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## STUDENTS AND EDUCATIONAL PRODUCTIVITY

### Benjamin Levin
### University of Manitoba

*LEVIN@CCU.UMANITOBA.CA*

**Abstract:** The literature on productivity in education is extensive. The object of this effort is to find a production function--a mathematical expression of the relationship between inputs and outputs in education. In this paper, the status of the literature on production functions is reviewed. Most of these approaches have seen schooling as something that is done to students, rather than thinking about education as something that students essentially do for themselves. An argument is developed that makes students the key factors in shaping school outcomes, and therefore a central focus of our thinking about productivity. The paper concludes with suggestions for research and policy.

In the past decade educational systems around the world have come under sharp criticism because of a feeling that students are simply not learning enough. Many countries made major efforts to expand educational provision in the 1950s and 1960s with the idea that more education would lead to many other social goods, such as increased economic success, greater social harmony, less poverty, less crime, and the like. While expenditures on education increased steadily in most industrialized countries through the 1970s, for at least the last fifteen years there has been contention that the higher investment has not brought the anticipated results (Hallak, 1990). More is spent on education, yet economic and social circumstances do not seem to improve.

Of course such an argument is a simplification, and not uncontroversial. One could take issue with every statement within it. For example, there are all sorts of reasons beyond spending levels as to why students and schools perform as they do. In many countries public support for education remains high, and there is not the same sense of crisis that envelops education policy in the United States. Some critics see the attack on schooling as a neo-conservative effort to move

away from commitments to equity and the public sector (Boyd, 1991). But those who criticize the neo-conservative agenda in education also have concerns about the quality and appropriateness of schooling. Regardless of the political solution advocated, there does seem to be widespread concern that systems of mass schooling are not as effective as they should or could be. One way of thinking about this problem is to see it as one of productivity.

There is a considerable literature on productivity in education, where productivity is taken as the search for patterns of school organization that produce the best student outcomes (recognizing that what is "best" is not a self-evident matter). In economic terminology, the effort is to find a production function - a mathematical expression of the relationship between inputs and outputs in education. The next section of this paper reviews the status of the literature on production functions. Following that, I suggest that most of these approaches have seen schooling as something that is done to students, rather than thinking about education as something that students essentially do for themselves. An argument is developed that makes students the key factors in shaping school outcomes, and therefore a central focus of our thinking about productivity. The paper concludes with suggestions for research and for policy based on the position outlined.

## Approaches to understanding productivity

The leading writer on production functions in education is probably David Monk of Syracuse University. In his 1990 book, *Educational Finance: An Economic Approach,* and in a 1992 article in *Educational Evaluation and Policy Analysis,* Monk outlines an informed and sophisticated view of the history of educational productivity studies and of the status of thinking in the area. His work is the most complete published analysis of the literature on educational production functions, and stands as the definitive synthesis of present knowledge. Monk's basic view is that production studies of schooling have not yielded very much useful knowledge yet, and that they face serious obstacles to doing so, but that it is too soon to give up on the attempt.

In his book, Monk uses the production function as the basic element in studying productivity in schools. He defines a production function as a model which links conceptually and mathematically outcomes, inputs, and the processes that transform the latter into the former in schools (p. 316). He notes that production functions are important for improving both technical and allocative efficiencies. However, despite their potential benefits, Monk recognizes the major obstacles that face the creation of production functions for education. Neither outcomes, inputs, nor processes are easily understood.

In education, outcomes are multiple, jointly produced, and difficult to weigh against one another. The outcomes of education are not all translatable into a standard metric, such as money, which makes it very difficult to give them relative value. A further difficulty with outcomes has to do with the level at which they should be measured. At various times researchers have been interested in outcomes of individual students, classes of students, schools, school districts, states, nations, ethnic groups, age groups, gender groups, and all sorts of other subsets of the population. Monk is aware of the difficulties in dealing with both micro and macro analyses. He concludes that there is no one best approach.

