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Teaching for Understanding in Health Education: The Role of Critical and Creative Thinking Skills Within Constructivism Theory

Valerie A. Ubbes, Jill M. Black, and Judith A. Ausherman

ABSTRACT

This article introduces the concept of teaching for understanding through the development of critical and creative thinking skills. We will address four key questions: (1) Why should we construct knowledge for understanding in health education? (2) How do we teach for understanding in health education? (3) What is the theoretical basis for critical thinking in health education? (4) Why should creative thinking be included in health education? Our ideas about teaching and learning are shaped by a learner-centered pedagogy. A teacher-directed pedagogy can also be useful in health education. However, the former approach brings teachers and students together as collaborative learners during the learning process. To assess whether learners know and understand health-related content, health educators will need to think critically and creatively, understand contexts, engage col-laboratively with learners, and reflect on the synergistic process of teaching and learning.

Introduction

Health education literature is scattered throughout physical, biomedical, behavioral, educational, psychological, and social science journals (Frazer, Kukulka, & Richardson, 1988). To date, health education scholars have not fully outlined how critical and creative thinking skills can be used as cognitive tools for studying our behavioral science and educational theories as parallel, complementary processes. Educational theory, which encompasses curriculum, instruction, and assessment, needs further conceptualization in health education. Constructivism theory may be one viable lens for viewing teaching and learning in health education. In educational contexts where participants are engaged in critical and creative thinking, assumptions are open to question, divergent views are aggressively sought, and inquiry is not biased in favor of a particular outcome (Kurfiss, 1988). The depth of these discussions obviously depends on the cognitive development of the learners (Baxter-Magolda, 1995; King & Baxter-Magolda, 1996; Obeidallah et al., 1993; Piaget, 1952). However, all learners can be encouraged to be inquisitive and learn to generate questions about themselves and their world. Younger children will contextualize

“their ways of knowing” from themselves, family, and friends, but adolescents will also expand their world views to more community and global concerns. For many learners, learning how to generate questions through problem posing and framing (Fernandez-Balboa, 1993; Friere & Faundez, 1989; Shor, 1992) can be just as instructive as knowing the answers.

When health educators query children and adolescents about their health needs and interests (Trucano, 1984), effective curriculum development can result. Inquiry-based curriculum and instruction can build on what learners already know and extend to what they want to know. Inquiry-based learning can also help academicians to refine our educational theories and models in health education. For example, this article will discuss constructivism theory as a basis for critical and creative thinking. We will address four key questions: (1) Why should we construct knowledge for understanding in health education? (2) How do we teach for understanding in health education? (3) What is the theoretical basis for critical thinking in health education? (4) Why should creative thinking be included in health education?

The main purpose of our article is to

explore how critical and creative thinking can extend our understanding of health-related content. To help learners improve how they think, “teaching has changed from covering the content to ensuring that students understand and know what they have learned. The switch has been to a less-is-more philosophy” (Halpern & Nummedal, 1995). Our theoretical assumption is that learners who participate in both individual and collaborative processes can construct and reconstruct meanings about their health and educational status better than either process alone. When learners are encouraged to generate critical questions about self and others and to probe health content for underlying meanings and assumptions, they are better able to understand the hows and whys of health behavior.

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Why Should We Construct Knowledge for Understanding in Health Education?

Health educators need to refine the cognitive domain of our profession. Knowledge acquisition is a needed component in health education pedagogy and has been recognized as one of five health education philosophies (Welle, Russell, & Kittleson, 1995). However, behavioral outcomes, namely health behaviors, have emerged as the predominate focus in much of the literature and as the leading philosophical preference in educational settings (Welle et al., 1995). We believe there is a continuing need for scholarly work that clarifies how knowledge is epistemologically and pedagogically defined and established in health education.

