Since the turn of the century - the 20th century - American schools have been impacted by a pedagogical and organizational paradigm built upon methodologies of the physical sciences. Schools were regarded as arenas within which the ideas of scientific technology could find wide application. In this model, the specification of ends and the search for ideal means relevant to the achievement of those ends was a dominant aspiration. Just reflect on the work of Franklin Bobbitt in the 1920s, the growth of the behavioral objectives movement in the 1950s, and most recently, the preoccupation with standards as a way to achieve the ends that were formulated. The tacit aspiration of researchers and some practitioners, particularly school administrators, was to find a set of methods that would efficiently and effectively help us achieve our most important goals.

This paradigm, a scientistic paradigm, was much more interested in certainty in methods than the surprises that some methods would yield. It was more concerned with measurement than with meaning, and at times its metaphors likened education to a business.

In this orientation, the arts were often marginalized. They are difficult to measure, and they harbor values that some believe to be problematic. At their best, the arts were nice to have in schools but not necessary. Even though the arts are considered a core subject in recent legislation pertaining to No Child Left Behind, in the reality of the school day, they are often hard to find.

But what if we looked to the arts not merely as recipients of policies made in light of a technological paradigm but rather as a source of both insight and practice that had something special to offer those interested in school improvement. Maybe it is the case that the arts have something to teach those whose paradigm is closer to educational engineering than it is to aesthetics. Maybe there is a story to be told that when told would capture the imagination of a public eager to find genuinely satisfying educational experiences for their children.

This paper was written to describe what it is that education can learn from the arts that is relevant to the improvement of our schools. Just what do the arts have to teach education? And why is what they have to teach educationally important? My hope is that what I have to say will enable those who seek extrinsic reasons for justifying the arts in the schools? mind a rationale for the arts that one might regard as self-justifying.
1. Education can learn from the arts that form and content cannot be separated. How something is said or done shapes the content of experience.

It has long been held that form and content are distinct phenomena and that one can modify the form of an object or event without changing its content. I argue that content and form coexist and must, of necessity, define each other. To change the form of a form is to change the quality of experience that it makes possible. The quality of experience that a form makes possible is what the content of the form is.

What does this mean for education? It means this. It serves as a reminder that how something is taught and how curricula are organized, how schools are designed impacts what students will learn. These "side effects" may be the real main effects of practice.

2. Education can learn from the arts that everything interacts; there is no content without form, and no form without content.

The point of this idea pedagogically is to acknowledge that when the form is changed in an object or an event, so, too, is the quality of life it engenders. When the content of a form is changed, so, too, is the form altered. Form and content are like two sides of a coin. One cannot have one without the other.

There are no separate parts in a whole. What, for example, a color looks like depends upon the colors around it. The same is true in teaching. We call this interaction.

The concept of interaction is as fundamental in education as it is in all human states of affairs. What is large and what is small depends upon what one is comparing it to. What is hard and what is soft depends on the hardness of the hard and the softness of the soft. Soft can be hard in some contexts, and can be soft in others. This is because interaction is a condition of experience.

In teaching, whether a teacher is considered to move swiftly or slowly depends not only upon the teacher's rate of speech but also on what the student brings to the occasion. For some students, swift is slow, and for others, slow is swift. It is the character of the interaction that defines our experience.

3. Education can learn from the arts that nuance matters. To the extent to which teaching is an art, attention to nuance is critical.

It has been said that the devil lives in the details. It can also be said that the aesthetic lives in the nuances that the maker can shape in the course of creation. How a word is spoken, how a gesture is made, how a line is written, and how a melody is played all affect the character of the whole, and all depend upon the modulation of the nuances that constitute the act.
Musicians "live in their nuances". There are dozens of ways to play a pizzicato on a violin, but what any particular violinist does with the pizzicato depends on what he or she does with the nuances that constitute his rendition of the music.

4. Education can learn from the arts that surprise is not to be seen as an intruder in the process of inquiry but as a part of the rewards one reaps when working artistically.

In our technically oriented control-focused society, we tend to regard surprise as an inability to predict. It is. But surprise in the course of work is also the result of securing a new insight one that was hitherto unexpected. No surprise, no discovery, no discovery, no progress. Educators should not resist surprise, but create the conditions to make it happen. It is one of the most powerful sources of intrinsic satisfaction.

5. Education can learn from the arts that slowing down perception is the most promising way to see what is actually there.

