Reading the World with Math: Goals for a Criticalmathematical Literacy Curriculum
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Marilyn Frankenstein suggests ways that teachers can introduce math as a tool to interpret and challenge inequities in our society. Her teaching methods also make math more accessible and applicable because the math is learned in the context of real-life, meaningful experiences. This article is particularly useful for teachers who are creating an interdisciplinary math and social studies curriculum.
Professor Frankenstein's examples are based on her work teaching at the College of Public and Community Service, UMass/Boston. Her students are primarily working-class adults who did not receive adequate mathematics instruction when they were in high school. Many of them were tracked out of college preparation. Therefore, the ideas presented in this article can be applied to the secondary classroom.
For a more detailed description as well as a more theoretical discussion of the concepts presented in this paper, please refer to the publications listed in the reference section by Frankenstein and those coauthored by Frankenstein and Arthur Powell.

When my students examine data and questions such as the ones on unemployment (see box, this page), they are introduced to the four goals of my criticalmathematical literacy curriculum.

1. Understanding the mathematics.
2. Understanding the mathematics of political knowledge.
3. Understanding the politics of mathematical knowledge.
4. Understanding the politics of knowledge.

Clearly, calculating the various percentages for the unemployment rate requires goal number one, an understanding of mathematics. Criticalmathematical literacy goes beyond this to include the other three goals mentioned above. The mathematics of political knowledge is illustrated here by reflecting on how the unemployment data deepens our understanding of the situation of working people in the United States. The politics of mathematical knowledge involves the choice of who counts as unemployed. In class, I emphasize that once we decide which categories make up the numerator (number of unemployed) and the denominator (total labor force), changing that fraction to a decimal fraction and then to a percent does not involve political struggle – that involves understanding the mathematics. But, the decision of who counts where does involve political struggle – so the unemployment rate is not a neutral description of the situation of working people in the United States. And, this discussion generalizes to a consideration of the politics of all knowledge.

In this article, I will develop the meaning of each of these goals, focusing on illustrations of how to realize them in their interconnected complexity. Underlying all these ideas is my belief that the development of self-confidence is a prerequisite for all learning, and that self-confidence develops from grappling with complex material and from understanding the politics of knowledge.

Goal #1: Understanding the Mathematics

Almost all my students know how to do basic addition, subtraction, multiplication and division, although many would have trouble multiplying decimal fractions, adding fractions or doing long division. All can pronounce the words, but many have trouble succinctly expressing the main idea of a reading. Almost all have trouble with basic math word problems. Most have internalized negative self-images about their knowledge and ability in mathematics. In my beginning lessons I have students read excerpts where the main idea is supported by numerical details and where the politics of mathematical knowledge is brought to the fore. Then the curriculum moves on to the development of the Hindu-Arabic place-value numeral system, the meaning of numbers, and the meaning of the operations.

I start lessons with a graph, chart, or short reading which requires knowledge of the math skill scheduled for that day. When the discussion runs into a question about a math skill, I stop and teach that skill. This is a non-linear way of learning basic numeracy because questions often arise that involve future math topics. I handle this by previewing. The scheduled topic is formally taught. Other topics are also discussed so that students' immediate questions are answered and so that when the formal time comes for them in the syllabus, students will already have some familiarity with them. For example, if we are studying the meaning of fractions and find that in 1985, 2/100 of the Senate were women, we usually preview how to change this fraction to a percent. We also discuss how no learning is linear and how all of us are continually reviewing, recreating, as well as previewing in the ongoing process of making meaning. Further, there are other aspects about learning which greatly strengthen students' understandings of mathematics:

(a) breaking down the dichotomy between learning and teaching mathematics;
(b) considering the interactions of culture and the development of mathematical knowledge; and
(c) studying even the simplest of mathematical topics through deep and complicated questions.

These are explained in more detail below.

(a) Breaking Down the Dichotomy between Learning and Teaching Mathematics. When students teach, rather than explain, they learn more mathematics, and they also learn about teaching. They are then empowered to proceed to learn more mathematics. As humanistic, politically concerned educators, we often talk about what we learn from our students when we teach. Peggy McIntosh (1990) goes so far as to define teaching as "the development of self through the development of others." Certainly when we teach we learn about learning. I also introduce research on math education so that students can analyze for themselves why they did not previously learn mathematics. I argue that learning develops through teaching and through reflecting on teaching and learning. So, students' mathematical understandings are deepened when they learn about mathematics teaching as they learn mathematics. Underlying this argument is Paulo Freire's concept that learning and teaching are part of the same process, and are different moments in the cycle of gaining existing knowledge, re-creating that knowledge and producing new knowledge (Freire, 1982).