> "... it is not always the case that microlevel data are better than macrolevel data. The proper level of analysis depends largely on the nature of the phenomenon being studied. Some phenomena are district rather than school or classroom phenomena and have effects that are felt throughout entire school districts" (p.327).

The inputs of the school itself are relatively easy to recognize--buildings, teachers, textbooks, and the like-- although Monk notes difficulties here, too, in knowing which inputs do reach students, and in what form.

What does it mean to say that a resource flows to a student? A teacher might spend time providing tutorial instruction for a single student. But the student may or may not be attentive to the instruction being provided. The student may "... decline the assistance, either overtly or covertly. In such a case, did the resource flow?" (p. 328)

Time is another significant problem in studying educational productivity. It seems reasonable to believe that students will learn at different rates. Yet this seemingly innocuous conclusion creates enormous difficulties for analysis, since it means that different resources at different times and in different arrangements may be necessary for different students. Indeed, there could be a unique production function for each child, or even several functions for each child under different circumstances (p.344).

Analysts also agree that learning is influenced significantly by factors outside the school. A vast array of home and background variables, Monk indicates, have been used at various times as part of the specification of the inputs of schooling, not always accompanied by a strong theoretical rationale for their importance (p. 324). Even when identified, these input variables are difficult to measure. Monk cites intelligence as a particularly important and difficult to resolve instance.

Finally, as if these problems were not enough, Monk mentions various technical problems in studying productivity in education. These include the limited variation among schools in many of their attributes, the possibility that both input and outcome variables are collinear, and the likelihood that inputs and outcomes influence each other. Finally, there is the real possibility that certain aspects of education are "anarchistic," by which Monk means that actors are not goal-oriented, so that even if a best way of doing things were known, people would not pay attention to it (p.339).

No surprise, then, that Monk raises the possibility that there is no production function for education; that no "systematic process governs the transformation of inputs into outcomes" (p. 342).

Many of the same themes are reprised in Monk's 1992 article. He begins by pointing out the current policy push towards what he calls "outcomes as standards" -- the idea that educational outcomes can be improved by setting and enforcing higher standards. He notes that there is a paradox between pessimistic assessments of productivity research in education and the growing drive towards improving productivity, which requires "a nontrivial store of knowledge regarding the ability of state, district, and school officials to enhance productivity" (1992, p.307). Monk's view is that

> "...the underlying model of education productivity is inadequate and has not evolved much.... The weakness of the conceptualization gives rise to much of the policy-making frustration." (p. 308)

In particular, Monk argues that education productivity research has failed to consider the ways in which production in education is different from other kinds of production. For example, Monk notes that some outcomes of schools are also inputs to later production (e.g., knowledge gained in primary school is an input to learning in secondary school). He points out that many of the most important inputs in education, such as family and peer influences, are not purchased and are

difficult to account for. Most relevant to this discussion, he acknowledges that "student time and effort are central ingredients in education production" (p. 315).

Monk then distinguishes between two possible strategies. One assumes that there is no "tractable" production function for education, so that central authorities cannot improve outcomes through a standard set of practices. The second approach retains faith in the existence of a production-function, with "the outcomes-as-standards strategy as a new means of gaining insight into the function's properties" (p. 316). Monk's discussion of the policy implications of these two alternatives is interesting, but will not be recapitulated here. After examining the alternatives he concludes

> "...(a) it is premature to conclude that the production function lacks meaning within education contexts; (b) ...approaches to the outcomes-as-standards policy-making response have merit and involve increased efforts to monitor and make sense of the experimentation that occurs; and (c) the embrace of the outcomes-as-standards response ought not to crowd out alternative, more deductively driven strategies." (p. 320)

Monk goes on to advocate the study of productivity through looking at the properties of classrooms. This proposal is based partly on the belief that teachers will use different instructional approaches with different classes of students. He discusses the ways in which these responses by teachers might occur depending on the students, and suggests that teachers may have individual patterns of adjustment that could be studied and defined in terms of their impact.