It is true that we have certain words to designate high levels of intelligence; we describe somebody as swift, or bright, or sharp, or fast on the pickup. Speed in its swift state is a descriptor for those we call smart. Such folks are a quick read. Yet, I would argue that one of the qualities we ought to be promoting in our schools is a slowing down of perception, the ability to take one's time, to smell the flowers, to really perceive in the Deweyan sense, and not merely recognize what one looks at. Recognition by contrast, Dewey pointed out, is about attaching a label to an object or event; this is an automobile, that is a wagon, this is an elm tree, that's a pine. The task of recognition has to do with a classification and assignment of a label that stands for the event. Much of early reading instruction is of this type.

What perception entails is not so much classification or categorization, but a savoring, a qualitative exploration of a variety of qualities, qualities that constitute the qualitative wholeness of the object or event being perceived. Dewey argued, and I endorse his argument, that learning how to slow down perception is one of the primary ways in which one can enrich one's experience. For slowed down perception to become a habitual attitude will require a cultural change in America. I do not know whether we are ready for such a change, I do know that much of human experience is dissipated or weakly experienced because of the absence of time that needs to be taken in order to see, to really see.

6. Education can learn from the arts that the limits of language are not the limits of cognition. We know more than we can tell.

In common parlance, literacy refers essentially to the ability to read and to write. But literacy could be re-conceptualized, and I propose to do so, as the creation and use of a form of representation that will enable one to create meaning, meaning that will not take the impress of language in its conventional form. In addition, literacy is associated with high level forms of cognition. We tend to think that in order to know you have to be able to say. I would argue that the limits of language in no way define the limits of cognition. As Michael Polany reminds us, we know more than we can tell. The implications of that idea are profound for
education. If taken seriously, it would expand our conception of what knowing entails, it would recognize the
diverse ways in which people can be literate? or should I say multi-literate. Language used in the service of
the poetic is quite different than language used in the service of the literal. One can be literate in one form
and illiterate in the other. What schools need to attend to are the cultivation of literacy in its many forms.
Each form of literacy provides another way to be in the world, another way to form experience, another way
to recover and express meaning.

7. Education can learn from the arts that somatic experience is one of the most important indicators that
someone has gotten it right.

Related to the multiple ways in which we represent the world, through our multiple forms of literacy, is a
way in which we come to know the world through the entailments of our body in the world itself. Sometimes
one knows a process or an event through one?s skin. As Susanne Langer once commented, "the senses are
our first avenues to consciousness." There is nothing in the head that was not first in the hand. Somatic
experience is body knowledge; a sense of rightness of fit, an ability to discriminate without being able to
articulate the conditions that made it possible. The body knows and forms the basis for intuition. To require
the logical description or the logical argument for a claim about a state of affairs is to expel the poetic from
what can be known. The evidence, for what we know almost always supersedes and expands to more than
what one can say about it.

8. Education can learn from the arts that open-ended tasks permit the exercise of imagination, and the
exercise of imagination is one of the most important of human aptitudes. It is imagination, not necessity,
that is the mother of invention.

Imagination is the source of new possibilities. In the arts, imagination is a primary virtue. So it should be in
the teaching of mathematics, in all of the sciences, in history, and indeed, in virtually all that humans
create. This achievement would require for its realization a culture of schooling in which the imaginative
aspects of the human condition were made possible. We ought to be helping our students discover new seas
upon which to sail rather than old ports at which to dock. We need schools whose tasks are sufficiently
open-ended to allow students to place their thumbprint upon their work without a sense of redundancy. It's
an ambitious aim I am after, but one that I think is critical in the long run for the well-being of the planet.

My aim in these brief comments is to open up and explore the implications the arts have for the aims and
conduct of education. Clearly the list of features I have identified do not exhaust the dimensions of schooling
and educational practice that can be identified. It is an effort to provide a set of leads that could be pursued
and explored. In a sense, this effort represents the beginning of a kind of paradigm supplement rather than
a paradigm shift. By that I mean I am not interested in substituting one paradigmatic model for another, but
rather in adding to the pantry of possibilities of new methods and views that may have important
pedagogical consequences. To the extent to which our practices reflect our beliefs, changes in beliefs ought
to manifest themselves at least in some degree to changes in practice. That is my hope.

The arts are not typically seen as a valued resource for re-conceptualizing educational work. Tradition has assigned the arts a marginal position in the armamentarium we use to negotiate the educational world. This need not be the case. My hope is that the options I have identified are sufficiently attractive to draw scholars together to explore their practical implications in real life situations. The practical utility of these "lessons" from the arts remain to be tested. When the going gets tough we should remember that there are few higher compliments that one can assign to an individual for his or her work than to say of that work it is a "work of art". Indeed, a work of art may represent the highest form of human achievement, again, whether in the fine arts themselves or in the sciences.

To help students treat their work as a work of art is no small achievement. In the process people become artists. Given this conception we can ask how much time should be devoted to the arts in school? The answer is clear: all of it.

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