Students gain greater control over mathematics problem-solving when, in addition to evaluating their own work, they can create their own problems. When students can understand what questions it makes sense to ask from given numerical information, and can identify decisions that are involved in creating different kinds of problems, they can more easily solve problems others create. Further, criticalmathematical literacy involves both interpreting and critically analyzing other people's use of numbers in arguments. To do the latter you need practice in determining what kinds of questions can be asked and answered from the available numerical data, and what kinds of situations can be clarified through numerical data. Freire's concept of problem-posing education emphasizes that problems with neat, pared down data and clear-cut solutions give a false picture of how mathematics can help us "read the world." Real life is messy, with many problems intersecting and interacting. Real life poses problems whose solutions require dialogue and collective action. Traditional problem-solving curricula isolate and simplify particular aspects of reality in order to give students practice in techniques. Freirian problem-posing is intended to reveal the inter-connections and complexities of real-life situations where "often, problems are not solved, only a better understanding of their nature may be possible" (Connolly, 1981). A classroom application of this idea is to have students create their own reviews and tests. In this way they learn to grapple with mathematics pedagogy issues such as: what are the key concepts and topics to include on a review of a particular curriculum unit? What are clear, fair and challenging questions to ask in order to evaluate understanding of those concepts and topics?

(b) Considering the Interactions of Culture and the Development of Mathematical Knowledge. This aspect is best described with the following example.

Example: When we are learning the algorithm for comparing the size of numbers, I ask students to think about how culture interacts with mathematical knowledge in the following situation:

> Steve Lerman (1993) was working with two 5-year-olds in a London classroom. He recounts how they "were happy to compare two objects put in front of them and tell me why they had chosen the one they had [as bigger]. However, when I allocated the multilinks to them (the girl had 8 and the boy had 5) to make a tower...and I asked them who had the taller one, the girl answered correctly but the boy insisted that he did. Up to this point the boy had been putting the objects together and comparing them. He would not do so on this occasion and when I asked him how we could find out whose tower was the taller he became very angry. I asked him why he thought that his tower was taller and he just replied 'Because IT IS!' He would go no further than this and seemed to be almost on the verge of tears."

At first students try to explain the boy's answer by hypothesizing that each of the girl's links was smaller than each of the boy's or that she built a wider, shorter tower. But after reading the information, they see that this could not be the case, since the girl's answer was correct. We speculate about how the culture of sexism – that boys always do better or have more than girls – blocked the knowledge of comparing sizes that the boy clearly understood in a different situation.

(c) Studying Mathematical Topics through Deep and Complicated Questions. Most educational materials and learning environments in the United States, especially those labeled as "developmental" or "remedial," consist of very superficial, easy work. They involve rote or formulaic problem-solving experiences. Students get trained to think about successful learning as getting high marks on school or standardized tests. I argue that this is a major reason that what is learned is not retained and not used. Further, making the curriculum more complicated, where each problem contains a variety of learning experiences, teaches in the non-linear, holistic way in which knowledge is developed in context. This way of teaching leads to a more clear understanding of the subject matter.

Example: In the text below, Sklar and Sleicher demonstrate how numbers presented out of context can be very misleading. I ask students to read the text and discuss the calculations Sklar and Sleicher performed to get their calculation of the U.S. expenditure on the 1990 Nicaraguan election. ($17.5 million ˜ population of Nicaragua = $5 per person). This reviews their understanding of the meaning of the operations. Then I ask the students to consider the complexities of understanding the $17.5 million expenditure. This deepens their understanding of how different numerical descriptions illuminate or obscure the context of U.S. policy in Nicaragua, and how in real-life just comparing the size of the numbers, out of context, obscures understanding.

> On the basis of relative population, Holly Sklar has calculated that the $17.5 million U.S. expenditure on the Nicaraguan election is $5 per person and is equivalent to an expenditure of $1.2 billion in the United States. That's one comparison all right, but it may be more relevant to base the comparison on the effect of the expenditure on the economy or on the election, i.e. to account for the difference in per capita income, which is at least 30/1 or an equivalent election expenditure in the United States of a staggering $30 billion!

