.		
5. notes these skills as necessary for lifelong learning.		
6. notes that the process emanates from an information need.		
PROCESS		
The process:		
1. demands Piagetian cognitive development of abstract reasoning.		
2. can be taught.		
3. can be taught as a general set of skills.		
4. must be taught in conjunction with a school/academic subject.		
5. can be taught through a "mixed approach" - general skills instruction and applied instruction.		
6. can be transferred to everyday life situations.		

		ENNIS	KUHLTHAU
7.	can be transferred to everyday life situations if transfer inducing skills are learned.		
8.	requires background knowledge in a subject.		
9.	varies from subject to subject.		
10.	includes reflective thinking.		
11.	follows a linear path (steps are completed in order).		
12.	is initiated by a need for information.		
13.	begins with the learner in a state of indecision.		
14.	includes information gathering from a variety of sources.		
15.	includes focused thinking that has a purpose.		
16.	requires intentional thinking about the process.		
17.	requires examination of previously held assumptions.		
18.	requires examination of information.		
19.	requires evaluation of information.		
20.	requires openness to new learning about self.		
21.	requires openness to differing points of view.		
22.	employs strategies to keep on task.		
23.	requires the disposition to use abilities to complete the process.		
24.	must be taught in a wide variety of contexts.		
25.	can be pictorially represented - flow charts, time lines.		

	ENNIS	KUHLTHAU
26. may involve the use of multiple choice tests.		
27. may involve the use of constructed response tests (essays, term papers)		
28. may use the teaching strategy of classroom discussion.		
29. may use the teaching strategy of small group discussion.		
30. may use the teaching strategy of teacher-student conferences.		
31. use the teaching strategy of writing journals.		
32. may use the teaching strategy of public speaking or debate.		
33. may use the teaching strategy of questioning techniques.		
34. is dependent on the learner's reading comprehension ability.		
35. advocates the use of commercially produced tests.		
36. includes time for the students to think.		
37. recognizes feeling levels (eg. anxiety, confusion, confidence) at different stages.		
38. is characterized by growing confidence from initiation to close.		
39. should include evaluation through several modes of output (oral, written, group interaction)		
40. includes the initial step of identifying or formulating a question		
41. emphasizes staying focused, keeping on track.		
42. emphasizes analysis of points of view.		

		ENNIS	KUHLTHAU
43.	emphas[illegible]entifying assumptions.		
44.	emphasiz[illegible]ng similarities and differences.		
45.	emphasizes identifying irrelevance.		
46.	emphasizes fact finding.		
47.	emphasizes judging the credibility of sources of information.		
48.	includes making and judging observations.		
49.	includes inference through deduction.		
50.	includes inference through induction.		
51.	includes inference through value judgements.		
52.	includes defining terms and judging definitions.		
53.	emphasizes group interaction.		
54.	emphasizes trying to put students at ease.		
55.	emphasizes active student participation.		
56.	includes evaluation of student strengths and weaknesses.		
57.	includes defining the requirements of the task.		
58.	extends beyond the curriculum materials.		
59.	uses an organized collection of information.		
60.	includes presentation of findings.		
61.	may use the teaching strategy of brainstorming.		
62.	requires teacher involvement which encourages without overwhelming.		

		ENNIS	KUHLTHAU
63.	may progress at each individual's pace.		
64.	includes prediction making by students.		
65.	includes student confusion.		
66.	is more likely to succeed if students are aware of the feelings they might have during the stages of the process.		
67.	includes active searching for differing points of view.		
68.	includes knowledge of the organization of information in libraries and networks.		
69.	advises general to specific use of sources.		
70.	requires determination on the part of the student.		
71.	demands prompt teacher feedback.		
72.	becomes increasingly successful with practice and maturity.		

END NOTES

1. Carol C. Kuhlthau, Information Skills for an Information Society: a Review of Research (Syracuse, N.Y.: ERIC Clearinghouse on Information Resources, 1987), 2.

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