**Educational production and the role of students**

Monk's work provides a good review of what has been done in the area of productivity research in education, and useful lenses for viewing the value of the work and possible directions for its development. He draws our attention particularly to weaknesses in the way in which the idea of educational process has been conceived. I want to suggest that the study of productivity in education has been greatly hampered by underestimating the central role played by students in generating educational outcomes. A better understanding of productivity in education requires much more attention to what students think and do.

The idea of a production function for education depends, of course, on seeing education as being a production process, which means that inputs are transformed into outputs in a standard way. The essential exemplar of a production relationship is the factory, in which raw materials are turned into finished products through various production processes. One can easily recognize the powerful role that the metaphor of the factory plays in much of the current policy conversation around schooling.

There may be, however, a fundamental problem with the production metaphor when applied to schooling. In a school, it is not evident what (or who) the raw materials are, nor who is doing the producing, nor what the product is. All of these problems are illustrated clearly when we consider the role of students in education.

One way of thinking about the issue is to ask whether students are raw materials being processed, or whether they are, as some more recent formulations have it, the workers doing the producing. Production function studies tend to slide over this distinction, treating students sometimes as producers but more often as materials. Students are seen as producers to the extent that issues such as their motivation and effort are taken into account. Yet they are seen as materials to the

extent that studies focus on the antecedents of students, much as we might want to ensure that a certain quality of steel went into the manufacture of cars. Moreover, an implicit assumption in most of the work is that schooling is something done to students--that adults organize schooling to produce certain outcomes. Interest in students is chiefly a matter of how well our efforts have succeeded.

This stance is also visible in much of the research on school processes, including studies that purportedly focus on students. For example, Merlin Wittrock, reviewing research on students' thought processes in the *Third Handbook of Research on Teaching,* noted that "...we must know and understand students' perceptions and previously learned strategies in order to teach a new strategy, and to understand how students will respond to it" (1986, p. 301). Yet the chapter has very little to say about how students think. Most of it reviews studies in which experimenters tried various manipulations to see what their outcomes would be. Learning directly from students about their thinking is essentially absent. In the same volume, in an otherwise valuable discussion of models of thinking about teaching, Lee Shulman (1986) provided almost no comment on the importance of students' understandings and intentions in affecting both teaching and learning.

Many of the problems of production studies hinge on the role of students; whether they are producers or materials. As soon as students are viewed as individuals with unique capacities and interests, the problems of specifying a production relationship in schools become enormous, as Monk points out. Imagine a factory in which the raw materials had minds of their own, and could make autonomous decisions about whether they would be part of whatever was being produced. Just as one was about to weld a piece of metal to be the roof of a car, the part one had in hand would announce its unwillingness to play the assigned role, and its desire instead to be part of an art gallery instead of part of a car, or to become a piece of cloth instead of a piece of metal. A change in welding technique might work for those pieces of metal willing to undergo it, but would hardly solve the problem.

The analogy may seem silly, but this is what happens in schools. Students must do the learning; there is no way around this fact. Whatever schools provide, whatever teachers do, in the end it is the student who must use the resources to acquire skills and knowledge. As Fenstermacher pointed out (1990) in comparing teaching to professions such as medicine or law, education is not something we do to people, but something that people do for themselves, assisted, we hope, by the efforts of teachers. Students play a far more complicated role than that of raw materials.

The idea of the student as worker seems more promising than that of the student as material to be worked on, since it acknowledges that learning is something that students do. But it too has problems as an analogy. In economic processes workers are doing something to some material or for someone else. Although students often do think of schooling in this sense, as doing something for their teachers or their parents, the concept of education is centrally concerned about what happens to learners, not what happens to others around them. If students are the workers, then they are working on themselves rather than on external materials.

