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ABSTRACT

The Future Homemakers of America (FHA) organization has historically provided an ideal climate for development of critical thinking by devoting conscious attention to thinking, teaching skills directly, and providing opportunities for interaction through cooperative learning and discussion. Strategies for expanding the knowledge base and building conceptual complexity include peer education projects and use of teaching models developed to stress group interaction and assist learners with the inquiry process in these projects. In regard to building metacognitive (executive) and nonexecutive thinking skills, the FHA Planning Process provides an ideal framework for members to build metacognitive skills. Other, more direct strategies might include peer education projects involving teaching others about the components of metacognition and investigating the use of metacognitive thinking skills in fulfilling various work and family roles. Members may study nonexecutive thinking skills themselves or incorporate them into peer education projects. Advisors can also strengthen the climate existing within FHA for the healthy development of the critical spirit by giving attention to idea- as well as skill-centered projects, encouraging respectful weighing of other points of view, discouraging hasty decision making, and encouraging reliance on self as well as experts to construct knowledge and make judgments. A bibliography is appended. (YLB)

THE ROLE OF THE FUTURE HOMEMAKERS OF AMERICA STUDENT ORGANIZATION IN FACILITATING THE DEVELOPMENT OF CRITICAL THINKING SKILLS

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Since its formation just over 40 years ago, the Future Homemakers of America (FHA) student organization has been meant to be an integral, or co-curricular, part of vocational home economics education. One of the primary contributions of Future Homemakers of America is its ability to extend opportunities for students to "assume active roles in society in areas of personal growth, family life, vocational preparation and community involvement" (FHA... , p. viii). Concomitantly, the organization provides opportunities for students to develop citizenship and leadership skills, enhance the relevance of their studies to the world of work and to family life, and ease the transition from school to adult work and family roles. The National Advisory Council on Vocational Education noted in its 1984 report that vocational student organizations are a critical aspect of the equation for excellence in vocational education programs.

While the values of FHA are widely recognized, one contribution that has not been highlighted substantially is the role of the organization in facilitating the development of critical thinking skills. FHA has historically provided a rich climate for members to develop the critical thinking skills, as well as the attitude and behavior patterns, that are associated with successful functioning in both work and family roles.

Components of Critical Thinking

It may help first to briefly outline how I conceptualize critical thinking. A traditicnal view is that critical thinking skills consist of the upper levels of Bloom's taxonomy of educational objectives (i.e., analysis, synthesis, and

evaluation)(Skinner, 1976). However, this notion has recently been criticized by Richard Paul (1985), among others. Today, much research in the area of critical thinking seems to be coming from the information processing view of what constitutes intelligence, and what is involved in rationally deciding what to do or believe. This is in contrast to the psychometric and developmental views of intelligence which have also received attention (Feely, 1976). Robert Ennis (1980, 1981, 1985) has defined critical thinking as "reasonable reflective thinking that is focused on deciding what to believe and do."

Research within the information processing perspective has shown that there are at least three requirements or prerequisites for making rational decisions about what to do or believe (Laster, 1985; Norris, 1985):

1. Extensive/acessible knowledge

   Knowledge of facts, principles, abstractions, and procedures clustered in big conceptual categories. Critical thinking requires a subject-matter base and seems to be taught most effectively when there are real world opportunities to apply knowledge.

2. Cognitive Skills

   These include both metacognitive and nonexecutive thinking skills Key metacognitive skills are:

   Planning - recognizing and defining the nature of a problem, choosing processes needed to solve the problem, and sequencing operations in an overall strategy.

   Representation - deciding how to organize and interpret information related to the problem.

   Self-monitoring - recognizing achievement of sub-goals; anticipating errors; identifying and correcting errors when they occur; choosing strategies to avoid errors; assessing appropriateness of outcomes/ results; recognizing and capitalizing on one's personal learning style(s).

Nonexecutive thinking skills include hundreds of sub-tasks that are popularly included in thinking skills curricula such as Seascape (Barnes, Wenck, Burgdorf, and Bell, 1978) and Structure of the Intellect (Meeker, 1969) and in tests of critical thinking such as the Cornell Critical Thinking Tests (Ennis and Millman, 1985), New Jersey Test of Reasoning Skills (Shipman, 1983) or Watson-Glaser Critical Thinking Appraisal (Watson and Glaser, 1980). Examples include classifying, comparing and contrasting, discriminating between fact and opinion, generating and testing hypotheses, using inductive and deductive reasoning. Expert-novice analyses have indicated the metacognitive skills may be more important than the others in intelligent problem solving (Larkin, McDermott, Simon, and Simon, 1980; Laster, 1985; Norris, 1985; Simon, 1980; Wagner and Sternberg, 1984).