Constructivist theory suggests that learners construct and reconstruct information to learn (Brooks & Brooks, 1993). These constructions (and understandings) evolve when learners actively gather, generate, process, and personalize health-related information rather than passively receive knowledge from teachers or health-related resources. We can explicitly teach learners to organize existent and new information by using concept organizers (Bellanca, 1992; Carter & Solmon, 1994; Maylath, 1989; Wooley, 1995). Wurman (1989) claims that "knowing how things are organized is the key to understanding them" (p. 8). He offers these guiding questions for consideration: "How can I look at this information? How would reorganizing the information change its meaning? How can I arrange the information to shed new light on the problem? How can I put the information in a different context?" When existing information is reorganized and connected in different ways, new patterns can lead to new meanings and interpretations. Consequently, a higher level of knowing results; this is called understanding.

In health education, we know that sharing of health-related information does not often enlighten our learners unless equal time is spent on reducing the misinformation and misconceptions that they bring to the lesson or session. When new information is disseminated in the form of basic information (facts), the depth of understanding is limited. Several variables need to be considered when sharing health-related content with participants: the developmental readiness of the

learners (Bibace & Walsh, 1981); issues of age, race, ethnicity, socioeconomic status, and gender (Fernandez-Balboa, 1993); the declarative and procedural knowledge of the learner (Marzano, 1992); the declarative and procedural knowledge of the teacher (Rink, 1997); the declarative and procedural knowledge of the curriculum framework (Kendall & Marzano, 1996); the learning environment (Barr & Tagg, 1995); and a wide range of selected methodologies.

If we really intend to teach for understanding, we also need to teach toward concepts so that learners can see meaningful new patterns and relationships between the topics. One of the five principles of constructivist theory (Brooks & Brooks, 1993) includes the structuring of learning around "big ideas" or primary concepts. For example, the macro concept in the *National Health Education Standards* is health literacy. Other concepts in the seven broad standard statements include prevention, culture, behavior, risks, and communication.

King (1995) suggests that learners can exhibit "the habit of inquiry by learning to ask thoughtful questions—of themselves and of each other—about the material they read, hear in lectures, and encounter during class discussions." She states: "Good thinkers are always asking What does this mean? What is the nature of this? Is there another way to look at it? Why is this happening? What is the evidence for this? and How can I be sure? Asking questions such as these and using them to understand the world around us is what characterizes critical thinking."

The *National Health Education Standards* (Joint Committee, 1995) indicate that critical thinking and problem solving, along with creative thinking and decision making, are appropriate skills for learners in grades K-12. The standards document states that a health-literate person is a critical thinker and problem solver; a responsible, productive citizen; a self-directed learner; and an effective communicator. Five of the seven health education standards emphasize that students will demonstrate the ability to do behavioral outcomes. We believe that the use of cognitive psychology within pedagogy will help health educators to guide and facilitate learners to understand the reasons, that is, the "whys," for doing health-enhancing behaviors rather than simply knowing the "whats" and "hows" with

minimal practice. Both the knowing and doing are important skills. Generation of health-related content based on the developmental readiness of the learners requires that both teachers and learners do the thinking. Within constructivist theory, this means that health educators do more than teach the content. When teaching for understanding, health educators must *facilitate* the students to work with the content. As such, when learners are challenged to go beyond facts into constructing personal meaning and understandings about health, their behavioral outcomes may be enhanced and extended as well.

We believe that behavior change theory must evolve simultaneously with the conceptualizations of the cognitive and affective domains so that people are treated as holistic learners. We especially need to emphasize the first step in educational planning in which the health needs and interests of learners are assessed initially and continually throughout the educational experience. This requires an assessment process of coming to know the learner from multiple perspectives, for instance, race, age, gender, culture, intellectual, developmental, and many others. It also supports another guiding principle of constructivism, which is to seek and value students' points of view.

Learners will demonstrate many *behaviors* when they have learned to think. Learners will demonstrate more persistence in problem solving, less impulsiveness when answering questions, increased ability to listen with empathy, acceptance of ambiguities, improved self-assessments, improved questioning ability, improved transfer of learning between different situations, and increased metacognition (thinking about thinking) (Costa & Lowery, 1989).