These are large differences from a standard production model or even from production in other public service activities such as health care. Students do not stand in relation to schools either as raw materials to be processed or as workers doing the processing. Education is a unique kind of production because it requires learners to create knowledge and meaning in the context of their own lives. The key aspect of social situations such as schooling, as has often been pointed out by theorists, is that humans are intentional; they can alter their actions according to their developing understanding of a given situation. This understanding is best captured in the phenomenological

sociology of Alfred Schutz (1967, 1970), who wrote extensively about human intention and action and their development through a person's life experiences. Schutz's work, and that of others in the same vein (e.g., Natanson, 1970; Greene, 1988), illustrates the ways in which people make sense of their world, and how these relevances shift constantly as their ideas and situations change.

Every teacher knows this, of course. Every teacher realizes that what happens in a class is fundamentally dependent on who the students are, how they make sense of the world, and what they want or do not want to do. Students are constantly making decisions about the amount of effort, attention and interest they will put into their school work. They decide to come to school or not, to pay attention in class or not, to take the material seriously or not, to focus on grades or not (Doyle, 1986). These decisions, we may hope, are not entirely independent of what schools and teachers do. Neither are they determined by what happens in schools. We may arrange schooling on the basis of relatively standard treatment of all, but every educator recognizes that the best laid plans may, and often do, come to nothing in the face of students with different agendas.

It is not merely that students are shaped by their backgrounds or abilities, either, important though these may be. For every student, background, ability and a variety of other life circumstances produce a unique biography, a unique personality, and a unique way of responding to the world. These elements are expressed in school, as they are in every other aspect of a person's life.

**Some examples**

Many studies illustrate clearly the influences that shape students' approach to schooling and the crucial role that students play in creating educational outcomes. Examining a few studies will illustrate the centrality and dynamics of students' roles.

Paul Willis's classic study of working class boys in Britain, *Learning to Labour,* shows how "the lads" develop their understanding of schooling as a result of family and social class background and peer culture, and how this understanding influences their behavior in school. Willis's "lads" also distinguish themselves from other groups within the school, and draw much of their identity from their oppositional behavior. They set out to be disruptive, to aggravate teachers and to avoid doing what the school wants. For teachers they are intractably difficult. Though their views and behavior may not fit the norms of the school, these boys do have knowledge about themselves and the world, and the ability to apply that knowledge when it seems appropriate to them to do so. Their identification of themselves as working class, with a particular orientation both to school and work, sets up various tensions and paradoxes in their world which Willis describes.

*Making the Difference* (Connell, Ashenden, Kessler and Dowsett, 1982), provides an extended portrait of secondary students in Australian public and private schools. The study shows how, for each student, a particular combination of family, personality, life experience and school leads students to a way of thinking about schooling and behaving in school. Even where class backgrounds are similar, some students end up relatively committed to schooling, while others do not -- perhaps because of parents, or friends, or a teacher, or some event that occurred. The range of circumstances that can have important impacts on students' views and choices is practically infinite. Moreover, Connell et al. point out that "'being a good student' is a constructed fact, not a given", so that students' commitment to school is "subject to change over the years, sometimes to radical mutation" (p.105). Schools are, in these authors' view, "active and influential producers of educational outcomes" but in a dynamic relationship with students and their families (p.187).

A third study, Mike Rose's *Lives on the Boundary* (1989), deals with adult learners. Rose tells stories of his own life growing up in South Los Angeles, and those of many of the learners he has since encountered in his work -- Hispanics from East Los Angeles, Vietnam veterans, Asian immigrants. He illustrates vividly the ways in which these people had come to the particular point at which he met them and their incredibly diverse ideas about and approaches to learning. The learners he describes saw and were motivated by quite different things. Rose writes,

> "...the challenge that has always faced American education... is how to create both the social and cognitive means to enable a diverse citizenry to develop their ability. It is an astounding challenge: the complex and wrenching struggle to actualize the potential not only of the privileged but, too, of those who have lived here for a long time generating a culture outside the mainstream and those who... immigrated with cultural traditions of their own. This painful but generative mix of language and story can result in clash and dislocation in our communities, but it also gives rise to new speech, new stories, and once we appreciate the richness of it, new invitations to literacy" (p. 226).

What these three books have in common (and many others could be cited that support the same view) is a focus on the ways in which students play a key role in creating school outcomes through a dynamic process of understanding and acting.