3. Dispostion to think Productively and Critically

This is the "critical spirit"; the ability and inclination to try to make ethically and intellectually defensible decisions, to search for multiple meanings, look for alternatives, and take another person's perspective; overcome the typical childhood tendency to be egocentric (Inhelder and Pinget, 1958; Selman, 1980).

So of special interest in FHA, then, is:

1. How can the organization help members expand their knowledge base or build conceptual complexity as a base for critical thinking?
2. How can FHA help build both metacognitive and non-executive thinking skills?
3. How can FHA enhance the critical spirit; the disposition to want to make the best (most defensible) decisions, and take the best actions possible?

According to Brown and Paolucci's conceptualization, we are concerned particularly about three kinds of actions family members take: 1) technical or instrumental (satisfying physical and aesthetic needs) 2) communicative (promoting mutual understanding within the family and outside world), and 3) emancipative (evaluating conditions in families and society that affect both, making value decisions based on ethical considerations, and being proactive in shaping work and family styles).

The FHA Climate for Critical Thinking

The literature contains mixed recommendations for facilitating development of the components of critical thinking. However, it is fairly typical to see these suggestions:

1. Devote conscious attention to thinking
2. Teaching skills directly
3. Provide opportunities for interaction through cooperative learning and discussion.

The FHA organization has historically provided an ideal climate for acting on these suggestions, particularly the third. The philosophy of cooperation and cooperative learning has formed the foundation of FHA since its inception, and is still emphasized, although competitive and individualistic goal structures are also recognized as valuable vehicles for certain types of learning. Today, the national organization recommends using a blend of 80% cooperative, 10% competitive, and 10% individualized activities (Olcott and Osburn, 1985; FHA... , 1982). These recommendations were based on Johnson and Johnson's research concerning the outcomes of cooperative group learning (Johnson and Johnson, 1975, p. 14; Johnson and Johnson, 1985, pp. 56-57). They have found that cooperative learning facilitates:

1. Greater retention of factual information

2. Greater elaborative and integrative thinking (formation, expansion, and application of conceptual knowledge)
3. Development of higher level thinking abilities
4. More positive attitudes toward the subject being studied and greater motivation to continue learning in the area
5. Greater group cohesion, identification with learning partners, and acceptance of individual differences
6. Greater acceptance of responsibility for one's own learning.

FHA Strategies that Facilitate Critical Thinking

I'd like to now just highlight some of the strategies that are being, and might be used, within FHA to facilitate development of ıe requisites for critical thinking; an extensive knowledge base, cognitive skills, and the critical spirit.

Expanding the knowledge base/building conceptual complexity

Research has shown that knowledge is more easily retrieved when clustered in large conceptual categories and integrated with previous understandings (Laster, 1985, p. 12). Further, active cognitive processing of information facilitates its acquisition and storage in large categories. This seems to occur most easily when:

- the information is presented and analyzed in vivid ways, such as in face-to-face interactions, real life experiences, and case examples involving oral summarization and discussion with others (Johnson and Johnson, 1985, p. 54).
- Learners are involved in teaching each other ways of thinking about problem situations (Johnson and Johnson, 1985). The old adage that the best way to learn something is to teach it to another has been borne out in research. People organize knowledge in much more complex and efficient ways when they are learning to teach others (Allen, 1976; Annis, 1983; Gartner,

Kohler, and Reessman, 1971; Murray, 1983).

- Learners are held accountable for their own learning and provide support and assistance to others when needed (Johnson and Johnson, 1975, 1983; Johnson, Johnson, & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson, and Skon, 1981).
- Learners have ample opportunities to take opposing stances on issues, explore differences in opinions and information, and examine relationships between qualitative and quantitative information (Johnson, 1979; Johnson and Johnson, 1979, 1984).

