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ABSTRACT

Researchers generally seek to improve student motivation without input from students concerning subject matter and teaching methods. Yet students make conceptual distinctions among different forms of knowledge, concerns, and contexts regarding knowledge. One distinction is between intellectual conventions (such as spelling) and matters of substance (involving logic). Most students' theories on this matter suggest that motivation suffers when teachers emphasize conventions over substance. However, this distinction hardly captures the complexity of students' conceptions of different forms of knowledge and their concerns about how best to acquire these different forms. One study examined children's conceptions of controversial knowledge and found that elementary school students easily distinguished controversial topics from noncontroversial topics. Students favored tolerance of diversity of positions on controversial matters. In two later studies, low-income African-American students evaluated approaches to controversial and noncontroversial curriculum, and reported that controversial topics had more positive effects on motivation. In the second study, students compared collaborative inquiry about controversial topics and individual memorization of noncontroversial facts. As grade increased, students saw collaborative inquiry as fairer than memorization of noncontroversial facts. Other studies of low-income, urban students showed that variation in context brings changes in concerns for types of knowledge and types of learning. Both teachers and researchers should more carefully consider the issues of students' cognitions, concerns, and contexts. (MM)

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What knowledge is of most worth?
Student perspectives

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A second grade class is discussing science and how they should learn it. A student declares, "We should really do it in life. We get tired of answering lots of questions. Scientists aren't inside doing worksheets. They are in the world finding things" (Nicholls & Hazzard, 1993). For this boy, in this context, cognitions and concerns are not separate. They are both involved in the analysis of the nature of scientific knowledge and what knowledge is worthwhile: Science is discovery in the world, not the producing of answers to worksheet questions, and we should be out there discovering. This student makes clear, in related conversations, that he sees science as the exploration of the unknown. Yet, in other contexts, he has no concern to explore the unknown or to discuss contested topics. He can, for example, become much concerned about the cut and dried, right-wrong sorts of knowledge that make up achievement tests.¹

It seems strange that researchers on motivation have generally sought to study and to improve student motivation without asking students what sorts of subject matter and what associated teaching methods make sense to them. We have rarely provoked students to ask Herbert Spencer's classic question, "What knowledge is of most worth?" We have not examined student understanding of the point of the curriculum -- the reasons for its content and organization. What attempts that have been made in this direction have often not come from developmental or educational psychologists (Cullingford, 1991; Erickson & Shultz, 1992; Schostak & Logan, 1984; Sosniak & Perlman, 1990). Here, I offer a preliminary, less than systematic exploration of this neglected topic.²

Footnotes

1 Concepts of knowledge are not to be confused with concepts of intelligence which are not to be confused with concepts of ability which are not to be confused with ability attributions (Nicholls, 1989; 1992).

2 In this paper I refer to both concepts and theories. In this usage, concepts are parts of theories. There are important individual differences in theories about schoolwork that involve differences in use of concepts such as ability (Nicholls, 1992; Thorkildsen & Nicholls, 1991). These individual differences are distinct from differences in the nature of the concepts students have available. At all ages, ego-oriented students give their concepts of ability a major role in their interpretations of academic outcomes whereas task-oriented students rely more on concepts like collaboration and knowledge. This argument is similar to that of Cole and Scribner (1974). Namely, that cultural differences are more often manifest in the ways concepts or cognitive processes are employed than in those concepts or processes themselves. This is not to say that developmental changes in conceptions of ability or

I will discuss students' conceptual distinctions among different forms of knowledge (conceptions of knowledge), concerns -- the value they place on different types of knowledge, the ways knowledge can be taught, and the contexts students see themselves as in. I can't argue all of this fully here, but I do want to make the case that the attempt at categorical separation of cognitions, concerns, and contexts concerning knowledge is often not useful.

Conventions and matters of substance

Within any discipline, are different types of knowledge which serve different purposes and offer different types of satisfaction. One such distinction (after Nucci (1982), Smetana (1981), Turiel (1983), and others) is that between intellectual conventions (such as how a word is spelled, how a letter is formed, or how a geometry proof is presented)³ from matters of substance. Intellectual conventions are seen as alterable by social consensus whereas matters of substance are not. And, among matters of substance they distinguish those involving logic (e.g., $1+1=2$) and laws of nature (rocks will fall when dropped) from potentially changeable facts about the world that do not directly reflect laws of nature (e.g., bikes are bigger than cars). The matters of empirical fact are, for example, seen as more likely than matters of logic or natural law to change (Nicholls & Thorkildsen, 1988).