Constructivist approaches try not to view the learner's behaviors as objects of analyses that can be manipulated and controlled. Instead, constructivism assesses student learning in the context of teaching and adapts the curriculum to address students' suppositions (Brooks and Brooks, 1993). When learners (and teachers) construct their own knowledge and critique the received wisdom of their culture, an emancipatory curriculum may evolve. Grundy and Henry (1995) describe an emancipatory interest in curriculum which "acknowledges the dy-

dynamic interrelationship of knowledge and power . . . Emancipatory knowledge is thus concerned with confronting issues of power and domination, and with empowering individuals and groups to act with autonomy and responsibility." The intent of this curricular approach would not aim to control the production or application of knowledge. However, as the learner copes with the conflict of personal meaning within the curriculum, "a new form of knowledge emerges, one which is authentic, which is empowering and liberating" for the learner. This inquiry approach requires "an interactive process, in which teacher and students together determine the curriculum, in order to make meaning of the world" (Grundy & Henry, 1995). As we discuss in the next section, this speaks to the need for learner-centered lessons in health education *balanced* with the more traditional teacher-directed lessons. How this translates into comprehensive, categorical, and integrated curricula is the focus of a future article.

How Do We Teach for Understanding in Health Education?

This section will offer three suggestions on how to teach for understanding in health education: (1) the use of collaborative learning, (2) focus on the developmental needs and interests of the learners, and (3) the need for systems thinking in addition to linear thinking to develop multiple perspectives.

Use of Collaborative Learning

First, we believe that an individual learns better when there is a balance between learner-centered lessons and teacher-directed lessons. Learner-centered lessons are often grounded in inquiry and facilitated by the teacher; in short, students help to determine the topics and questions for learning. When students and teachers collaborate as a team to determine some of the lessons, both students and teachers become the learners. As such, the curriculum becomes more learner-centered and less hierarchical (Arrendondo, Brody, Zimmerman, & Moffett, 1995). Collaborative approaches also help learners to draw out each other's ideas, enter into and elaborate on them, and build together a concept that none of them could have constructed alone (Clinchy, 1995). As one outcome to learner-centered lessons, students have the

Table 1. Suggested Questioning Techniques When Leading a Discussion

<p>Begin class with a problem or controversy.</p> <p>Allow thinking time after the question.</p> <p>Probe for completion of the response:</p> <ul style="list-style-type: none"> Probe for assumptions (What are you assuming? What is underlying what you say?) Probe for reasons and evidence (How do you know? What are your reasons for saying that?) Probe for implications and consequences (What are you implying by that? What might happen?) Probe for clarification (What do you mean by . . . ? Could you give an example?) <p>Ask for elaboration if the response is short.</p> <p>Redirect responses to other students.</p>
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Sources: Paul, 1990; Wilen, 1987

potential to learn more about health-related content that is relevant to them, and teachers learn more about their students' developmental needs, interests, and backgrounds within the context of a certain lesson. Marzano (1992) refers to learner-centered lessons as "workshop classes" and teacher-directed lessons as "presentation classes."

Constructivism places individuals in collaborative environments for learning. The *National Health Education Standards* recognize that learners need assistance in understanding personal, community, and global contexts about health. For example, the seventh standard states that "students will demonstrate the ability to advocate for personal, family, and community health" (Joint Committee, 1995). Learners often need help moving from individualistic, egocentric views of health to a community, sociocentric view of health. A more worldcentric view brings an "expanded self" with implications for optimal well-being and human potential (Fahlberg & Fahlberg, 1997). Warren (1994) states that "it is difficult, if not impossible, to consider seriously other points of view . . . if one is not aware that there *are* other points of view." Constructivism helps learners participate in cooperative learning activities so that "cognitive discrepancies" are exposed and reconciled. King (1995) states that "when we are engaged in peer interaction, we discover that our own perceptions, facts, assumptions, values, and general understandings of the material differ to a greater or lesser extent from

those of others. When confronted with these conceptual discrepancies, we want to reconcile the conflicts. To do so, we must negotiate understanding and meaning. And this negotiation, this co-construction of meaning, occurs through explaining concepts and defending our own views to each other." According to Cobb (1988), when learners engage in reconciling differences and reaching negotiated meaning, they are continually restructuring their thinking—the basic tenet of constructivism.