Peer education projects such as those suggested in the FHA resources, The Student Body (1985) and Families and Futures (1982), are excellent strategies for promoting active cognitive processing of information. Some examples:

- A chapter may choose to become involved in researching media messages that may relate to food-related behavior, family relationships, consumer behavior, images of male and female roles, work attitudes or career choices (Families and Futures, 1982, p. 22; Way, 1983) and design a school or community project to create awareness of the content of these messages and hypothesized impact on individuals and families.
- Chapter members may choose to focus on food-related responsibilities from different perspectives: individual, family, national, international. They might choose to seek information about problems of malnutrition in the U.S., problems in the world food supply, and alternative food sources, and explore differences in opinions and information. They might choose to research food waste in their homes, school and/or community and then design a project to create awareness of the issues and promote changes they perceive are needed (Feed, Need, Greed, 1980; Johnson and Johnson, 1985).

Peer education projects involving inquiry, academic controversy, and

cooperative learning could be designed to relate to any area of home economics education (see Johnson, 1979; Johnson and Johnson, 1979 and 1984). However, to ensure they build conceptual complexity, it will be helpful if FHA members have opportunities to take responsibility for their own learning; carry out their own inquiry; identify, discuss, and summarize multiple facts and opinions; and design and carry out their own peer education strategies.

A number of models of teaching (Joyce and Weil, 1980; Joyce, 1985) have been developed that stress group interaction and assist learners with the inquiry process. They are as appropriate for informal educational settings as formal; and might well be used by FHA members in defining and/or implementing peer education projects. FHA members may have learned about these models in their home economics classes, or they may choose to learn about them as an FHA activity. Included are (Joyce and Weil, 1980): Herbert Thelen's group investigation model which emphasizes academic inquiry, the construction of knowledge, and social process learning (pp. 226-240); Fannie and Goerge Shaftels' role playing model that is designed to help learners study personal values and clarify their positions (pp. 241-259); Donald Oliver's jurisprudential inquiry model that provides a framework for analyzing social issues and emphasizes understanding others' perspectives or roles (pp. 260-276); and Massialas and Cox's social inquiry model which stresses inquiry into social life but emphasizes the tentative nature of knowledge and commitment to solving social problems.

Building Metacognitive (Executive) and Nonexecutive Thinking Skills

Planning, representation, and self-monitoring are recognized metacognitive thinking skills. These skills are believed to be especially important in the process of rationally deciding what to do and believe as family members, citizens, and workers.

The FHA Planning Process provides an ideal framework for helping members

build metacognitive skills. The steps of the Planning Process are (FHA, 1982, pp. 24-30): 1) identify concerns, 2) set a goal, 3) form a plan, 4) act, and 5) follow up.

To focus on building metacognitive skills when using the process, the following strategies in each step might be useful:

1. Identify Concerns - focus on perennial (long-term) concerns of families, work, and/or work/family relations (Brown, 1980, pp. 56-82) and consider multiple ways of representing concerns. For example, one might consider representing teen pregnancy concerns from the personal, family, social, economic, religious, ethnic, and/or historical perspectives. One might also consider representing these concerns in terms of types of knowledge: theoretical, technical, and/or practical (The Use of Knowledge... 1980).
2. Set a Goal - consider the contexts of suggested goals to assess their possible impact/appropriateness for society as well as self and family; identify sub-goals or milestones for goals formulated.
3. Form a Plan - identify and weigh alternative strategies, including operational sequences for achieving sub-goals and goals; anticipate possible stumbling blocks and strategies for avoiding them; identify knowledges, skills, abilities, and others resources needed to take action, and strategies for securing them; identify and capitalize on preferred learning styles (Laster, 1985, p. 16). With respect to learning styles, it may be appropriate to focus on cognitive, affective, and/or physiological dimensions of learning style.
4. Act - consciously monitor progress in terms of sub-goals and strategies selected; anticipate new barriers to successful outcomes; continuously assess need for changes in goals and plans, and make needed changes.

5. Follow-up - reflect on the action in terms of outcomes, but also in terms of a) degree to which the concern/problem was adequately represented, b) appropriateness of goals and sub-goals selected, and c) appropriateness of planned strategies and effectiveness of any strategy modifications made.

Besides these suggestions for building metacognitive skills while using the Planning Process to identify and carry out content-related projects, FHA members and advisors may find it helpful to try other more direct strategies in building metacognitive skills. These might include undertaking peer education projects that involve teaching others about the components of metacognition, investigating the use of metacognitive thinking skills in fulfilling various work and family roles, and/or informing others about the role of metacognition in home economics education. One program for teaching metacognitive skills that may be helpful is Philosophy for Children (Lipman, Sharp, and Oscanyan, 1980; Lipman, 1984).