Is there any doubt that such an expenditure would decisively affect a U.S. election? (Sleicher, 1990)

Goal#2: Understanding the Mathematics of Political Knowledge

I argue, along with Freire (1970) and Freire and Macedo (1987), that the underlying context for critical adult education, and criticalmathematical literacy, is "to read the world." To accomplish this goal, students learn how mathematics skills and concepts can be used to understand the institutional structures of our society. This happens through:

a. understanding the different kinds of numerical descriptions of the world (such as fractions, percents, graphs) and the meaning of the sizes of numbers, and
b. using calculations to follow and verify the logic of someone's argument, to restate information, and to understand how raw data are collected and transformed into numerical descriptions of the world. The purpose underlying all the calculations is to understand better the information and the arguments and to be able to question the decisions that were involved in choosing the numbers and the operations.

Example: I ask students to create and solve some mathematics problems using the information in the following article (In These Times, April 29–May 5, 1992). Doing the division problems implicit in this article deepens understanding of the economic data, and shows how powerfully numerical data reveal the structure of our institutions.

Drowning by numbers

It may be lonely at the top, but it can't be boring – at least not with all that money. Last week the federal government released figures showing that the richest 1 percent of American households was worth more than the bottom 90 percent combined. And while these numbers were widely reported, we found them so shocking that we thought they were worth repeating. So here goes: In 1989 the top 1 percent of Americans (about 934,000 households) combined for a net worth of $5.7 trillion; the bottom 90 percent (about 84 million households) could only scrape together $4.8 trillion in net worth.

Example: Students practice reading a complicated graph and solving multiplication and division problems in order to understand how particular payment structures transfer money from the poor to the rich.2

The Rate Watcher's Guide (Morgan, 1980) details why under declining block rate structures, low-income citizens who use electricity only for basic necessities pay the highest rates, and large users with luxuries like trash compactors, heated swimming pools or central air-conditioning pay the lowest rates. A 1972 study conducted in Michigan, for example, found that residents of a poor urban area in Detroit paid 66% more per unit of electricity than did wealthy residents of nearby Bloomfield Hills. Researchers concluded that "approximately $10,000,000 every year leave the city of Detroit to support the quantity discounts of suburban residents." To understand why this happens, use the graph above which illustrates a typical "declining block rate" payment structure to (a) compute the bill of a family which uses 700 kwh of electricity per month and the bill of a family which uses 1400 kwh; (b) calculate each family's average cost per kwh; (c) discuss numerically how the declining block rate structure functions and what other kinds of payment structures could be instituted. Which would you support and why?

Example: Students are asked to discuss how numbers support Helen Keller's main point and to reflect on why she sometimes uses fractions and other times uses whole numbers. Information about the politics of knowledge is included as a context in which to set her views.

Although Helen Keller was blind and deaf, she fought with her spirit and her pen. When she became an active socialist, a newspaper wrote that "her mistakes spring out of the...limits of her development." This newspaper had treated her as a hero before she was openly socialist. In 1911, Helen Keller wrote to a suffragist in England: "You ask for votes for women. What good can votes do when ten-elevenths of the land of Great Britain belongs to 200,000 people and only one-eleventh of the land belongs to the other 40,000,000 people? Have your men with their millions of votes freed themselves from this injustice?" (Zinn, 1980)

Example: Students are asked to discuss what numerical understandings they need in order to decipher the following chart. They see that a recognition of how very small these decimal fractions are, so small that watches cannot even measure the units of time, illuminates the viciousness of time-motion studies in capitalist management strategies.

Samples from time-and-motion studies, conducted by General Electric. Published in a 1960 handbook to provide office managers with standards by which clerical labor should be organized (Braverman, 1974).

Open and close	**Minutes**
Open side drawer of standard desk	0.014
Open center drawer	0.026
Close side drawer	0.015
Close center drawer	0.027
Chair activity	
Get up from chair	0.039
Sit down in chair	0.033
Turn in swivel chair	0.009

Goal #3: Understanding the Politics of Mathematical Knowledge

Perhaps the most dramatic example of the politics involved in seemingly neutral mathematical descriptions of our world is the choice of a map to visualize that world. Any two-dimensional map of our three-dimensional Earth will, of course, contain mathematical distortions. The political struggle/choice centers around which of these distortions are acceptable to us and what other understandings of ours are distorted by these false pictures. For example, the map with which most people are familiar, the Mercator map, greatly enlarges the size of "Europe"3 and shrinks the size of Africa. Most people do not realize that the area of what is commonly referred to as "Europe" is smaller than 20% of the area of Africa. Created in 1569, the Mercator map highly distorts land areas, but preserves compass direction, making it very helpful to navigators who sailed from Europe in the sixteenth century.