Focus on Developmental Needs, Interests, and Backgrounds

A second suggestion for teaching for understanding is to focus on the developmental needs, interests, and backgrounds of the learners. A developmental perspective focuses continually on how students learn, rather than focusing more typically on the content of the lesson, and/or the methodology for delivering the content. A focus on student outcomes rather than teacher outcomes is an important shift in educational theory and practice (Marzano, 1992, p. 179). Grundy & Henry (1995) remind us "to think of classroom interactions in terms of learning experiences rather than teaching strategies."

Grundy and Henry's suggestion can help us transform some of our health education practices. For example, teaching ideas are often shared for different topics, settings, and populations at professional conferences and in our health education literature. These teaching ideas can provide creative innova-

tions for our curricula and programs and assist health educators who received minimal background in pedagogy. However, we caution that a particular methodology, technique, or strategy should be secondary to the developmental needs, interests, and background of the learner(s). Health educators who make ongoing assessments of their learners during a lesson will understand the amount and extent of health-related content needed for that situation. How that information is shared, whether in didactic and/or collaborative methodologies, requires critical and creative thinking on the part of the health educator. Since health-related information can be disseminated through a variety of methodologies and technologies (the science of health education), we believe that the art of health education is knowing *what* educational tool to use *when* and with *whom*. Nunmedal and Halpern (1995) warn that "just as learning to think critically involves more than developing a repertoire of critical-thinking techniques (i.e., skills, strategies, heuristics, and models), so too learning to teach critical thinking involves more than developing a repertoire of instructional techniques." To be successful in both requires what Weimer (1993) describes as the "management of that repertoire—the ability to select from one's bag of tricks a technique relevant to the . . . moment."

Need for Systems Thinking

A third way to teach for understanding is to assist learners to recognize the limitations of value dualisms that occur through linear, dichotomous thinking (Wheatley, 1994). Warren (1994) defines value dualisms as "either-or pairs in which the disjunctive terms are seen as exclusive (rather than inclusive) and oppositional (rather than complementary), and where higher value is attributed to one disjunct than the other." Some examples of value dualisms are yes/no, white/black, head/heart, and mind/body. When value dualisms are extended to systems (relational) thinking, these same examples become yes, no, maybe; white, black, gray; head, heart, soul; and mind, body, spirit. The use of systems thinking in addition to dichotomous linear thinking can help learners develop multiple perspectives and ways of knowing.

Perry (1970) advocated moving learners from egocentric, dualistic thinking to more

mature, relativistic thinking. Gilligan (1982) reminds us also to include the female critical perspective in developmental psychology models. Many of these psychological models are first disseminated to health education students in course work from departments of educational psychology and/or psychology. Consequently, if these developmental theories are not revisited and extended within health education course work (and developed at a higher sophistication in our professional literature), learner-centered models can be overshadowed by a teacher-directed curriculum or by instructional methods that may not be authentic or relevant for the learners. Systems thinking can broaden our understanding of health and education concepts by seeking relationships between and among different variables. This is very important for preservice teachers during their professional development, and it is valuable for pre-K–12 learners who receive limited health instruction during their developmental years.

What Is the Theoretical Basis for Critical Thinking in Health Education?

This section will expand on the theory of critical thinking within health education. Skill-based curricular approaches are preferred. For example, Fetro (1992) has advocated the understanding and integration of personal and social skills—for example, decision making, refusal skills, goal setting, stress management—across health curricula. These personal and social skills could also be labeled thinking skills (Ubbes, 1997), but we also hypothesize that they could be a combination of cognitive, affective, and psychomotor actions within personal and social contexts. Health educators should help learners understand how a personal or social skill used in one situation can transfer to a different situation or context. Critical thinking is a necessary component of this learning process (Scales, 1993). Rehearsal of personal and social skills within and across different situations and contexts is critical. Hostetler (1994) claims that "education aimed at critical thinking must be concerned with developing a particular content and context as opposed to focusing merely on skills. Skills certainly have their place. But while there may be techniques or skills *in* critical thinking there can be no technique of critical thinking." McPeck (1994)

agrees that "critical thinking is not a content-free *general ability*." He criticizes the offering of critical thinking as a separate course, because learners need relevant knowledge about the types of problem within the context of a field or discipline.