Here is what Robert Coles concluded after twenty years of studying children's lives and actions. He is writing about a youth in Georgia in 1960 who, much to the boy's own surprise, ended up befriending the first two black students in his school, after beginning by jeering and cursing them. That youth's

> "...willingness to suggest the complexity of things contrasts, alas, with the categorical assurance of some theorists who have moral development all figured out, as if life were a matter of neatly arranged academic hurdles, with grades given along the way. Here was a young person with a story ... the circumstances that make for such a difference in our lives, the accidents, the incidents that come along out of nowhere, it seems. Fate is the word other generations used, and destiny - but of course, to accept what such words imply about this life takes matters out of the hands of those of us who want control, who want to be able to predict all, explain all" (1986, pp. 28-29).

Some might suggest that this sort of view of human life and human learning makes it impossible to talk about productivity in education. Most of the commentary that emphasizes human intentionality comes from a pedagogical or philosophical orientation far from that of productivity studies (e.g., Greene, 1988). Monk seems to suggest that if one sees each schooling situation as unique, one is condemned to a never-ending process of experimenting without much learning. Yet this assessment seems unduly pessimistic. Our inability to pin down a phenomenon precisely and entirely does not mean that we have learned nothing. Without entering the long-standing philosophical debate about what knowledge is and whether and how it can be accumulated, we can simply observe that people behave as if they were learning even when they are not sure of just what they have learned, or how they have learned it. We can and do, as Monk recognizes in discussing what he calls the "quasi-but unknown production function," draw conclusions based on our study and our experience even if their warrant in evidence is far from total. It is not reasonable to claim that if we do not know everything then we know nothing.

We may really have no choice except to assume that we can make order out of the world no

matter how difficult it may seem. Robert Coles, after making his comment about fate and circumstance, goes on to say that even so one doesn't have to abandon all efforts to understand moral life theoretically (p. 30). Others have written eloquently about the same dilemmas in our understanding of other parts of the social world (e.g., Dror, 1986; Inbar, 1992). The same it true of our understanding of how education occurs. Putting students at the center of our thinking about schools, even if we acknowledge all the uncertainty and individuality described by Willis, Connell et al and Rose, does not mean throwing up our hands in despair and giving up on improving education. Instead, we can think through the implications for both policy and research of seeing students as, uniquely, both the producers and the product of their education.

## Policy implications of putting students first

If what students do and think is central to education, then it must also be central to the way schooling is organized. Yet that is far from being the case. Most of the policy attention about schools focuses on such matters as curriculum, teachers, school organization, or governance. Policies in these areas are presumed, almost unthinkingly, to yield changes in what students do, think, or learn.

Consider various sides of the debate over restructuring schooling. One approach has been what Fullan (1991) calls the "intensification" approach -- stricter curriculum requirements, closer supervision of teachers and students, external examinations, and so on. Here the assumption is that teachers and administrators will be tougher on students, and that students will respond to the changes by intensifying their own efforts at school. The strategy could be phrased as one of "making them learn whether they want to or not". Put this way, of course, it is clearly unworkable, since we have abundant evidence that though we may be able to influence, we cannot control what students learn. If we could, presumably we would already have taken steps to make sure all students learned what we wanted them to. As soon as we see students as both workers and product, clearly a strategy of intensification will not, by itself, be successful, since it does not take into account the power and range of students' ideas and motivations.

The main alternative policy currently being proposed is the "professionalization" approach, in which more authority is to be given to teachers to take the steps they see as most desirable. In some versions authority is moved to school communities which include teachers, parents, and sometimes students (Zeichner, 1992). But if we think of students as central, then this strategy too seems unlikely to succeed. It assumes that teachers know what to do to create more learning, and that they will do so if given the authority. Neither assumption seems credible. It is reasonable to think that most teachers have a real concern about students and their welfare. It is not reasonable to think that all teachers have a tremendous store of knowledge about how to educate that they are waiting to unleash with dramatic effect as soon as they are freed from the shackles of bureaucratic restrictions. Nor is it reasonable to think that teachers will, any more than any other occupational group, always recognize the best interests of students or have those interests at heart when they conflict with teachers' own ideas, needs and interests.

