An Essay on

The Sources of a Science of Education

by

John Dewey

The problem of the education of the young has been with us since the antiquity of Civilisation. The essence of Civilization is to add to the instinctual repertoire acquired characteritics, which are not automatically perpetrated, but have to be transmitted by instruction, whether explicit or implicit. Language seems to occupy an intermediate place between the instinctual and the acquired. The capability of speech seems to have been an integral part of Modern Anatomical Man since its inception, but whether it was also present with the Neandertahls should be left to paleontological speculation. The particular forms speech takes, i.e. the actual incarnations as language, are clearly a matter of convention and historical development; but the ability of young children to learn to speak their mothers tongues seems almost automatic, given the right environment, and is seldom a matter for education, save in cases of severe psychological retardation. Normal people, raised under normal circumstances, learn to talk, just as they learn to walk, whether we want it or not. Literacy is another matter, in a evolutionary perspective a very recent invention; and most children need instruction in order to acquire the skills. Thus the learning of reading, writing and doing simple arithmetic, forms traditionally the basics of education.

Integral to the process of education is the teacher. There are very good teachers and very bad teachers, and most are of course neither perticularly good, nor disastrously bad. Can good teaching be taught? This is the basic question John Dewey in his old article from 1929 addresses. He wants to take exception to the popular view that teaching is not a science but an Art, that its secrets cannot be taught, and that it is a matter of individual inspiration, that cannot be transmitted. First he regrets such a view, as that would make the accomplishments of individual teachers inseparable from their persons, and thus expire with their passing away. Good teaching should become part of a collective treasure, thus transmittable from generation to generation, and not just reinvented in perpetuity. He does not directly address the issue of what is a good teacher, or better still what constitutes good teaching, although he does admit that what often may be conventionally thought so, may not always stay so. The stimulated pupil, may be like the piece of paper that burns brightly with excitement, only to burn out, without the excitement taking any deeper roots. Nor does he address the issue of whether there are activities that may truly be considered as Art, as maybe artistic creation itself, and to which a Scientific approach may be clearly doomed. If he did so, he might have adduced some evidence to why teaching differs from those activities, thus being amendable to scientific treatment. In particular he does not claim, and probably wisely so, that every activity can be scientifically treated; that would have led him to some contradictions, he as a philosopher would have been just too aware of to haplessly fall into the trap.

Claiming, as a matter of opinion, that a Science of Education is not only desirous but worthwhile, he is affronted with the problem of what a Science of Education would be like, where it could find its sources, how it would operate, and what it could hope to achieve. Those are basic questions, which I fear are as relevant today, as they were seventy years ago, when he stated them. He starts with a general overview of what science is, and what it is not. The value of science is not so much that it can give definite answers, although its findings can sometimes be translated into specific rules and procedures, that in certain circumstances can be applied mechanically, but to enlarge the mind. The option of mechanical application is certainly the case with the more developed exact sciences; but even in the exact sciences, this is not the most important thing. (Just as he as a non-mathematician realises, that the notion of quantity is not the essence of mathematics). The point of science is to give a systematic ordering and structure of knowledge, which transcends the particular problems, that can have been its sources. To possess such structured knowledge opens and enlarges the mind that is privy to it, enriches its imagination, gives unprecedented associations. One of the consequences may be applications and solutions, and although those are invaluable as checks and measures, they do not constitute the entire justification. One feature of a mature science, is that it explains and orders things using notions that are quite removed from the surface nature of the phenomena studied. This is what we mean by depth. It is also this feature that allows accumulation and consolidation. Dewey makes a few illustrative points, concentrating on engineering aspects. There is in fact a science of Bridge Building, that allows modern men to build bridges, that the ancients, with only resource to tradition, would never have been able but to dream about (if even that). The science of Bridge Building is fashioned out of mechanics and mathematics, subjects that naturally go beyond the limited incentives, that constitute the building of bridges. (But of course the fact that they are not only helpful but essential to the building of bridges is a testimony to their intrinsic interest and non-triviality). Dewey is also at pains to point out that science is not just a matter of testing things empirically, before you make an experiment, you need to know what you want to know. Reflection and thought-experiments are essential to all development of science, if you do not know what you are looking for, you will not find it. Thus one should never disparage so called Arm-Chair thinking, it is essential. Dewey identifies himself, as has been noted, as a philosopher, and sensitive to the criticism of philosophy, some of which he acknowledges, he naturally finds in this reflective attitude to science, the crucial philosophical influx, justifying his calling. Whenever people stand back and reflect upon what they have done, or want to do, they are in fact engaging in philosophy, whether they know it or not. It is amusing to see how he in one passage anticipates the notion of so called paradigms, and how these may shift, a much quoted theory developed a few decades later by Thomas Kuhn.

