4. Discipline-Based Achievements:
What knowledge and skills do cultures judge to be so essential that they formally teach them in school or by other means?

Introduction
What are discipline-based achievements?
According to D. H. Feldman "at the next major landmark [after cultural achievements] are developmental [achievements] that are based on mastery of a particular discipline. In some discipline-based domains such as chess or aviation, the different levels of mastery and the criteria for their attainment are clearly and explicitly established (e.g. Expert or Master level play in chess). For other domains (such as medicine, carpentry, or political leadership) the levels of achievement are less clearly defined. One difference between cultural and discipline-based bodies of knowledge is that fewer people learn discipline-based domains than cultural ones" (1985, pp. 9-10).

What is general education?
Discipline-based achievements require more systematic effort to attain than merely growing up as a member of a culture. Usually these achievements are mastered through formal schooling. Although schooling also has other social functions, in cultures with universal, mandatory formal education, discipline-based achievements are the core content of the curriculum. In the United States elementary school subjects are grounded in disciplines, such as science, mathematics, history, and the language arts. In elementary school students learn the vocabulary and basic concepts of the disciplines. They learn that there is a specific and different-from-everyday meaning of words. These are the things that youngsters would be unlikely to learn through socialization alone. Many cultures, through tradition and with the validation of school boards and state departments of education, have determined that all young people should know the basics of these disciplines.

"General education" is another term one might apply to discipline-based education. For example, most communities in the United States identify the three "R's"--reading, writing, and arithmetic (to which science, technology, and social science are often added) --as so essential, that formal schooling must be provided in order that all elementary children be given the opportunity to master knowledge and skills in these subjects. The basic content for instruction in all these subjects is derived from established disciplines. At the secondary level, students are expected to reach higher levels of discipline-based achievement and, in some cases, begin to master some of the achievements of specialists. Many high schools also provide vocational courses designed to teach the discipline-based skills of non-academic domains needed to fill local employment needs.

Of course, adults may wish to continue their general education after secondary school. Motivated by personal interest rather than career, people often seek discipline-based knowledge and skills in domains other than those in which they may be working.

Should morality and social values be part of formal education?
Formal education about morality and social values is much debated in the United States. One explanation for controversy about appropriate values education in public schools is the diversity of sources from which such education might be drawn. Religious schools base their values education upon the disciplines of their religion, for example, Catholicism, Protestant Fundamentalism, Judaism, Islam, Amish beliefs, etc. Because there is no established religion in the United States, debates about appropriate moral and social education are likely to continue. W. Damon argues for a sharing of responsibility for young people's moral development involving both the culture at large and the schools. He proposes that "school is but one of the multiple influences that must play a role in the building of a child's competence and character. *All* the people and institutions that come in contact with young people must play a constructive role in their growth. Schools cannot shoulder the entire responsibility themselves. We should neither expect this of them nor blame them for ill consequences that follow from our [culture at large] inaction" (Damon, 1995, p. 222).

Discipline-Based Art Achievements

What knowledge and skills in art do cultures judge to be so important that they support that learning through formal education?

One might expect that the primary rationale and basis of content for formal elementary and secondary education would be disciplines (that is, the achievements of specialists in various domains of human endeavor, such as history, science, literature, and mathematics) presented appropriately for each grade level.

In practice, formal education in art is quite varied across the school rooms of the United States depending on many factors including: the person who is responsible for art instruction (elementary classroom teachers, art specialists, community volunteers, or artists-in-the-schools); school district and state curriculum standards; and the philosophy of art education held by the teacher of art. Teachers can use art materials and art images in pursuit of a wide range of goals, including recreation, cultural indoctrination, language development, scientific observation, learning in social studies, psychological release, peer relationship building, measurement of skill development, reward for good behavior, etc. None of these are examples of discipline-based art learning, though some can be effectively combined with discipline-based art learning.

Examples of discipline-based art learning objectives include learning: to use traditional art making materials, to appreciate important artworks, to express ideas and feelings effectively in visual form, to construct meaning and support interpretations of artworks, and to appreciate the diversity of artistic assumptions held in different cultures and eras. All these objectives are drawn from established art disciplines, or domains of specialist achievement in art.

There is a great deal of diversity in formal art instruction in elementary schools in various regions in the United States. In some regions, certified art teachers provide art instruction to all children in all the elementary grades. In other regions, art specialists provide some guidance to classroom teachers who teach art to their own students. Some states require one or two college art courses for elementary teacher certification. Other states require none. In some schools classroom teachers are on their own to plan whatever, if any, art instruction their students will receive.