If neither intensification nor professionalization is a good strategy given a belief in students as the center of education, what policy alternatives do we have? Many can be derived from available evidence about how people live and learn; two examples will suffice to illustrate the sorts of changes in policy and organization that follow.

Perhaps most importantly, we would need to pay much more attention to the issue of motivation. If students are the producers of their own learning, then their motivation is absolutely critical. There is a substantial literature on motivation, both in education and in psychology (e.g., Ames &

Ames, 1984, 1989; Deci & Ryan, 1985; Hastings & Schwieso, 1987). Various strategies for the organization of schooling and teaching have been advanced based on this research. Nolen and Nicholls (in press), in reviewing the literature, come to the conclusion that the most effective strategies have to do with treating students as capable persons, capitalizing on their knowledge and interests, and involving students in determining goals and methods of learning. Berliner (1989) suggested that classrooms where different kinds of tasks are occurring simultaneously provide more ways for students to demonstrate ability and feel competent (p. 323). DeCharms (1984, p. 306-307) suggested that teachers need to provide students with choices and encourage "responsible pupil-influence attempts and independent activity", with students learning gradually to make more and larger choices.

Covington (1992) went further, suggesting that the entire school curriculum should be organized around what he calls "serious games" based on the analysis of "discovered problems" (p. 224), and that students should be provided with "opportunities ... to produce something of merit in the real world" (p. 236). Many other similar suggestions could be cited (Glynn, 1985; Grolnick & Ryan, 1987).

Second-order consequences are immediately apparent. Working to motivate students would seem necessarily to require that their ideas and interests be taken seriously, that they be treated with respect, that they have significant influence (which is not to say total control) over what they study, how they study, and when they study. There would need to be much less rigidity and hierarchy in the organization of schooling. We might begin by applying to students the various assertions now being promoted about the appropriate treatment of teachers -- as persons who need to be autonomous but in a collegial setting, who need to exercise more influence over their work, who should not arbitrarily be assigned tasks or be evaluated without their participation (e.g., Lieberman & Miller, 1990; Rosenholtz, 1985). If teachers would be better workers given such conditions, would not the same be true of students?

These suggestions may seem so obvious as to require no mention, yet they are not strategies that are common in schools, as shown by a large body of evidence on the dynamics of classrooms (e.g., Cullingford, 1981; Goodlad, 1983; Stahl, 1992). And somehow when the research is translated into practitioner publications, the stress on student autonomy is also lost. In 1985 Jack Frymier wrote a brief discussion of motivation for *Kappa Delta Pi*; of the 13 suggestions he made to teachers about increasing motivation, only one dealt with increasing the role of students. Similarly, in a 1988 NASSP publication Grossnickle and Thiel stressed that teachers should work to make classes interesting to students, but say almost nothing about involving students in this effort. Their only mention of a student role is a brief suggestion to "utilize student input... when appropriate" (1988, p. 6). Of their 12 suggestions about schoolwide efforts to increase motivation, not one involves students' being given a more active role.

These ideas do not imply a return to the idea (seldom honored in practice) of schools in which students do whatever they want. Idealizing the intentions and motivations of students is no more reasonable than doing the same for teachers or administrators. Instead, a hard-nosed interest in productivity in education--in having students learn more--leads to the requirement that students' ideas, interests and preferences be accorded much more importance than they currently are in the organization of schools and classrooms. Educators would engage in debate with students about what was worth doing and why - in itself an important learning - rather than issuing orders and enforcing them with behavioral sanctions. No party would be in charge; all parties would have to pay attention to the ideas and wishes of others, and to justify their own ideas through giving reasons and defending opinions. (These ideas are developed in more detail in another paper which is currently under review for publication.)