FHA also provides an ideal climate for helping members build non-executive thinking skills. Lists of these are plentiful (e.g., Ennis, 1967 and 1980; Morante and Wesky, 1984) as are curriculum guides to help develop them (e.g., Barnes, et al., 1978; DeBono, 1983; Feuerstein, Rand, Hoffman, and Miller, 1980; Meeker, 1969; Seiger-Ehrenberg, 1982). Members may wish to identify and study these themselves and/or incorporate them in peer education projects that are designed and implemented.*

For example, students may wish to focus variously on:

- building hypotheses
- developing criteria

* For an excellent overview of curriculum materials designed to teach various kinds of thinking skills, see Nickerson, 1984.

- discriminating between definition and example, and fact and opinion
- judging relevance of information
- recognizing false analogies and slanted arguments
- testing generalizations
- outlining and summarizing

These and many other non-executive thinking skills could be appropriately addressed in just about any FHA project.

Thinking skills curriculum guides provide one resource that is available to FHA members and advisors for stressing nonexecutive thinking skills. Formal models of teaching are another. Among these models included in Joyce and Weil's Models of Teaching (1980) are: Jerome Bruner's concept attainment model (pp. 2-46) and Helda Taba's inductive thinking model (pp. 47-60) which both focus on the inductive reasoning process; Richard Suchman's inquiry training model (pp. 61-74) that helps learners organize data, examine cause and effect relationships, and build and test theories; and David Ausubel's advance organizers model (pp. 74-93) which is designed to strengthen cognitive organization in a deductive fashion.

Building the "Critical Spirit"

The relationship between affect and cognition has long been recognized. John Dewey, for example, wrote in 1933 (pp. 29 and 34):

> "Ability to train thought is not achieved merely by knowledge of the best forms of thought... Moreover, there are no sets of exercises in correct thinking whose repeated performance will cause one to be a good thinker. The information and the exercises are both of value. But no individual realizes their value except as he is personally animated by certain dominant attitudes in his own character.
>
> ... If we were compelled to make a choice between these personal attitudes (open-mindedness, wholehearted interest, responsibility in facing consequences) and knowledge about the privileges of logical reasoning... we should decide for the former. Fortunately, no such choice has to be made because there is no opposition between personal attitudes and logical processes... what is needed is to weave them into unity."

Richard Paul (1982, 1984), current director of the Center for Critical Thinking and Moral Critique at Sonorna State University, underscores the importance of affective processes in his differentiation between critical thinking in the "strong" and "weak" senses. In the weak sense, critical thinking consists of the development only of technical reasoning skills. In the strong sense, it consists of the development of emancipatory reasoning skills; those that generate insight into ones own affective processes as well as cognitive and that produce openness to and comfortableness with dialectical analysis (the weighing and reconciling of contradictory arguments and news through dialogue, discussion, and debate).

It seems to me that providing a climate within which the "critical spirit" can develop is entirely consistent with the goals of the FHA organization. Time and again, in FHA resource materials we see such statements as (FHA, 1982):

> "youth can think and act seriously and responsibly if given the chance" (p. ix)
>
> "youth must be involved in decisions that affect them" (p. ix)
>
> "we have the ability to determine the quality of our lives for we have energy, imagination and courage" (p. xi).

The climate exists within FHA for the healthy development of the critical spirit. Advisors can maintain and strengthen this climate in a variety of ways. Among these are (Glaser, 1985; Paul, 1984; Sabini and Silver, 1985):

1. Facilitating as much focus on long-term family and societal issues as on shorter-term technical issues and problems; or giving as much attention to idea-centered projects as to skill-centered projects.
2. Encouraging respectful weighing of unorthodox and conflicting points of view.
3. Discouraging hasty decision-making based upon limited knowledge, or on only one kind of knowledge (e.g., theoretical or technical).

4. Reinforcing careful listening, cooperative building of ideas, and respect for different ways of expressing ideas.
5. Encouraging reliance on self as well as experts to construct knowledge and make judgments about what to do or believe.