When teachers with some art training are responsible for the elementary art curriculum, content commonly involves:
- an introduction to visual and tactile features of artworks (elements and principles) and how they are organized,
- experience with a range of two-dimensional and three-dimensional art media;
- an introduction to the work of some well-known European and American artists and, increasingly also to some artworks from other cultures;
- experience with some traditional representational drawing, such as drawing in perspective, and using realistic facial and body proportions; and
- "free expression" activities in which students are encouraged to express their feelings through art making.

Art teachers also often develop interdisciplinary lessons that seek to build bridges across the curricula. For example, some coordinate art lessons with the social studies curriculum, introduce measuring activities to coordinate with mathematics, or ask students to write about their own or others' art to reinforce learning in the language arts.

In many schools across the country in the 1980s and 1990s, a discipline-based approach to art education advocated by the Getty Education Institute took hold. Discipline-Based Art Education, or DBAE as it come to be known, drew its content from four art disciplines: art making, art history, art criticism, and aesthetics due, in large part, to the advocacy and leadership of the Getty Education Institute (Smith, 1987; Smith, 2000, Dobbs, 1998). This DBAE approach was a very particular approach, built on, but more specific than, Feldman's general idea of discipline-based understanding used in this survey.

If classroom teachers are on their own in planning art lessons and if they have had minimal or no specialized art instruction in secondary or higher education, they are not likely to be prepared to teach basic artworld information. Schools sometimes attempt to replace or complement specialized training with community volunteers or artists-in-the-schools. Many elementary schools have masterpiece volunteers who study a well-known artist and visit classes sharing what they have learned. Some elementary schools receive grants to fund classroom visits by artists-in-the schools.

Not all schools follow an articulated and sequenced art curriculum. The establishment of state and national art content standards (and even state testing in some states) may result in more carefully sequenced art curricula, which allow secondary art teachers to build on the teaching of elementary teachers, as one expects in other subjects, such as mathematics, language arts, science, and history.

The content in secondary art classes is commonly quite similar to that taught by art teachers at the elementary level, though more advanced. At the high school level, after an introductory course, classes are often broken out by media, such as ceramics, drawing and painting, photography, computer graphics, etc. Occasionally several teachers work together to teach interdisciplinary humanities courses or related arts courses. Some high schools also offer separate art appreciation or art history courses.

The vast majority of teachers responsible for teaching art in middle school and high school have studied art extensively at the college level and are certified as specialists in art education. Art is required at the middle school level in most states. At the high school level, art is almost always an elective. For most students the last, and often only, art instruction taught by a teacher with some specialized training is in middle school.

Most adults in the United States do not elect art as a high school subject and many adults graduate college without any art course. Many of the those who are responsible for establishing educational policy and delivering art instruction in the elementary grades have no discipline-based art learning themselves.

Some individuals develop a strong interest in making art or understanding art and follow that interest on their own without benefit of formal education. E. M. Delacruz offers the following working definition of the folk arts: "widely varied art forms created by self-trained artists who, often working with ordinary and recycled materials found their own environs, and working mostly outside the art establishment, create, primarily for themselves and members of their immediate social groups, stylistic narratives and visions of the struggles and aspirations of daily or spiritual life" (1999, p. 24). A. Muri describes folk artists as "individuals who are self-taught, are not overly interested in the technical aspects of art making, or are those who do not reflect a great deal on the psychological aspects of their art. Most folk artists are everyday people, often from lower working class and socio-economic backgrounds" (1999, p. 36). Also in the United States today there are individuals who seek to develop art making skills with the assistance of commercial products such as arts and crafts kits, instructional television shows, and videos.

Some individuals go out of their way to learn more about the art of others, without benefit of formal art education. Such people might, for example, visit galleries and museums in their community, read whatever they can find on art that interests them, or seek out art information in the media.

There are disadvantages involved with self-taught art making and art understanding. Knowledge and skills acquired can be haphazard and isolated. However for many self-taught individuals the response of family, friends, and the local community provides all the response they desire.

Beauty, Realism, and Skill
Graham (2003) studied the impact of "a curriculum based on the artistic tradition of the European Renaissance.... ...including "specific strategies for creating the illusion of space and form as well as the craft of using media effectively.....   ... [with the goal] to connect these experiences to ideas that were important to the students, to create opportunities for them to use their imaginations, and to construct visual narratives that are important to them" (p. 165). He concluded "The divergence of individual artistry during the semester of instruction suggests that the instructional program based on the mastery of representational strategies foster individual, creative responses" (p. 175).