A second example has to do with the use of time in schools. As bureaucratic organizations schools proceed on the basis of standardized allocations of time. A day is the same length every day; so is a class, particularly in secondary schools. Breaks happen at preordained times. A course requires so many hours of classroom time. It is hardly original to point out that these practices fly in the face of knowledge about learning. Less often noted is that only certain kinds of time "count" in schools. It is assumed that learning is taking place only when students are in a class or an assigned activity with a teacher. What students may be doing or learning while at home, on the playground, in a library, riding the bus, at work, or in other situations is, typically, seen as irrelevant. Yet we know that learning is powerfully affected by what happens to students in their homes or at their work or with their friends.

There is no reason in principle why the use of time in schools could not be made much more flexible. There is no reason in principle why everyone must be doing the same thing at the same time. At the simplest level, why must all students have recess at the same time every day, regardless of what is happening in their classroom? Why must all classes in secondary schools be the same length? A colleague of mine recently made a considerable impact on the extent of out-of-school activities in a high school by setting aside certain days for field trips. Teachers, who no longer had to go through extensive negotiations to take students out of colleagues' classes, began to include more field trips into their programs.

More dramatic changes in use of time can also be considered. It would be quite possible -- highly desirable -- to see students' entire lives as educational experiences, and try to integrate what they do out of school with what they do in school. Students' part-time work, often seen as an interference with their schooling, could become an essential part of the curriculum, instantly expanding the amount of time students' were spending on their education. The possibilities for different uses of time are enormous.

Clearly these ideas are only sketched out here in a general way. Their implementation would doubtless be fraught with the usual difficulties besetting institutional change. Another paper would be required to take up these questions in detail; here I will simply say that seeing the obstacles is not a reason to abandon a course we believe to be right.

**Implications for research**

If we need to take action in schools to put students in a more central role, then it is equally important to direct research at the same questions. A first requirement is simply to learn more about how students experience schooling; how they think about and organize their work as learners. There is surprisingly little research that asks directly about these issues. Studies such as Cullingford's (1981) are all too rare, even though they cast considerable insight into students' understanding of and approach to schooling. Not only are such general inquires needed, but we could benefit from learning more about how students perceive many aspects of schooling, including various instructional techniques, disciplinary practices, organizational attributes, and so on. As has been noted, much of the research that deals with students is conceived and conducted from the point of view of educators trying to shape students' actions rather than from the standpoint of the students themselves.

Moving to research that falls more closely in the economic domain, it would be highly relevant to study the impact of experimenting with the kinds of changes that are called for in the literature on motivation cited earlier. Monk's 1992 article calls for experimentation as a means of studying productivity. We have already noted that most of the measures currently proposed for study, however, have little to do with altering the role of students. Researchers might well want to study

the differential impact of settings that are more and less coercive in their treatment of students. The existing differences between early childhood settings and those of older students provide one way to study these differences.

**Conclusion**

Seeing students as the central element in educational productivity offers a way to combine the agendas of conservative critics of education and of liberal reformers. It provides a route with clear policy implications and with the promise -- open to careful and systematic evaluation -- of improving the results of schooling. It seems an obvious approach, yet has received relatively little attention. Efforts to conduct schooling as if students really mattered ought to have an important place on the policy and research agenda.

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Dewayne Matthews
*dm@wiche.edu*

Mary P. McKeown
*iadmpm@asuvm.inre.asu.edu*

Les McLean
*lmclean@oise.on.ca*

Susan Bobbitt Nolen
*sunolen@u.washington.edu*

Anne L. Pemberton
*apembert@pen.k12.va.us*

Hugh G. Petrie
*prohugh@ubvms.cc.buffalo.edu*

Richard C. Richardson
*richard.richardson@asu.edu*

Anthony G. Rud Jr.
*rud@purdue.edu*

Dennis Sayers
*dmsayers@ucdavis.edu*

Jay Scribner
*jayscrib@tenet.edu*

Robert Stonehill
*rstonehi@inet.ed.gov*

Robert T. Stout
*aorxs@asuvm.inre.asu.edu*