When used in textbooks and other media, combined with the general (mis)perception that size relates to various measures of so-called "significance," the Mercator map distorts popular perceptions of the relative importance of various areas of the world. For example, when a U.S. university professor asked his students to rank certain countries by size they "rated the Soviet Union larger than the continent of Africa, though in fact it is much smaller" (Kaiser, 1991), associating "power" with size.

Political struggles to change to the Peter's projection, a more accurate map in terms of land area, have been successful with the United Nations Development Program, the World Council of Churches, and some educational institutions (Kaiser, 1991). However, anecdotal evidence from many talks I've given around the world suggest that the Mercator is still widely perceived as the way the world really looks.

As Wood (1992) emphasizes:

> The map is not an innocent witness...silently recording what would otherwise take place without it, but a committed participant, as often as not driving the very acts of identifying and naming, bounding and inventorying it pretends to no more than observe.

In a variety of situations, statistical descriptions don't simply or neutrally record what's out there. There are political struggles/choices involved in: which data are collected; which numbers represent the most accurate data; which definitions should guide how the data are counted; which methods should guide how the data are collected; which ways the data should be disaggregated; and which are the most truthful ways to describe the data to the public.

Example: Political struggle/choice over which numbers represent the most accurate data. To justify the Eurocentric argument that the Native American population could not have been so great, various "scholars" have concluded that about one million people were living in North America in 1500. Yet, other academics "argued on the basis of burial mound archeology and other evidence that the population of the Ohio River Valley alone had been [that] great," (Stiffarm & Lane, 1992) and that "a pre-contact North American Indian population of fifteen million is perhaps the best and most accurate working number available." Admitting the latter figure would also require admitting extensive agricultural institutions, as opposed to the less reliable hunting and gathering. Cultivators of land are "primarily sedentary rather than nomadic...and residents of permanent towns rather than wandering occupants of a barren wilderness."

Example: Political struggle/choice over which definitions should guide how data are counted. In 1988, the U.S. Census Bureau introduced an "alternative poverty line," changing the figure for a family of three from $9453 to $8580, thereby preventing 3.6 million people whose family income fell between those figures from receiving food stamps, free school meals and other welfare benefits. At the same time, the Joint Economic Committee of Congress argued that "updating the assessments of household consumption needs... would almost double the poverty rate, to 24 percent" (Cockburn, 1989). Note that the U.S. poverty line is startlingly low. Various assessments of the smallest amount needed by a family of four to purchase basic necessities in 1991 was 155% of the official poverty line. "Since the [census] bureau defines the [working poor] out of poverty, the dominant image of the poor that remains is of people who are unemployed or on the welfare rolls. The real poverty line reveals the opposite: a majority of the poor among able-bodied, non-elderly heads of households normally work full-time. The total number of adults who remain poor despite normally working full-time is nearly 10 million more than double the number of adults on welfare. Two-thirds of them are high school or college-educated and half are over 33. Poverty in the U.S. is a problem of low-wage jobs far more than it is of welfare dependency, lack of education or work inexperience. Defining families who earn less than 155% of the official poverty line as poor would result in about one person in every four being considered poor in the United States." (Schwartz & Volgy, 1993)

Example: Political struggle/choice over which ways data should be disaggregated. The U.S. Government rarely collects health data broken down by social class. In 1986, when it did this for heart and cerebrovascular disease, it found enormous gaps:

> "The death rate from heart disease, for example, was 2.3 times higher among unskilled blue-collar operators than among managers and professionals. By contrast, the mortality rate from heart disease in 1986 for blacks was 1.3 times higher than for whites...the way in which statistics are kept does not help to make white and black workers aware of the commonality of their predicament." (Navarro, 1991)

Goal #4: Understanding the Politics of Knowledge

There are many aspects of the politics of knowledge that are integrated into this curriculum. Some involve reconsidering what counts as mathematical knowledge and re-presenting an accurate picture of the contributions of all the world's peoples to the development of mathematical knowledge. Others involve how mathematical knowledge is learned in schools. Winter (1991), for example, theorizes that the problems so many encounter in understanding mathematics are not due to the discipline's "difficult abstractions," but due to the cultural form in which mathematics is presented. Sklar (1993), for a different aspect, cites a U.S. study that recorded the differential treatment of Black and White students in math classes.