Future Homemakers of America has indeed much to offer students in home economics education. However, it may be time to make that more broadly known in more specific ways. One specific contribution the organization can and is making on behalf of families and workers is facilitating the development of critical thinking skills. This contribution is but one more reason for:

- o teacher educators to prepare future FHA advisors,
- o home economics teachers to form, maintain, and expand FHA and HERO chapters,
- o students to participate in FHA activities, and
- o administrators to support home economics education.

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BIBLIOGRAPHY

Allen, V. (1976). Children as teachers: Theory and research on tutoring. New York: Academic Press.

Annis, L. (1983). The processes and effects of peer tutoring. Human Learning, 2, 39-47.

Barnes, E., Wenck, L.S., Burgdorf, A., and Bell, H.H., Jr. (1978). Reading, thinking, and reasoning skills program Level VIII - Seascope. Austin, TX: Steck-Vaughn Co.

Brown, M.M. (1980). What is home economics education? Minneapolis, MN: Minnesota Research and Development Center for Vocational Education, University of Minnesota.

Brown, M. and Paolucci, B. (1979). Home Economics: A Definiation. Washington, DC: American Home Economics Association.

DeBono, E. (1983). Cognitive research trust (CoRT). Elmsford, NY: Pergamon Press.

DeBono, E. (1984). Critical thinking is not enough. Educational Leadership, 42 (1), 16-17.

Dewey, J. (1933). How we think. Boston: D. C. Heath & Co.

Ennis, R. H. (1967). A concept of critical thinking: a proposed basis for research in the teaching and evaluation of critical thinking ability. In B.P. Komisar and C.J.B. Macmillan (Eds.), Psychological concepts in education. Chicago: Rand McNally, 114-118.

Ennis, R.H. (1980). A conception of rational thinking. In Jerrold R. Coombs (ed.) Philosophy of education 1979. Bloomington, IL: Philosophy of Education Society.

Ennis R. H. (February 5, 19[illegible] Goals for a critical-thinking/reasoning curriculum. Unpublished manuscript, [illegible]ersity of Illinois.

Ennis, R.H. (1981). Rational thinking and educational practice. In Jonas F. Soltis (ed.). Philosophy and education (Eightieth Yearbook of the National Society for the Study of Education, Part I), Chicago: The National Society for the Study of Education.

Ennis, R.H. and Mellman, J. (1985). Cornell critical thinking tests, level X and level 2. Pacific Grove, CA: Midwest Publications.

Families and futures: a peer education approach to individual and family health. Reston, VA: Future Homemakers of America, 1982.

Feed, need, greed (1980). Cambridge, MA: Science for the People.

Feely, T., Jr. (1976). Critical thinking: Toward a definition, parodigm, and research agenda. Theory and Research in Social Education 4 (1), 1-19.

Feuerstein, R., Rand, Y., Hoffman, M.B., and Miller, R. (1980). Instrumental enrichment: An intervention program for cognitive modifiability. Baltimore, MD: University Park Press.

Future homemakers of America handbook for youth-centered leadership. (1982). Reston, VA: Future Homemakers of America.

Gortner, A., Kohler, M., and Reissman, F. (1971). Children teach children: Learning by teaching. New York: Harper and Row.

Glaser, E.M. (1985). Critical thinking: Educating for responsible citizenship in a democracy. National Forum, 65 (1), 24-27.

Inhelder, B. and Piaget, J. (1958). The growth of logical thinking (A. Parsons and S. Milgram, trans.). New York: Basic Books.

Johnson, D.W. (1979). Educational psychology. Englewood Cliffs, NJ: Prentice-Hall.

Johnson, D.W. and Johnson, R. (1979). Conflict in the classroom: Controversy and learning. Review of Education Research, 49, 51-70.

Johnson, D.W. and Johnson, R.T. (1975). Learning together and alone. Englewood Cliffs, NJ: Prentice-Hall.

Johnson, D.W. and Johnson, R.T. (1985). Nutrition education: A model for effectiveness, a synthesis of research. Journal of Nutrition Education, 17 (2), June Supplement.

Johnson, R. and Johnson, D.W. (Eds.). (1984). Structuring cooperative learning: Lesson plans for teachers. Minneapolis, MN: Interaction Book Co.

Johnson, D.W. and Johnson R. (1983). The socialization and achievement crisis: Are cooperative learning experiences the solution? In L. Beckman (Ed.), Applied Social Psychology Annal 4. Beverly Hills, CA: Sage.