Expression of Feelings & Ideas
Clover and Erickson (1997 and 1998) propose that people using the Expression of Ideas and Feelings Viewpoint see an artwork as a communication between an artist and a viewer. The ability to interpret meaning, significance, or function is essential to this viewpoint.

People using ideas associated with Parsons' third stage (Expression) value "creativity, originality, and depth of feeling" (Parsons, 1987, p. 23). The feelings of both the viewer and the art maker are significant. Parsons explains that "preadolescence, in general, brings a greater ability to understand the point of view of others and a greater interest in their emotions. This means, among other things, great interest in the expressiveness of artwork, and in what artists may be trying to say" (Parsons & Blocker, 1993, p. 159).

Viewers in Housen's fourth stage[1] "seek a more personal experience with the work of art. ….
[They] use intuitions, past experiences, informed emotions and affect-laden memory as guides to
interpret the symbolic content expressed in the work of art" (2000, p. 283). Clover (1995) found
that secondary Navajo and Mexican American students and some novice adults used ideas
associated with the Expression of Feelings and Ideas Viewpoint more frequently than they used
any other viewpoint.

Erickson (1995) found that after instruction some students as young as second graders moved
beyond an interest in the identification of subject matter toward speculation about the function of
artworks. She (1996) found evidence that some students could distinguish their own viewpoint
from that of the artist. In another study she (1997) found evidence that some middle school
students sought the perspectives of others after instruction on issues of art conservation.

An ability to interpret, beyond identification of subject matter, is associated with the Expression
of Feelings and Ideas Viewpoint. Freedman and Wood (1999) analyzed the impact that visual
culture may be having on young people's understanding of art. They propose that high school
students may apply their understanding of advertisements to museum painting. "...students may
try to apply what they have learned about decoding advertisements to the painting in an effort to
understand it, rather than interpreting the painting in an extended manner, as might be
appropriate" (Freedman & Wood, 1999, p. 130).

In an action research study, Cummings (2010) described changes of her high school art students'
behaviors after she revised her curriculum and teaching teaching. She revised her curriculum to
focus on themes, social issues, and visual culture and created "a classroom atmosphere
conducive to a continuous exchange of ideas, mutual respect, and tolerance of differences" (p.
64). "I found sufficient evidence to indicate changes in their behaviors when they were enrolled
in my art class. Increased confidence in artistic abilities, willingness to share, acceptance of
differences, and support and compassion were revealed" (p. 64.).

Koroscik (1997) identified problems that novices often encounter as they attempt to interpret
artworks, such as naïve concepts, undifferentiated concepts, garbled knowledge,
compartmentalized concepts, disoriented search patterns, and guessing, among other problems.
Short (1996-1997) reports that instruction in art criticism can improve high school students'
interpretation abilities. Without instruction, viewers' abilities to interpret feelings and ideas in art
can remain naive.

Artworld Viewpoint
According to Clover and Erickson (1997 and 1998) people using the Artworld Viewpoint have
been initiated into the ideas, values, and standards of their culture's artworld and apply them in
their responses to the art of their own culture. These ideas, values, and standards are beyond
general cultural differences in perception and understanding held by all people in that culture.

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[1] Housen identifies a sort of fact-gathering stage between her second and this fourth stage, in which "Viewers use
facts, dates, styles, biographies, and histories to place the work of art within its niche, to give the work a fitting
label" (Housen, 2000, p. 283).

Erickson and Hales (2014) found that after participation in a year-long contemporary art-museum-based, a significant number of advanced high school art students shifted the primary focus of their art making from Modernist artworld ideas (such as elements and principles and technical issues) to the expression of meaning.

In 1964 Danto introduced the term "artworld" in philosophical circles. He argued that "to see something as art requires …. a knowledge of what other works the given work fits with, a knowledge of what other works makes a given work possible" (Danto, 1997, p. 165). Becker (1982) described a culture's artworld when he wrote that "all artistic work, like all human activity, involves the joint activity of a number ... of people. …. The work always shows signs of that cooperation" (1982, p. 1).

Art specialists are people who have been judged to have met the standards to be achieved by experts within their own artworld. Art historians, critics, art teachers, exhibiting artists, and art museum curators are some of the art specialists in the mainstream artworld in the United States. Specialists in each artworld hold certain art ideas and practices in common. For example specialists in the Modern artworld value originality, individual genius, respect for materials, and the idea of the *avant garde*.

Parsons (1987) called his fourth stage Form and Style. The judgments of people using stage four ideas depend on "culturally learned ideals" (p. 143). In 1987, Parsons described those ideals as deriving from one international artworld, which "draws on many sources and traditions, but in an important sense it is one world, roughly as large as all the societies touched by the Western tradition" (p. 142). By 1993, Parsons and Blocker described a postmodern, multicultural situation with "artistic traditions of different cultural origins" (p. 36). They wrote that "cultures and art traditions are always changing and influencing each other, always hybrid in one way or another" (p. 27).