> Sixty-six student teachers were told to teach a math concept to four pupils - two White and two Black. All the pupils were of equal, average intelligence. The student-teachers were told that in each set of four, one White and one Black student was intellectually gifted, the others were labeled as average. The student teachers were monitored through a one-way mirror to see how they reinforced their students' efforts. The "superior" White pupils received two positive reinforcements for every negative one. The "average" White students received one positive reinforcement for every negative reinforcement. The

> "average" Black student received 1.5 negative reinforcements, while the "superior" Black students received one positive response for every 3.5 negative ones.

Discussing the above study in class brings up the math topics of ratios and forming matrix charts to visualize the data more clearly. It also involves students who are themselves learning mathematics in reflecting on topics in mathematics education. This is another example of breaking down the dichotomy between learning and teaching, a category discussed in the above section on Understanding the Mathematics.

And, of course, Freire (1970) theorizes about the politics of "banking education," when teachers deposit knowledge in students' empty minds.

Underlying all these issues are more general concerns I argue should form the foundation of all learning, concerns about what counts as knowledge and why. I think that one of the most significant contributions of Paulo Freire (1982) to the development of a critical literacy is the idea that:

> Our task is not to teach students to think – they can already think, but to exchange our ways of thinking with each other and look together for better ways of approaching the decodification of an object.

This idea is critically important because it implies a fundamentally different set of assumptions about people, pedagogy and knowledge-creation. Because some people in the United States, for example, need to learn to write in "standard" English, it does not follow that they cannot express very complex analyses of social, political, economic, ethical and other issues. And many people with an excellent grasp of reading, writing and mathematics skills need to learn about the world, about philosophy, about psychology, about justice and many other areas in order to deepen their understandings.

In a non-trivial way we can learn a great deal from intellectual diversity. Most of the burning social, political, economic and ethical questions of our time remain unanswered. In the United States we live in a society of enormous wealth and we have significant hunger and homelessness; although we have engaged in medical and scientific research for scores of years, we are not any closer to changing the prognosis for most cancers. Certainly we can learn from the perspectives and philosophies of people whose knowledge has developed in a variety of intellectual and experiential conditions. Currently "the intellectual activity of those without power is always labeled non-intellectual" (Freire & Macedo, 1987). When we see this as a political situation, as part of our "regime of truth," we can realize that all people have knowledge, all people are continually creating knowledge, doing intellectual work, and all of us have a lot to learn.

Marilyn Frankenstein *is one of a group of scholars and activists in the field of mathematics education from a critical perspective. She is co-founder, along with Arthur B. Powell and John Volmink, of the Criticalmathematics Educators Group (CmEG) and the author of numerous articles and books on criticalmathematics (see References below.) She is a Professor of Applied Language and Mathematics,* *College of Public and Community Service, University of Massachusetts-Boston, Boston, MA 02125. E-mail: marilyn.frankenstein@umb.edu.*

Notes

1. Thanks to my friend, UMass/Lowell economist Chris Tilly, for this problem.
2. This situation has changed in Massachusetts, which now has a flat rate structure, and my reference did not contain real data for Michigan. So although the context-setting data are real, the numbers used to understand the concept of declining block rates are realistic, but not real.
3. Grossman (1994) argues that "Europe has always been a political and cultural definition. Geographically, Europe does not exist, since it is only a peninsula on the vast Eurasian continent." He goes on to discuss the history and various contradictions of geographers' attempts to "draw the eastern limits of 'western civilization' and the white race" (p. 39).