The weight students accord to conventions relative to matters of substance when both are involved in an intellectual activity. (e.g., spelling and punctuation must be considered when writing.) is relevant to classroom life. The average tendency is to see conventions as less important (Nicholls & Thorkildsen, 1989). That is, most students' theories on this matter would suggest, as does Schoenfeld (1988), that when a teacher emphasizes conventions over matters of substance, motivation might suffer.

Staying with this overly-simple (Nicholls, 1992) but useful categorization of knowledge into conventions and matters of substance, we find that students see exploration as highly appropriate for learning matters of substance such as the logic of addition but see didactic teaching as more valuable for teaching conventions (Nicholls & Thorkildsen,

intelligence or knowledge are unimportant, but that they are different.

3 Here, conventions correspond to regulative as opposed to constitutive conventions -- a distinction that I think has not been made empirically in developmental research, yet which seems to demand attention (Nicholls, 1992). The novel, for example, is a conventional form, yet not to be put in the same category as the conventions of spelling and punctuation. Spelling can be seen as involving regulative conventions, whereas the novel is a convention that constitutes forms of intellectual, aesthetic experience for readers and writers -- forms that were not available before the novel was invented.

1989). Classrooms might, therefore, be seen as varying in the extent to which instruction is responsive to students' theories about the relative importance and the best methods of acquiring these different forms of knowledge.

Our two interview studies (Nicholls & Thorkildsen, 1988; 1989) also suggest reliable individual differences in readiness to accept variation in intellectual conventions and in the importance attributed to conventions relative to matters of substance. Classroom observations also quickly reveal some young students who enjoy writing without concern for spelling and, sitting right beside them, others who want to spell each word correctly before they proceed to the next one (Nicholls & Hazzard, 1993). The nature, source, and meaning of such differences is unclear but interesting.

Specific academic subjects

The above evidence on conventions versus matters of substance hardly touches the likely complexity of students' conceptions of different forms of knowledge and their concerns about how best to acquire these different forms. If we focus on matters of substance, we will surely find that different disciplines are seen as offering different types of satisfactions -- just as they are "designed" for different purposes (Perkins, 1986). Mathematics, for example, is less well designed for the visualization of new types of social living than is the novel. The novel, on the other hand, is of little value for building a vehicle to get people to the moon.

Any single discipline, furthermore, offers a diversity of possible purposes or sources of satisfaction. Silva and Nicholls (in press) examined possible purposes for writing among students in undergraduate composition courses. We found three dimensions of goals (concerns) and beliefs about how to succeed in writing. The first represented writing as an expressive and aesthetic activity. Loading on this factor were the goals of achieving a poetic form of expression and clarifying and enhancing one's personal values. Associated beliefs were that to write well one must be sensitive to poetic considerations, honestly express personal feelings and values, and be imaginative.

The second dimension involved the goals of improving one's logical reasoning ability and one's knowledge of subject matter and the belief that success in writing depends on flexibility of strategies for writing. (Writing to learn) The third dimension involved the goal of being methodical and correct in surface-level conventions (e.g., punctuation and spelling) and the beliefs that successful writing requires a focus on correctness of surface conventions.

In attempting to predict which of these dimensions would be most associated with commitment to writing as an end in itself, we found little to guide us in current perspectives on motivation. We turned instead to the Deweyan (1913) notion that the more an activity contributes to the broadening or total development of the person, the

more educative the activity and the more whole-hearted the student's engagement. We expected that the expressionistic cluster of goals and beliefs about the causes of success in writing were most strongly related to commitment to writing as an end in itself. This proved to be the case. Furthermore, the more purely intellectual cluster of goals and beliefs (writing to learn) were less related to commitment. Still less (and not significantly) related to commitment were the goal of mastery of surface-level conventions and beliefs in the importance of such mastery for successful writing. This last finding is consistent with the earlier finding that elementary school students see matters of substance as more central than surface conventions (Nicholls & Thorkildsen, 1989). The major conclusion, however, is that the goals and beliefs that frame learning as more inclusive of larger personal and social concerns are more associated with the experience of writing as inherently valuable.