There are many traditional, evolving, and hybrid artworlds, such as Asian, African, Oceanic, indigenous American artworlds; colonial and post-colonial artworlds, the world of global media, and more narrowly focused artworlds such as artworlds centered on contemporary quilt making, comic book illustration, tattooing, car art, and so forth. One would be hard pressed to identify one set of ideas and norms appropriate for all artworlds.

In different artworlds, art specialists may hold quite different beliefs about art. Jim, A. et. al (1997) recorded the responses of Navajo artists and medicine men to questions about the nature of art and beauty as well as the function of art in Navajo culture. Lackey (1993) described the traditional pottery-making artworld in Acatlán, Puebla, Mexico and the role teachers and traders have played in its evolution. Mead (1993) outlined four distinct stages required in becoming *mwane manina*, or "artistic man" among carvers in the Soloman Islands.

According to Anderson (1990), in the Yoruba culture of West Africa "some families specialize in particular crafts [such as mask making; weaving; and bracelet, stool, or tray carving], in which

case a child's years of artistic training are an essential part of growing up. The child whose interests and talents do not coincide with the family profession may be apprenticed to a master in another medium (Anderson, 1990, p. 122). Anderson (1990) describes the distinctive vocabulary and standards that Yoruba art specialists use to judge beauty artworks.

According to McNaughton (1993), blacksmiths in the Western Sudan make artworks, as well as other objects, and perform other roles within the Mande society. "The profession floats on a sea of secret expertise that outsiders have no right to learn about. .... [Beginning apprentices learn] the Mande principles of secrecy but not the secrets [until they are further along in their apprenticeship]" (McNaughton, 1993, p. 7). As apprentices work their way through their instruction, they receive beads, amulets, and tools to designate their status. "[A small white bead] was a special blacksmith' device, used to announce membership in the profession and to protect the wearer..." (McNaughton, 1993, p. 6). Seeing an apprentice wearing the bead brings about a change in the way other members of Mande society perceive the apprentice.

Davis and Gardner (2000) report that "with exposure to the domain, individuals become progressively more attentive to the aesthetic properties of individual works of art. They become progressively more aware of the 'others' who create works of art working in a domain that has tradition, context, and values" (2000, p. 258).

Erickson (2002) compares middle school students' understanding of their own artworlds before and after instruction about people, places, activities, and ideas of several artworlds. She reports statistically significant increases in students' understanding of their own artworlds. She measured beginning level artworld understanding. Parsons identified more advanced artworld understanding in his fourth stage. According to Parsons (1987), people using ideas associated with his fourth stage understand that "the significance of a painting is a social rather than an individual achievement" (p. 25). They understand artworks as existing in relationship to a tradition. They value art criticism as a guide to perception.

Wang and Ishizaki (2002) developed an Art Appreciation Profile based on Parsons' five stages. Wang and Ishizaki found that in Japan, where "capable teachers give art classes with production and criticism mainly so students can learn the elements of art" (p, 388), students understood the elements of art. However Japanese students did not exhibit an awareness of what Parsons called "a community of viewers."

Csikszentmihalyi and Robinson's (1990) study of museum professionals found four types of response: "a perceptual response, which concentrated on elements such as balance, form, and harmony; an emotional response, which emphasized reactions to the emotional content of the work and personal associations; an intellectual response, which focused on theoretical and art historical questions; and finally, what [they] characterized as the communicative response, wherein there was a desire to relate to the artist, or to his or her time, or to his or her culture, through the mediation of the work of art" (Csikszentmihalyi & Robinson, 1990, p. 28).

Housen (2000) describes persons at her fifth stage as having viewed many artworks over a long period of time. They "are shaped by a self-aware willingness to encounter the work of art

playfully as one would a friend. Viewers try to interpret the work of art by re-creating the problems, choices, and solutions the artist once faced" (Housen, 2000, p. 283). They are able to "integrate analytic and emotional responses" (Housen, 2000, p. 283).

Parsons describes a fifth, yet more sophisticated stage of art understanding (Autonomy), which some artworld specialists achieve. People using ideas associated with this stage have "an alert awareness of the character of their own experience, a questioning of the influences upon it, and a wondering whether one really sees what one thinks one sees" (Parsons, 1987, p. 25). They understand that they come from a tradition, but that it is their responsibility to judge the values of that tradition and then affirm or amend those values based on their own values.