Johnson, D.W., Johnson, R., and Maruyama, G. (1983). Interdependence and interpersonal attraction among heterogeneous and homogeneous individuals: A theoretical formulation and meta-analysis of the research. Review of Educational Research, 53, 5-54.

Johnson, D.W., Maruyama, G., Johnson, R., Nelson, D., and Skon, L. (1981). Effects of cooperative, competitive, and individualistic goal structures on achievement: A meta-analysis. Psychological Bulletin, 89, 47-62.

Joyce, B. (1985). Models for teaching thinking. Educational Leadership, 42 (8), 4-8.

Joyce, B. and Weil, M. (1980). Models of teaching. Englewood Cliffs, NJ: Prentice-Hall.

Larkin, J.H., McDermott, J., Simon, D.P., and Simon, M.A. (1980). Expert and novice performance in solving physics problems. Science, 208, 1335-1342.

Laster, J. (1985). Toward excellence in secondary vocational education: Using cognitive psychology in curriculum planning. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.

Lipman, M. (1984). The cultivation of reasoning through philosophy. Educational Leadership, 42(1), 51-56.

Lipman, M., Sharp, A.M., and Oscanyan, F. (1980). Philosophy in the Classroom. Philadelphia, PA: Temple University Press.

Meeker, M.N. (1969). The structure of the intellect: Its interpretation and uses. Columbus, OH: Charles E. Merrill.

Morante, E.A. and Wesky, A. (1984). Assessment of reasoning abilities. Educational Leadership, 42(1), 71-74.

Murray, F. (1983). Cognitive benefits of teaching on the teacher. Paper presented at the American Education Research ASsociation Meeting, Montreal, Quebec.

Nickerson, R.S. (1984). Kinds of thinking taught in current programs. Educational Leadership, 42(1), 26-36.

Norris, S.P. (1985). Synthesis of research on critical thinking. Educational Leadership, 42(8), 40-45.

Olcott, D. and Osborn, M. (1985). Ways of working: Cooperation, competition, and individualization. Teen Times, 40(3), 18-19.

Paul, R.W. (1985). Bloom's taxonomy and critical thinking instruction. Educational Leadership, 42(8), 36-39.

Paul, R.W. (1984). Critical thinking: Fundamental to education for a free society. Educational Leadership, 42(1), 4-14.

Paul, R. (1982). Teaching critical thinking in the "strong" sense: A focus on self-deception, world views, and a dialectical mode of analysis. Informal Logic Newsletter, 4(2), 2-7.

Sabini, J. and Silver, M. (1985). Critical thinking and obedience to authority. National Forum, 65(1), 13-17.

Seiger-Ehrenberg, S. (1982). The basics program: Building and applying strategies for intellectual competencies in students. Coshocton, OH: Institute for Curriculum and Instruction.

Selman, R.L. (1980). The growth of interpersonal understanding: Developmental and clinical analyses. New York: Academic Press.

Shipman, V. (1983). New Jersey test of reasoning skills. Upper Montclair NJ: IAPC, Test Division, Montclair State College.

Simon, H.A. (1980). Problem solving and education. In D. T. Tuma and F. Reif (Eds.) Problem solving and education. Hillsdale, NJ: Lawrence Erlbaum Associates.

Skinner, S.B. (1976). Cognitive development: A prerequisite for critical thinking. The Clearing House, 49, 292-299.

The Student Body: A teen peer education program of Future Homemakers of America, Inc. Reston, VA: Future Homemakers of America, 1985.

The use of knowledge: A family-focused approach (1980). Madison, WI: Wisconsin Department of Public Instruction (a slide-tape presentation, project No. 9-5979).

Vocational student organizations: Contributing to excellence. (1984). Washington, DC: National Advisory Council on Vocational Education, U.S. Department of Education.

Wagner, R.K. and Sternberg, R.J. (1984). Alternative conceptions of intelligence and their implications for education. Review of Educational Research, 54, 179-223.

Watson, G. and Glaser, E.M. (1980). Watson-Glaser critical thinking appraisal (2 forms). Cleveland, OH: The Psychological Corporation, a subsidiary of Harcourt Brace Javonovich.

Way, W.L. (1983). Content analysis: A tool for home economics researchers in uncovering subtle messages from contemporary life. Journal of Vocational Home Economics Education, 1(2), 3-31.