The *National Health Education Standards* (Joint Committee, 1995) highlight the importance of critical thinking in the context of our field or discipline. The standards define a health-literate person as "a critical thinker and problem solver who uses decision making and goal setting in a health promotion context." The standards also define a health-literate person as a responsible, productive citizen, an effective communicator, and a self-directed learner. The latter characteristic fits nicely within Marzano's (1992) Dimensions of Learning model, which uses five types of thinking to promote learning.

Warren (1994, p. 171) believes that "critical thinking always takes place within *some* conceptual framework. In this respect, critical thinking must be understood as essentially contextual, i.e., sensitive to the conceptual framework in which it is conceived, practiced and learned or taught." She reminds us that "at any given time, a conceptual framework functions for an individual as a finite lens, a 'field of vision,' in and through which information and experiences are filtered. As such, conceptual frameworks set boundaries on what one 'sees'" (p. 156).

In addition to the seven National Health Education Standards used as a framework for curriculum development in grades K–12, health educators in higher education also have a conceptual framework for the professional preparation of health educators. The *Competency-Based Framework for Professional Development of Certified Health Education Specialists* (NCHEC, 1996) provides guidelines for the development of multiple competencies and responsibilities in the profession, including thinking skills. Health educators might begin to assess which competencies require more explicit thinking skills.

In advocating a more sophisticated discussion of thinking skills in health education, we are not saying that we need to question everything. However, health educators should be moving learners beyond an initial knowledge of health-related content. Techniques like "Fat and Skinny Questions" (Fogarty & Bellanca,

1993), Bloom's taxonomy (Bloom, 1956), and KWL (Know, Want to Know, What You Learned; Marzano, 1992) can assist learners to understand health-related content. The use of questioning techniques and writing narratives (see Table 1) are helpful techniques for probing what our learners know and understand about health-related topics, issues, and problems.

The move to include fewer topics and more concepts in health education curricula may be an advantage to our learners. This will require an explicit teaching of thinking skills through less content and more rehearsal time during pre-K-12 health education classes and our professional preparation courses. Critical thinkers are needed so we can solve the challenges of our profession, among them how to have more than 22 minutes per day (or about 60 hours per year) of K-12 health instruction. Consequently, problem solvers will need to employ creative thinking skills to such challenges as explained in the next section.

Why Should Creative Thinking be Included in Health Education?

Trunnell, Evans, Richards, and Grosshans (1997) have explored the factors associated with creativity in health educators who have won university teaching awards. Participants in their study ($n = 10$) defined creativity as "the generating of something new and different . . . or taking something old and giving it a new direction or shaping it in a different way." Cinelli, Bechtel, Rose-Colley, and Nye (1995) have suggested the use of three types of questioning strategies in health instruction. One strategy is called "divergent questioning," which uses brainstorming for eliciting a variety of possible responses to a given situation. Brainstorming is one of the best creative thinking skills in health education.

When confronted with health-related challenges, learners can use critical thinking skills and both inductive (particular to general conclusions) and deductive (general to particular conclusions) reasoning to solve problems. However, reasoning and logic should not be used at the expense of thinking. Walters (1994) suggests that "thinking encourages wonder, while reasoning tends to stifle it by concentrating on immediately solvable problems" (p. 178). Wheatley (1994) talks about this process: "In our past explorations, the tradition was to discover some-

thing and then formulate it into answers and solutions that could be widely transferred. But now we are on a journey of mutual and simultaneous exploration. In my view, all we can expect from one another is new and interesting information. We cannot expect answers. Solutions . . . are a temporary event, specific to a context, developed through the relationship of persons and circumstances" (p. 151).

Antonietti (1997) states that "children should learn that, when trying to think creatively, they may have to deal with many confusing, conflicting, and ambiguous ideas." Children need to learn "to think past the obvious responses, search for more original ideas, and become aware of some mental strategies they can adopt in facing novel problems." Creativity is not needed in every situation; creativity is most needed when there is no single correct answer.