As people become familiar with any art tradition, they become more able to integrate ideas and norms from that artworld into their response to art. Sophisticated artworld viewers grow more self aware and reflective about that tradition.

Viewpoints and Common Elementary and Secondary Art Activities
"Free expression" activities in the preschool and primary grades focus on the Non Reflective Viewpoint. Working with media addresses the interest in skill that people using the Beauty, Realism, and Skill Viewpoint hold. Learning drawing skills also addresses the interest in realism also associated with the Beauty, Realism, and Skill Viewpoint. In intermediate grades, if students learn more about how artworks express, then "free expression" activities can reinforce ideas associated with the Expression of Feelings and Ideas Viewpoint, as well as with the Non Reflective Viewpoint. Introduction to visual and tactile features and to the work of well-known artists teaches basic artworld ideas associated with the Artworld Viewpoint. Most people trained in art will have learned this introductory information in specialized art classes in secondary schools and in higher education.

Secondary art classes tend to continue to reinforce beliefs about art associated with the Erickson and Clover's Beauty, Realism, and Skill Viewpoint and the Expression of Feelings and Ideas Viewpoint. At the same time there is increased attention to ideas associated with the Artworld Viewpoint.

Occasionally some attention is focused on ideas associated with the Plural Artworld Viewpoint. This viewpoint demands quite advanced understanding. Many art teachers who hold strong Modernist Artworld Viewpoints may not have developed a Plural Artworld Viewpoint themselves. Therefore, they are not likely to present Plural Artworld ideas. In recent years, concerns for multicultural education and diversity have resulted in an increase in presentation of art from diverse cultures.

What do developmental researchers say about discipline-based achievement?

In most cultures children begin participating in discipline-based education at an early age in elementary school and many continue through the secondary school level. Adults, through seniors, can participate in discipline-based education. This wide range of individuals means that participants in discipline-based education approach their learning from a range of developmental levels.

L. Vygotsky's "principle of decontextualization of mediated means" is useful in explaining the role of symbolic representation (numbers and words) in the development of abstract reasoning. Vygotsky proposes that when one's interaction with the world is mediated by signs, one begins to understand ideas separately from the contexts in which they exist. "The decontextualization of mediational means is the process whereby the meaning of signs become less and less dependent on the unique spatiotemporal context in which they are used" (Wertsch, 1985, p. 33). Based on his studies of literate and nonliterate cultures, one of Vygotsky's followers "argued that subjects who had some experience in formal educational settings are willing to utilize decontextualized categories and assertions, whereas subjects with no such experience had much greater difficulty in doing so" (Wertsch, 1985, p. 34). The research of Vygotsky and his followers lead him to conclude that "literate subjects demonstrated a willingness and an ability to operate with linguistic objects and a linguistically created reality. They categorized objects, accepted premises, and derived conclusions strictly on the basis of linguistic means. Non literate subjects did not demonstrate such tendencies. Instead, they invoked nonlinguistic, practical experience in their reasoning" (Wertsch, 1985, p. 35).

How do people teach themselves without formal education?

A few people attain some discipline-based achievements largely on their own, without the support of formal education. They may have the opportunity to see models that they can emulate. If they can read, books and the internet provide access to discipline-based information, (as well as much which is not.) If they make use of textbooks or online resources written as learning resources (such as school books, or self help books) they can benefit from the work of educators, even without attending schools or becoming apprentices. Some dedicated individuals teach themselves the basics of many domains such as astronomy, auto mechanics, embroidery, bookkeeping, or archeology. However, without feedback and assessment from specialists and teachers, self-taught individuals run the risk of misunderstanding some of the basics.

Damon (1995) reports on young orphans in Brazil who develop mathematical skills without the support of formal education through selling candy on the street. He writes that "sometimes the speed and accuracy of their calculations makes them look mathematically precocious in comparison with schoolchildren of the same age. But these street-taught candy sellers never learn the numerical orthography, the notational system, or the formal body of reasoning on which advanced mathematical thinking relies. Without the formal symbolic tools that are learned in school, these children will find their progress hampered if they try to go further in math. In the long run, their lack of schooling places these budding mathematicians at a serious disadvantage" (Damon, 1995, pp. 193-4).

B. A. Oloko (1994) describes a somewhat similar informal learning situation among urban Nigerian street traders. She reports that children who trade in the street gain a "substantial knowledge of their socioeconomic milieu" (Oloko, 1994, p. 209). They learn to identify and woo prospective customers, accumulate money, and calculate financial transactions. They have some support from other street traders with whom they associate. "Members [of their selling group] can provide technical and social assistance, such as detecting forged currencies, protecting against criminal adults and youth, and alerting the group of the approach of law-enforcing officials. …. Street trading provides its participants with a sense of freedom and independence that they would not have had otherwise. …. Working children tended to be more self-reliant than their non-working counterparts" (Oloko, 1994, p. 211).