In a second grade class, I found anecdotal evidence consistent with the above study of college students. One of the most devoted journal writers was a girl who often found school emotionally and intellectually difficult. Yet she poured her heart out in her journal -- describing her feelings about the challenges of academic and social life. She contrasted with one of the more able students, according to test scores and speed and accuracy on most class assignments. He almost never wrote and openly objected to writing about feelings. "Do we have to write about feelings again?" He said he'd rather write about baseball cards. When it actually came to writing about them, however, he did little. He would trade the cards, seeking good financial deals, but he would rarely write about them or anything else (Nicholls & Hazzard, 1993).

Controversial knowledge

One way of looking at the use of writing for expressive purposes or to develop one's personal values is that such writing involves the development of controversial knowledge. The distinction between controversial and noncontroversial knowledge is suggested by two exemplary teachers of history who convey to their students that, "We can know certain facts ... but the moment we turn to questions of significance -- of why something happened versus the mere fact of its happening--history becomes an act of judgment" (Wineburg & Wilson, 1991, p. 329). An historian's interpretation of the consequences of the Civil War, for example, can help define her or his values and identity. On noncontroversial questions, such as the locations of various battles of the Civil War, one's position normally indicates correctness or error, not the nature of one's values or one's identity. In this sense, controversial knowledge has the potential to be personal knowledge -- knowledge that defines or constitutes an individual.

An initial study focussed on children's conceptions of controversial knowledge. We (Nicholls & Nelson, 1992) found

that elementary school students had no difficulty distinguishing controversial topics like whether there is life elsewhere in space or whether more should be spent on the space program from noncontroversial topics. They expected ideas on controversial topics (more than noncontroversial topics) to vary across time and place. They had no objection to the teaching of standard positions (the positions they themselves endorsed) on noncontroversial topics. On the controversial topics, however, they generally rejected the idea of teaching one position. They even rejected the idea that a teacher should teach as correct the position they (the student) endorsed.

Putting that all together, we conclude, again that students see that different forms of knowledge should be treated differently. More specifically, students favor tolerance of diversity of positions on controversial matters. One can almost hear the angry cry that these children are relativists. But they, like any self-respecting relativist (Rorty, 1985), do not favor the idea that anything should go on any topic. They readily allow that teachers should foster the development of standard positions on noncontroversial matters of spelling, science, and ethics. This objection to the idea that teachers should push a given position on a controversial topic was, however, clear only after about grade three. Only at about this level did students clearly question the teachers' right to transmit even the interviewee's favored positions on controversial issues.

At this point, I encountered a change of context with consequent changes in cognitions and concerns. I moved to Chicago and contemplated low income African American students as curriculum theorists. In two studies (Nicholls, Nelson, & Gleaves, 1992), we asked students to consider the relative merits of different approaches to curriculum.

The idea of trying to separate forms of knowledge and methods of teaching made little sense to us. Discovery learning of the conventions of spelling is not advocated by anyone, even those who favor allowing invented spelling. All accept the existence of standard forms for writing arithmetic problems that must be learned rather than chosen or constructed in the way one might choose or construct one's stance on the place of algebra in the junior high school curriculum. Instead of seeking an artificial distinction between forms of knowledge and forms of teaching we tried to assess students' concerns by posing them questions that reflected (in simplified form) current societal concerns about curriculum.

We contrasted inquiry about controversial matters with memorization of noncontroversial matters. Some writers see the ability to live with and even relish controversy as essential. "If it is true," argues Clifford Geertz (1983, p. 161), "that insofar as there is a general consciousness it consists of the interplay of a disorderly crowd of not wholly commensurable visions, then the vitality of that

consciousness depends upon creating the conditions under which such interplay will occur." Graff (1990) presents a similar position and, like others (e.g., Carrington & Troyna, 1988; Dewey, 1916; Johnson & Johnson, 1979; Wellington, 1986), argues for fuller treatment of controversial questions in school.

Hirsch (1988), on the other hand, emphasizes the importance for low income minority students (and others) of background knowledge of noncontroversial information. Although his provisional list of what every American needs to know has itself been contentious, he argues for a working familiarity with many noncontroversial matters such as who Paul Gauguin was and what Big Ben is.