Learners in our health education classes should be encouraged to use logical, critical thinking with a willingness to take imaginative and intuitive risks. Imagination and intuition are two related and complementary processes. Walters (1994) reports that "intuitive insights often follow intensive reflection upon a particular problem within a specific context, but, when and if they arise, they are unexpected and not consciously premeditated. Characteristically they hit the subject with a sudden and comprehensive 'Aha!' impact" (p. 72). If intuitive insight is often unanticipated and spontaneous, then imagination is more planned and conscious. Barrow (1988) warns that imaginative thinking is not a mere generation of unusual ideas. As Walters (1994) states "odd or unorthodox ideas can be nonconventional without necessarily being imaginative, particularly when they are absurd, incoherent, whimsical, or delusional" (p. 71). Hence, imaginative thinking must be effective in "extending cognitive comprehension and enriching practical utility." Walters reminds that "critical thinking and creative thinking, then, are not incompatible with one another nor are they mutually exclusive. Indeed, genuine success in one entails facility in the other. It follows that the education of good thinkers requires training in both . . . (We need to provide) students with pedagogical opportunities for enhancement in imagination as well as analysis, creativity alongside justification, problem construction in addi-

tion to problem solving" (pp. 69-70).

Gardner (1993) studied the creativity of famous individuals whom he called "Exemplary Creators" and their "defining works" to determine whether creativity is domain-specific. He investigated the "triangle of creativity" by observing the "dialectics among the individual person or talent; the domain in which the individual is working; and the field of knowledgeable experts who evaluate works in the domain. No matter how talented the individual is . . . unless he or she can connect with a domain and produce works that are valued by the relevant field, it is not possible to ascertain whether that person in fact merits the epithet creative" (p. 380). Perhaps these creativity guidelines can be further explored in the health education field.

Conclusion

This article began with a discussion of why we should construct knowledge for understanding in health education. Suggestions on how to teach thinking were offered using constructivist theory as a foundation for teaching and learning. A balance between learner-centered lessons and teacher-directed lessons was suggested, including the use of a developmental perspective that focuses more on learner outcomes. The use of systems thinking can also help learners develop multiple perspectives and ways of knowing. The impact of critical and creative thinking skills needs additional discussion and development in the health education literature.

References

- Antonietti, A. (1997). Unlocking creativity. *Educational Leadership*, 54(6), 73-75.
- Arredondo, D. E., Brody, J. L., Zimmerman, D. P., & Moffett, C. A. (1995). Pushing the envelope in supervision. *Educational Leadership*, 53(3), 74-78.
- Barr, R. B., & Tagg, J. (1995). From teaching to learning—a new paradigm for undergraduate education. *Change*, 27(6), 13-25.
- Barrow, R. (1988) Some observations on the concept of imagination. In K. Egan, & D. Nadaner, (Eds.), *Imagination and Education* (pp. 79-90). New York: Teacher College Press.
- Baxter-Magolda, M. B. (1995). The integration of relational and impersonal knowing in