Sometimes self-taught individuals come to value the support that formal education can provide. If their economic situation allows, some seek the expertise and judgment of experts that is available through formal education, such as through adult classes offered by public schools, colleges and universities, or other community organizations.

How do elementary school students develop cognitively and morally?
Most children enter elementary school at what J. Piaget calls the Preoperatational Stage and advance in the elementary grades to the level of concrete operations.

N. Eisenberg (1996) reports on a study that supports the notion that schooling can affect young people's moral development. She writes: "teachers and schools influence children's prosocial development. For example school-based programs that emphasize rational discipline, cooperation, and prosocial values, and that provide activities designed to enhance children's sympathy and understanding of others, appear to foster elementary children's prosocial behavior" (Eisenberg, 1996, p. 208).

How do secondary school students develop cognitively and morally?
In the secondary grades some young people achieve formal operations, though many people never reach this cognitive level in their lifetimes. People using formal operations can formulate hypotheses and systematically test them. They can express and manipulate ideas abstractly, that is, through words and numbers. They can reason without reference to concrete things or situations. Growing up in a culture, especially one without universal, mandatory formal education, does not guarantee that one masters formal operations. Piaget and others have pointed out that many adults never learn to reason abstractly. Systematic instruction seems to be necessary to move beyond concrete reasoning to reasoning abstractly.

K. Egan (1992) writes about the importance of imagination in the cognitive development of middle school children. He describes education as "a process that awakens individuals to a kind of thought that enables them to imagine conditions other than those that exist or that have existed" (Egan, 1992, p. 47). Specifically he argues that "Imagination is what enables [the transcendence of conventional ideas], and is consequently necessary to education" (Egan, 1992, p. 48). He proposes that teachers should plan activities that do not stop with the actual but that cause students to imagine the possible.

At the same time as he argues for the development of imagination in middle school he argues for the necessity of also teaching a great deal of diverse information. He writes that "Ignorance … starves imagination. …. Only knowledge in our memories is accessible to the action of imagination. We can only construct possible worlds, can only think of things as possibly so, out of what we already know. The imagination is limited to working with what exists in the memory. …. The development of students' imaginations will not go forward without their learning and memorizing much and diverse knowledge" (Egan, 1992, pp. 52-53).

Focusing of cognitive development, Egan argues that imagination is essential not only to middle school students' cognitive development, but also their moral and social development. He writes that "the lack of that capacity of the imagination which enables us to understand that other people are unique, distinct, and autonomous--with lives and hopes and fears quite as real and important as our own--is evident in much evil" (Egan, 1992. P. 54). He goes on to claim that "by imaginatively feeling what it would be like to be other than oneself, one begins to develop a prerequisite for treating others with as much respect as one treats oneself" (Egan, 1992, p. 55).

D. Kuhn (1999) describes how, beginning in middle school, young people begin to achieve what she calls second-order cognition. "These basic forms of second-order cognition--knowing what one knows and how one knows it and effectively managing and deploying one's cognitive resources--are foundational of the critical thinking skills that we hope to impart to students during the remainder of their school years" (Kuhn, 1999, p. 21).

Kuhn explains that children, adolescents, and many adults hold <u>absolutist</u> ideas about knowledge. This absolutist understanding "does not accord a pivotal role to the knower as a constructor of knowledge. Rather, the locus of knowledge remains in the external world, where it awaits discovery by human knowledge seekers" (Kuhn, 1999, p. 22). Most adolescents move on to develop a <u>multiplist</u> understanding of knowledge. "A critical event leading to [a multiplist understanding of knowledge] is likely to be exposure to the fact that experts disagree about important issues. …. [People with multiplist understanding wonder] if experts with all their knowledge and authority disagree with one another, why should their views be accepted as any more valid than anyone else's. [People with multiplist understanding believe that] beliefs or opinions are the possessions of their owners, freely chosen according to the owner's tastes and wishes and, accordingly, not subject to criticism" (Kuhn, 1999, p. 22). Kuhn goes on to report that "only a minority progress to an <u>evaluative</u> epistemology [understanding of knowledge], in which all opinions are not equal and knowing is understood as a process that entails judgment, evaluation, and argument" (Kuhn, 1999, p. 22).