References

Braverman, H. 1974. *Labor and monopoly capital.* New York: Monthly Review Press.
Connolly, R. 1981. "Freire, praxis, and education." In R. Mackie (Ed.) *Literacy and revolution: The pedagogy of Paulo Freire.* New York: Continuum Press.
Cockburn, A. 1989, December 11. "Calculating an end to poverty." *The Nation*.
Frankenstein, M. 1983. "Critical mathematics education: An application of Paulo Freire's Epistemology." *Journal of Education*. 165.4:315-340.
—. 1989. *Relearning mathematics: A different third r radical maths*. London: Free Association Books.
—. 1990. "Incorporating race, class, and gender issues into a critical mathematical literacy curriculum." *Journal of Negro Education*. 59.3:336-347.
—. 1994, Spring. "Understanding the politics of mathematical knowledge as an integral part of becoming critically numerate." *Radical Statistics*. 56:22-40.
—. 1995. "Equity in mathematics education: Class in the world outside the class." In W.G. Secada, E. Fennema, & L.B. Adajian, (Eds.) *New directions for equity in mathematics education*. pp. 165-190. Cambridge, UK: Cambridge University Press.
—. 1997. "Breaking down the dichotomy between teaching and learning mathematics." In Freire, P., J. Fraser, D. Macedo, et al. (Eds.) *Mentoring the mentor: a critical dialogue with Paulo Freire*. pp 59-88. New York: Peter Lang.
—. 1997. "In addition to the mathematics: Including equity issues in the curriculum." In J. Trentacosta (Ed.) *Multicultural and gender equity in the mathematics classroom: The gift of diversity*. pp 10-22. Reston , VA: National Council of Teachers of Mathematics.
Frankenstein, M., & Powell, A.B. 1989. "Empowering non-traditional college students: On social ideology and mathematics education." *Science and Nature*. 9.10:100-112.
—. 1994. "Toward liberatory mathematics: Paulo Freire's epistemology and ethnomathematics." In P. McLaren & C. Lankshear (Eds.) *Politics of liberation: Paths from Freire*. pp. 74-99. London: Routledge.
Freire, P. 1970. Pedagogy of the oppressed. New York: Seabury.
—. 1982 Education for critical consciousness. Unpublished Boston College course notes taken by Frankenstein, M. July 5-15.
Freire, P., & Macedo, D. 1987. *Literacy: Reading the word and the world*. South Hadley, MA: Bergen & Garvey.
Grossman, Z. 1994. "Erecting the new wall: Geopolitics and the restructuring of Europe." *Z Magazine*. 39-45.
Kaiser, W.L. 1991, May/June "New global map presents accurate views of the world." *Rethinking Schools*. 12-13.
Lerman, S. 1993. Personal communication with the author. March 26.
McIntosh, P. 1990, November 14. "Interactive phases of personal and pedagogical change." Talk at Rutgers University/Newark, NJ.

Morgan, R.E. 1980. *The rate watcher's guide*. Washington, DC: Environmental Action Foundation.
Navarro, V. 1991, April 8. "The class gap." *The Nation*. 436-437.
Orenstein, R. E. 1972. *The psychology of consciousness*. San Francisco: W. H. Freeman.
Powell, A.B., & Frankenstein, M. 1997. *Ethnomathematics: Challenging Eurocentrism in mathematics education*. Albany, NY: SUNY Press.
Saunders, B. 1994, September 26. "Number game." *The Nation*. 259.9:295-296.
Schwarz, J.E., & Volgy, T.J. 1993, February 15. "One-fourth of nation: Above the poverty line - but poor." *The Nation*. 191-192.
Sklar, H. 1993, July/August. "Young and guilty by stereotype." *Z Magazine*. 52-61.
Sleicher, C. 1990, February. "Letter to the editor." *Z Magazine*. 6.
Stiffarm, L.A., & Lane, P. Jr. 1992. "Demography of Native North America: A question of American Indian survival." In M. A. Jaimes (Ed.) *The State of Native America*. pp. 23-53. Boston: South End Press.
Winter, R. 1991. "Mathophobia, Pythagoras and roller-skating." In *Science as culture*, Vol. 10. London: Free Association Books.
Wood, D. 1992. *The power of maps*. New York: The Guilford Press.
Zinn, H. 1995. *A people's history of the United States*. New York: Harper & Row.

Example: Unemployment Rate

In the United States, the unemployment rate is defined as the number of people unemployed, divided by the number of people in the labor force. Here are some figures from December 1994. (All numbers in thousands, rounded off to the nearest hundred thousand.)

ï In your opinion, which of these groups should be considered unemployed? Why?

ï Which should be considered part of the labor force? Why?

ï Given your selections, calculate the unemployment rate in 1994.

1. 101,400: Employed full-time
2. 19,000: Employed part-time, want part-time work
3. 4,000: Employed part-time, want full-time work
4. 5,600: Not employed, looked for work in last month, not on temporary layoff
5. 1,100: Not employed, on temporary layoff
6. 400: Not employed, want a job now, looked for work in last year, stopped looking because discouraged about prospects of finding work
7. 1,400: Not employed, want a job now, looked for work in last year, stopped looking for other reasons
8. 3,800: Not employed, want a job now, have not looked for work in the last year
9. 60,700: Not employed, don't want a job now (adults)

For discussion: The U.S. official definition counts 4 and 5 as unemployed and 1 through 5 as part of the labor force, giving an unemployment rate of 5.1%. If we count 4 through 8 plus half of 3 as unemployed, the rate would be 9.3%. Further, in 1994 the Bureau of Labor Statistics stopped issuing its U–7 rate, a measure which included categories 2 and 3 and 6 through 8, so now researchers will not be able to determine "alternative" unemployment rates (Saunders, 1994).1