In most schools, inquiry about controversial matters is not emphasized (Godhead, 1984). The question of this emphasis is especially salient for low income, urban African-American students, such as those reported on here, who commonly experience less inquiry, and more focus on noncontroversial "basic" information and skills than do middle class students (Collins, Hawkins, & Carver, 1991; Knapp & Turnbull, 1990; Strickland & Ascher, 1992). In the avoidance of controversial matters (though not in all respects), these practices are in accord with accommodationist approaches to curriculum championed, for example, by Booker T. Washington (Holsey, 1901; Watkins, in press). Carter Woodson (1933/1990), on the other hand, argued that "The mere imparting of information is not education" (p. x). James Baldwin held that "The purpose of education is ... to create in a person the ability to look at the world for himself ... To ask questions of the universe, and then learn to live with these questions" (1988, p. 4). Comer contrasts "a curriculum based on 'fact' learning" and "the true value of education--learning to understand that everything is always in flux and that most questions have many answers" (1980, p. 234). (See also, Banks, 1991; Booking, 1986; Ladson-Billings & Henry, 1990; Gob, 1988). The relevance of this question in the particular schools in which we worked was indicated by some teachers who, on hearing of our work, told us that their students had too much chaos in their lives and, in school, needed order and an emphasis on factual information.

We interviewed 4th through 8th grade students about the consequences of memorizing noncontroversial facts versus trying to decide positions on controversial matters. (These matters were, respectively: names and dates concerning W. E. B. DUBOIS and Booker T. Washington or names and sizes of dinosaurs versus the virtues of the philosophies of DUBOIS and Washington or the different theories of the extinction of the dinosaurs.)

Students generally valued both types of curriculum. Nevertheless, they saw the study of controversial topics as having more positive effects on motivation and as more important. Teachers sometimes avoid controversial topics to avoid discipline problems (McNeil, 1986). Students

sometimes see it as fair if teachers reduce learning to the memorization of lists and strategies (McNeil, 1986; Busch, 1991). Yet, on balance, the students we interviewed agreed with observers of classrooms who see teaching that emphasizes simple, noncontroversial information as associated with low student involvement in learning (McNeil, 1986, Page, 1990). In this respect, the students seem likely to see virtue in Carter Woodson's argument that "Above all things [education] must result in making a man think and do for himself" (1933/1990, p. x). They expect study of controversial topics to make students more enthusiastic and more able to exercise judgment and tend to favor the study of controversial topics. The fact that these results were obtained equally for the two very different topics suggests that the findings are not idiosyncratic or specific to a particular topic.

A second study extended the first by covering a larger age span (1st through 8th grade) and students' views on the purposes of education -- the effects they believe school should have on students. Students compared *collaborative* inquiry about controversial topics and individual memorization of noncontroversial facts. The addition of collaborative inquiry (as opposed to the less clearly specified inquiry of Study 1) was to reflect the emphasis on the social exchange of perspectives normally advocated by educators who favor the study of controversial material (e.g., Dewey, 1916; Johnson & Johnson, 1979).

At all grades, students tended to see their school as placing less emphasis on collaborative inquiry than they thought was fair. This suggests that their evaluations did not merely reflect what they saw. As grade increased, so did the tendency to see collaborative inquiry as fairer than memorization of noncontroversial facts. This result appears consistent with the increase with age in students' sense that they can evaluate their own work and should have their ideas heard (Harter, 1981).

This increased emphasis on the fairness of collaborative inquiry does not appear attributable to an increased emphasis by students on collaboration in schoolwork -- collaboration was highly valued at all grades. Nor is it attributable to variation in the value accorded to learning to figure things out and understand them. This was ranked moderately highly at all ages. Memorizing, however, did show a decisive decline in importance across grade. Furthermore, being excited about schoolwork increased appreciably in importance across the grades. This increase is given added meaning by the corresponding increase in expectation that collaborative inquiry will produce more excitement than memorization of facts. With age, students increasingly devalue memorization of facts and see learning that is like an intellectual adventure as fair. They increasingly see collaborative inquiry about a controversial topic as likely to provide this sense of adventure or excitement. This, in part at least, could account for the

increasing sense that collaborative inquiry is fairer than solitary memorization.

Low income, urban, African American students accustomed to rather traditional forms of education see motivational and personal benefits in inquiry about controversial topics and might, if asked by their teachers, argue for the study of more topics that demand exploration and individual judgement. Especially, as they age, these students' evaluations of teaching practices converge with those of scholars such as James Baldwin (1988), John Dewey (1916), and Carter G. Woodson (1933/1990) who have criticized schools for emphasizing a "body of fixed facts and skills to be acquired" (Goodlad, 1984, p. 209).