P. M. King and K. S. Kitchner (1994) describe seven stages in the development of reflective judgment grouped in three broad categories: 1) Pre-Reflective, 2) Quasi-Reflective, and 3) Reflective. They identify two stages (4 and 5) within the broad Quasi-Reflective category. People using Stage 4 begin to understand abstraction and are not limited to concrete examples, however, they do not clearly understand the difference between knowledge of truth and justification of belief. "[B]ecause neither evidence nor evaluations of evidence are certain, any judgment about the evidence is idiosyncratic to the person making the judgment. .... They choose evidence that fits their prior beliefs ... and presume that others do the same" (pp. 58-59). In Stage 5, "while people may not know directly with certainty, they may know within a context based on

subjective interpretations of evidence, a belief they sometimes call relativism. ... [W]hat is known is always limited by the perspective of the knower. .... [I]ndividuals frequently appear to be giving a balanced picture of an issue or problem rather than offering a justification for their own beliefs" (pp. 62-63).

How do college school students develop cognitively and morally?
In his study of college students, Perry (1981) reports a range of cognitive levels of understanding, from dualism, through multiplicity, to relativism and commitment. Perry's Dualist and Multiplist stages parallel the absolutist and multiplist stages that Kuhn found among adolescents.

Perry's relativist and commitment stages describe aspects of the evaluative stage of understanding that Kuhn found only in a minority of adults. Perry describes relativism as "diversity of opinion, values, and judgment derived from coherent sources, evidence, logics, systems, and patterns allowing for analysis and comparison. Some opinions may be found worthless, while there will be matters about which reasonable people will reasonably disagree. Knowledge is qualitative, dependent on contexts" (Perry, 1981, p. 80). He describes commitment as "an affirmation, choice, or decision (career, values, politics, personal relationship) made in the awareness of Relativism" (Perry, 1981, p. 80).

Most adults do not reach Kuhn's evaluative state or Perry's relativist or commitment stages. If they do reach these levels of understanding they are likely to have committed themselves to some specialist level of education, beyond the discipline-based education that provides the foundation for elementary and secondary education, and for general studies courses in higher education.

Jenny Mercer (2010) studied special issues faced by British adults returning to higher education. She found they experienced "conflict between fear of failure and academic success" (p. 27), which diminished as they progressed through their studies. "…returning education allowed [some adults] to prove themselves and reclaim something that had been missing from, and affecting their sense of self for many years previously" (p. 30). Returning adults also experienced "conflict between the home environment and the university environment" (p. 30) as well as "conflict caused by juggling multiple roles" (p. 31).

Costello and English (2001) describe some of the distinctive challenged of college students with learning disabilities. "Results indicate that college students with and without learning disabilities were found to score more alike than different on the selected measure of psychosocial development" (p. 23). However, Costello found two areas where college students with learning disabilities scored lower than those without "academic autonomy and developing mature interpersonal relationships …. [which suggests] that many college
students with learning disabilities may have less developed skills in their utilization of effective study plans, self-satisfaction with academic performance, self-discipline, and interdependence."(p. 24).

How do cultural differences affect discipline-based education?

An individual's culture continues to influence that person's development throughout his or her life. Diverse cultures have different influences on how children learn in school.

What are traditional Asian beliefs about innate ability versus effort?

J. Bempechat and E. Drago-Severson (1999) have analyzed cultural factors that might account for the fact that United States students' achievement in mathematics and science lags behind the achievement of Asian students. They argue that "it is impossible to understand human psychology at the individual level alone, because individuals participate in culture … and the folk theory of mind is a very powerful influence on individual and collective meaning-making" (Bempechat & Drago-Severson, 1999. p. 297). They report on studies of Chinese Confucian philosophy and its impact on young people's achievement in school. According to this philosophy, ability is changeable and "discipline in one's studies is more important than innate ability. Innate ability may dictate rate at which knowledge is acquired, but does not limit achievement. Thus students maintain a long-term view of their education--many believe that years of devotion to studies will pay off" (Bempechat & Drago-Severson, 1999. p. 300).

Bempechat and Drago-Severson (1999) also report that traditional Japanese notions of character also affect school performance. A traditional Japanese belief holds that "character is … shaped by hardship, endurance, effort, and complete self-exertion. .... Enduring hardship … and reflecting on one's weaknesses are believed to be critical for children's social and personal growth" (Bempechat & Drago-Severson, 1999. p. 300). They cite a Japanese national policy that states "it is desirable that, in the lower grades, one should learn to bear hardship, and in the middle grades, to persist to the end with patience, and in the upper grades, to be steadfast and accomplish goals undaunted by obstacles or failures" (Bempechat & Drago-Severson, 1999. p. 301). Because a student's failure is also seen as a failure of the family, Japanese families are quite involved with their children's schooling.