- young adults' epistemological development. *Journal of College Student Development*, 36(3), 205-216.
- Bellanca, J. (1992). *The cooperative think tank II: Graphic organizers to teaching thinking in the cooperative classroom*. Palatine, IL: IRI Skylight Training and Publishing, Inc.
- Bibace, R., & Walsh, M. E. (1981). *Children's conceptions of health, illness, and bodily functions*. San Francisco: Jossey-Bass Inc., Publishers.
- Bloom, B. S. (1956). *Taxonomy of educational objectives. The cognitive domain*. New York: David McKay.
- Brooks, J. G., & Brooks, M. G. (1993). *In search of understanding: The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Carter, J. A., & Solmon, M. A. (1994). Cognitive mapping: An activity for health education. *Journal of Health Education*, 25(2), 108-109.
- Cinelli, B., Bechtel, L. J., Rose-Colley, M., & Nye, R. (1995). Critical thinking skills in health education. *Journal of Health Education*, 26(2), 119-120.
- Clinchy, B. M. (1995). A connected approach to the teaching of developmental psychology. *Teaching of Psychology*, 22(2), 100-104.
- Cobb, P. (1988). The tensions between theories of learning and instruction in mathematics education. *Educational Psychologist*, 23, 78-103.
- Costa, A., & Lowery, L. (1989). *Techniques for teaching thinking*. Pacific Grove, CA: Midwest Pub.
- Fahlberg, L. L., & Fahlberg, L. A. (1997). Wellness re-examined: A cross-cultural perspective. *American Journal of Health Studies*, 13(1), 8-16.
- Fernandez-Balboa, J. M. (1993). Critical pedagogy: Making critical thinking really critical. *Analytic Teaching*, 13(2), 61-72.
- Fetro, J. V. (1992). *Personal and social skills: Understanding and integrating competencies across health content*. Santa Cruz, CA: ETR Associates.
- Fogarty, R., & Bellanca, J. (1993). *Patterns for thinking, patterns for transfer: A cooperative team approach for critical and creative thinking in the classroom* (2nd ed.). Palatine, IL: IRI/Skylight Publishing.
- Frazer, G. H., Kukulka, G., & Richardson, C. E. (1988). An assessment of professional opinion concerning critical research issues in health education. *Advances in Health Education*, 1, 27-42.
- Friere, P., & Faundez, A. (1989). *Learning to question*. New York: Pantheon.
- Gardner, H. (1993). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi*. New York: HarperCollins.
- Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University Press.
- Grundy, S., & Henry, M. (1995). Which way home economics? An examination of the conceptual orientation of home economics curricula. *Journal of Curriculum Studies*, 27(3), 281-297.
- Halpern, D. F., & Nummedal, S. G. (1995). Closing thoughts about helping students improve how they think. *Teaching of Psychology*, 22(1), 82-83.
- Hostetler, K. (1994). Community and neutrality in critical thought: A nonobjectivist view on the conduct and teaching of critical thinking. In K. S. Walters (Ed.), *Rethinking reason: New perspectives in critical thinking* (pp. 135-154). Albany, NY: State University of New York Press.
- Joint Committee on National Health Education Standards (1995). *National health education standards: Achieving health literacy*. Atlanta, GA: American Cancer Society, Inc.
- Kendall, J. S., & Marzano, R. J. (1996). *Content knowledge: A compendium of standards and benchmarks for K-12 education*. Aurora, CO: Mid-Continent Regional Educational Laboratory.
- King, A. (1995). Inquiring minds really do want to know: Using questioning to teach critical thinking. *Teaching of Psychology*, 22(1), 13-17.
- King, P. M., & Baxter Magolda, M. B. (1996). A developmental perspective on learning. *Journal of College Student Development*, 37(2), 163-173.
- Kurfiss, J. G. (1988). *Critical thinking: Theory, research, practice, and possibilities* (ASHE-ERIC Higher Education Report No. 2). Washington, DC: Association for the Study of Higher Education.
- Marzano, R. J. (1992). *A different kind of classroom: Teaching with dimensions of learning*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Maylath, N. S. (1989). Constructing concept maps for health instruction. *Journal of School Health*, 59(6), 269-270.
- McPeck, J. E. (1994). Critical thinking and the "trivial pursuit" theory of knowledge. In K. S. Walters (Ed.), *Rethinking reason: New perspectives in critical thinking* (pp. 101-117). Albany, NY: State University of New York Press.
- Nunmedal, S. G., & Halpern, D. F. (1995). Introduction: Making the case for "Psychologists Teach Critical Thinking." *Teaching of Psychology*, 22(1), 1-5.
- Obeidallah, D., Turner, P., Iannotti, R. J., O'Brien, R. W., Haynie, D., & Galper, D. (1993). Investigating children's knowledge and understanding of AIDS. *Journal of School Health*, 63(3), 125-129.
- Paul, R. (1990). Socratic questioning. In R. Paul (Ed.), *Critical thinking: What every person needs to survive in a rapidly changing world*. Rohnert Park, CA: Sonoma State University, Center for Critical Thinking.
- Perry, W. (1970). *Form of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart & Winston.
- Piaget, J. (1952). *The origins of intelligence in children*. New York: International Universities Press.
- Rink, J. E. (1997). Teacher education programs: The role of context in learning how to teach. *Journal of Physical Education, Recreation, and Dance*, 68(1), 17-24.
- Scales, P. C. (1993). The centrality of health education to developing young adolescents' critical thinking. *Journal of Health Education*, 24(6), S10-S14.
- Shor, I. (1992). *Empowering education: Critical thinking for social change*. Chicago: The University of Chicago Press.
- The National Commission for Health Education Credentialing (NCHEC) (1996). *The competency-based framework for professional development of certified health education specialist*. Allentown, PA: NCHEC.
- Trucano, L. (1984). *Students speak: A survey of health interests and concerns (kindergarten through twelfth grade)*. Seattle, WA: Comprehensive Health Education Foundation.
- Trunnell, E. P., Evans, C., Richards, B., & Grosshans, O. (1997). Factors associated with creativity in health educators who