Concerns for inquiry about controversial matters probably vary with the social context. This is suggested by Thorkildsen and Schmahl's (1991) study of two types of urban school. Low income students accustomed to much direct teaching of noncontroversial information and much emphasis on test scores saw it as fair for them to be given tests on an almost daily basis. They saw tests as helpful in getting them to learn. Students of similar background attending a school where there was much inquiry on student-initiated projects were more inclined to reject tests. They said that tests interfere with learning. As tests generally involve noncontroversial information, the students accustomed to many tests might, in part, have been communicating a greater preference for inquiry about noncontroversial matters. In the above two studies, our interview questions focussed student concerns on motivation. If the focus had been on standardized test scores, which involve noncontroversial knowledge, students might have placed more emphasis on noncontroversial knowledge. In other words, the picture of the students' concerns given in the above two studies probably reflects the context we defined in the interview.

Similarly, within individual classrooms, variation in context bring changes in concerns for types of knowledge and types of learning. Consider the second grade class referred to at the outset. Here, there were times, when the students explicitly favored inquiry about controversial knowledge. They saw the causes of the demise of the dinosaurs as "an unknown thing" and as a good thing to study. Yet, when faced with work sheets, which they recognized as testing their knowledge of material they had just read, they sought right answers.

The boy I quoted at the beginning of this paper displayed interesting fluctuations in concern that seemed to reflect his changing sense of the context, including his sense of his future. For much of the year, he was an enthusiastic participant in discussions about controversial matters. He would, however, occasionally break into such discussions with declarations that this is doing no good and that he wasn't learning anything. These fluctuations seemed to reflect fluctuations in his egotistical preoccupation with whether he was learning faster than others. This was

clearest in the last week of the school year when the class was discussing the third grade which provoked considerable anxiety. This boy declared, "There's so much work and you're always doing conversations and I'm not learning anything. In kindergarten I got information like a computer would. I can't do that now. I knew all I had to know for first and second grade in kindergarten. It's conversation, conversation, and we hardly get anything accomplished."

Others point out that earlier in the discussion he had said work was sometimes hard. Some detail things he learned in the second grade, but his ardor is undimmed. On one earlier occasion when he made this point, he was immediately drawn back into the tide of the conversation he had just disparaged. But in this conversation about the third grade, he is unusually concerned.

Earlier in the year, this boy declared that scientists choose what they will study, that "Science is what you're thinking about and what you discover," and that "you should go to your sources, not their sources." Thinking of the third grade (and beyond that the race for prestige colleges) the student most articulate in his challenges to arbitrary adult authority now wants an adult to pump him full of information he cannot question--information that could offer no challenge to his restless ingenuity.

I take two points from this little example. Firstly, this case suggests a reinterpretation of the changes in college students that William Perry (1970) described as conceptual development. These apparently long-term changes described by Perry resemble very much the change that the above boy illustrates -- a change in concerns and associated cognitions that sometimes occurred within the space of one lesson. What Perry described as a cognitive developmental change (in the Piagetian sense) is probably a change in concern.⁴ That is, an increased acceptance of the concerns that commonly distinguish the context of college from the context of high school. It is easy to re-read Perry's accounts of students' discussions of the difference between high school and college as involving the coming to terms with a context where right-wrong facts are no longer the measure of all things. As our studies show, elementary school students know this to be the case. What many apparently come to accept, however, is that school is only concerned with such knowledge and that genuine inquiry or exploration, therefore, has no place in school.

Secondly, the example suggests that our cognitions about the nature of knowledge, our concerns about what knowledge is worth gaining, and our sense of our context are interdependent. They might be linked together in loose systems meriting the term theories rather than concepts and change (over both short and long term) as any part of the complex is changed. When the boy reflects on the prospect of the third grade, he devalues many of the experiences he

4 This is also the theory -- concept distinction.

had valued while they were occurring. His sense of what knowledge is of most worth changes with his sense of the world and the place he wants in it changes. What we see in the example is an immediate, situational change, but the concern for noncontroversial information could dominate his elementary and secondary school life. Perhaps, when he goes to college he will be prompted to make the transformation in concerns and cognitions Perry described but, I think, misinterpreted.

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