D. Y. F. Ho (1994) reports that in China parents are quite involved with their children's homework. He writes: "Given the emphasis on effort in the Confucian tradition, it is hardly surprising that Chinese children are expected to and do spend a great deal of time on homework" (Ho, 1994, p. 299). Ho describes a Chinese school environment as quite different from what one may expect in a typical United States school. He writes that "the Chinese school environment is orderly and authoritarian; strict discipline is emphasized. In line with the Confucian ideal of filial piety, teachers are authority figures who are not to be questioned or challenged. Their role is to impart knowledge--to instruct, not to stimulate, students. The typical teaching methods are formal, expository, and teacher initiated" (Ho, 1994, p. 298).

One might wonder about the effects of philosophical belief systems on formal schooling in predominantly Confucian, Muslim, Christian, Jewish, Hindu, or other cultures.

What are traditional Mexican American beliefs about respect for elders?

C. Delgado-Gaitan (1994) describes how traditional Mexican beliefs can affect the schooling of recent immigrants from Mexico in United States schools. European American and traditional Mexican values can come into conflict around the notion of critical thinking. Delgado-Gaitan

describes critical thinking as "skills in verbal analysis, verbal questioning, and verbal argumentation. …. [In critical thinking] the locus of authority in the individual is independent of age. That is, either an adult or a child can establish a position of power if he or she can formulate the correct logical argument" (Delgado-Gaitan, 1994, p. 64). On the other hand "in their culture of origin, [Mexican American] children are expected to politely greet their elders; they are not supposed to argue with them. In the company of adults, children are to be good listeners and can participate in the conversation only when solicited. To raise questions is rebellious" (Delgado-Gaitan, 1994, p. 64).

What happens when the values of schools conflict with the values of the families of students who attend those schools?

What are traditional Navajo beliefs about specialized knowledge and individual autonomy?
 J. R. Joe (1994) describes a conflict between Navajo traditions and formal schooling. Traditionally Navajo learning is passed on through families or apprenticeship. Joe writes that historically "when formal schooling was introduced to the Navajos, most families resisted…. This form of education was foreign to the Navajos. Also, most Navajos misunderstood what formal schooling meant; many equated this type of learning with specialized learning--learning that a promising young Navajo adult might undertake to become a religious leader" (Joe, 1994, pp. 110-111). The Navajo believed that it was wrong to provide such special training to children who were too young to understand. They also did not want to force children to go to schools because of their belief in individual autonomy, that is, their "unwillingness to make a decision for someone else" (Joe, 1994, p. 111).

Some cultures believe that knowledge should not be shared with everyone who seeks it, let alone forced on those who don't. In some cultures certain knowledge properly belongs only to members of certain families or clans, or to people who have met certain prior conditions, such as initiation into a particular role or achievement of a particular status. How might such beliefs about knowledge affect formal education in some cultures?

What are traditional Nso beliefs about playfulness and inquisitiveness?
A. B. Nsamenang and M. E. Lamb (1994) describe some values among the Nso people of Cameroon that might affect children's learning in school. They report on characteristics that Nso parents and grandparents identify as desirable for "good children." Desirable characteristics include obedience and respect, filial service, hard work, helpfulness, honesty, and intelligence. Playfulness and inquisitiveness were listed with disobedience and disrespect, laziness, fighting, greed, and fearfulness as undesirable characteristics.

One might wonder how Nso disapproval of playfulness and inquisitiveness would affect achievement in schools that, for example, value inquiry.

What are traditional gender biases in United States schools?
C. L. Martin and G Levy (1996) report on gender bias in instructional materials. They report that "in United States elementary school readers and textbooks, male characters outnumber females characters, and are more frequently portrayed as dominant, active, and adventuresome whereas female characters are often portrayed as passive and helpless. Women (and minorities) are also

less often mentioned as significant historical figures" (Martin & Levy, 1996, p. 242). They go on to report the "preschool and elementary teachers tend to direct more disapproval to boys than girls. However, teachers also direct more positive attention to boys than girls, especially for masculine behaviors (i.e. assertiveness). Girls receive attention for being quiet and compliant. These patterns occur at all levels of education, in many cultures, and by teachers of both sexes" (Martin & Levy, 1996, p. 242).

C. Gilligan reports that teachers often observe that girls, in general, become less outspoken following puberty, less likely to disagree in public or even to participate in classroom discussions" (Gilligan, 1988, p. xxxvi)

One might wonder how young people's achievement in school might be affected if these gender biases were reversed.