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Worksheet 1: Standard of Living

You will need to consult outside sources to complete this questionnaire. Some sources that may be of benefit to you are parents, free real estate guides, newspapers, *Occupational Outlook Handbook*, and/or other resources from your library.

1. Provide a description of the kind of house and property that you would like to have by the time you are 30 years old.
 2. What would be the typical monthly payment (in today's dollars) for your desired home?
 3. How much would you pay monthly for gas, electricity, water, and sanitation for this type of home?
 4. Did your house payment include property tax, bank interest, and insurance? If not, how much would these cost you per month?
 5. What kind of car would you like to have as an adult?
 6. How much would it cost you per month to make the payments (including any bank interest)?
 7. How much would it cost for gasoline and insurance per month? (You can get an estimation of insurance from an insurance company and then divide the figure to record a monthly amount.)
 8. Would you like to eat out at restaurants a lot? What kind of food would you like to eat at home?
 9. How much money would you need to allow yourself per month for the above food expenses?
 10. What kind of recreational activities would you like to do each month (i.e., go to the movies, play miniature golf, go to concerts, go on trips, play arcades, etc.)? How much would you need per month for this?
 11. What kind of clothes would you like to own?
 12. What amount of money per month would be needed to provide you with the kind of clothes you desire?
 13. What type of furnishings for your home and other possessions do you wish to own?
 14. How much money would be needed each month for the type of possessions you desire?
 15. How much would you spend each month for medical insurance?
 16. How much money would you want to give for charity or tithing?
 17. Would you want a telephone? What would you expect to pay each month for your phone bill (including any long-distance charges)?
 18. How much would you expect to pay each month for domestic items and miscellaneous (i.e., glass cleaner, bathroom cleaners, mops, garbage bags, contraceptives, etc.)?
 19. How much money would you need to put aside each month for possible medical needs including office visits and medication?
 20. How much would you save for retirement (most financial planners recommend saving/investing, at a bare minimum, 10% of your income)?
 21. Do you wish to have any pets or animals? If so, how much would it cost to maintain these pets?
- What is the total amount of money needed each month to support the standard of living you desire? \$ _____

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Ubbes

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- have won university teaching awards. *Journal of Health Education*, 28(1), 35–41.
- Ubbes, V. A. (1997). Transforming individuals and organizations for the 21st century. *Journal of Health Education*, 28(3), 187–191.
- Walters, K. S. (1994). Critical thinking, rationality, and the vulcanization of students. In K.S. Walters (Ed.), *Re-thinking reason: New perspectives in critical thinking* (pp. 61–80). Albany, NY: State University of New York Press.
- Warren, K. J. (1994). Critical thinking and feminism. In K.S. Walters (Ed.), *Re-thinking reason: New perspectives in critical thinking* (pp. 155–176). Albany, NY: State University of New York Press.
- Weimer, M. (1993). The disciplinary journals on pedagogy. *Change*, 25(6), 44–51.
- Welle, H. M., Russell, R. D., & Kittleson, M. J. (1995). Philosophical trends in health education: Implications for the 21st century. *Journal of Health Education*, 26(6), 326–332.
- Wheatley, M. J. (1994). *Leadership and the new science: Learning about organization from an orderly universe*. San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Wilens, W. (1987). *Questions, questioning techniques, and effective teaching*. Washington, DC: National Education Association.
- Wooley, S. F. (1995). Behavior mapping: A tool for identifying priorities for health education curricula and instruction. *Journal of Health Education*, 26(4), 200–206.
- Wurman, R. S. (1989). *Information anxiety*. New York: Doubleday.