Now, how should a Science of Education start, and how should it operate? The basics of its studies would be the problems that occur in education. The activities in the educational process is the alpha and the omega. It is there it should start, and it is there it should end. The feedback provided by the changing the problems, will hopefullyt start a never-ended cycle of refinements and improvements, which is the hallmark of any vital science. A Science of Education that is not directly concerned with the practice of education, very quickly runs the danger of degenerating into irrelevant speculation. In

this context, Dewey notes, it is very important that actual teachers play a much more central role, than they hitherto have been allowed. After all they are the people, who are most in touch with the problems of education. One may ask oneself how much this has really changed in the intervening seventy years, and if not, whether this can in some degree explain the popular distrust people in general feel towards educators. (Those who cannot do it, they teach, and those who cannot teach, teach the teachers, and so on..) On the other hand Dewey warns against expecting results too soon. As far as there exists a Science of Education, it is so far too underdeveloped to be able to provide any definite rules, even if that is what school adminstrators are wishing for. Once again the point of a science is not to give some kind of authority and stamp of quality to specific procedures, but to enlarge the view of inquiry and install a measure of understanding. Thus give it time, he pleads.

There are severe problems that are connected with the establishment of a Science of Education. The most basic is that the Scientific sources it can build upon, like Sociology and Psychology are quite underdeveloped themselves. This is of course due to the fact that the Physical Sciences build on relatively simple matters, like position and its dependance on time, which can easily be isolated (he does not digress on the philosophical question, whether those aspects of Physics really are the essential, or at least whether the recognition that they could be the essential, is obvious. Maybe with a false start on Physics, the subject would have been in a muddle?), the subject matter of humans and their societies, is far more complicated, and allows no isolation of variables. He thus warns that it is pointless for such sciences to emulate the methods and the precision of the Physical sciences, and particularly harmful is the proliferation of statistically quantitative methods, which too often only provides a semblance of science, leading to a spurious, as well as specious, sense of accuracy and legitimacy.

The paper is at its most elequent, when it addresses general philosophical questions, and to Dewey the application of philosophy, i.e. reflection on principles and premises, is to provide fundamentally to the development of the science. When it comes to discussing particular sources, it is inevitably somewhat disappointing. The 'response-stimulus' approach of Psychology, he thinks has limited application to education. He is somewhat more positive of psychatry. He writes

No apology is made for the emphasis upon the psychiatric side. The increasing number of insane and neurotics is itself evidence of great failure and evil in our educational process, parental and scholastic.

This is clearly a matter of opinion, something that fits well at a heated dinner conversation. But what really is the evidence of an increase in mental disturbance, and if so, how can we so readily attribute it to failings in education? When it comes to Sociology he is naturally even more hazy. He talks vaguely about social tools, but how these tend to be isolated from social contexts in the actual practice of instruction. Clearly this part of his extended essay has dated most seriously. In particular he has little to say about biology, and does not even touch on neurology.

The main thrust of his argument is the supremacy of the so called educational Process. The goals of educations should not be set from the outside, and it is actually this tendency which tends to diminish the authority and respect of educators; on the other hand it is not

the educators themselves that should set the goals either, but the process. Our education determines our Society, but as the nature of our Society is not set, it is not up to it, to set the goals, and thereby to perpetrate itself. In this view education becomes the central motor of Societal development.

The supremacy of education calls for a Science of Education, because it is only in a structured and inspirational inquiry, education can develope and transcend itself, just as mathematics and the physical sciences have transcended themselves, setting their own agendas. If education simply becomes a means to an end, if it just becomes a matter of perfecting current practices, it cannot develope; it is only if it becomes an end in itself, it is a worthy activity on par with the other exalted activities of mankind.

In particular he warns about compartimentalization. What use is there in teaching children to read, and what point is there in making that process more effective; if the end result is that they are going to read that kind of deplorable trash, of which so much of current present publications is saturated with. Thus to him, the responsibility of schooling is not to impart certain basic skills, leaving their application and development up to the individuals. In this he heralds the present view that education should not just be about learning academic skills, but to develope the entire human being, not forgetting, maybe even putting foremost, their social developement, including installing respect and commitment for democratic values. Dewey speaks explicitly of education as Social Engineering, (and it is not accidental that so many of his illustrative examples, like bridge building, are taken from engineering.), what may not be so apparent from the essay, is that at this time (the 20's) Social Engineering was less problematic than it is nowadays. Dewey no doubt had high hopes and far-reaching ambitions, believing that the right education would prevent most individual as well as social ills, up to an including such momentous ones as insanity and war. One may argue that it is this explicit enlarged ambition of education, that may be a source of some of its present problems.

The prevailing impression of the essay is its timelessness, to which its philosophical approach no doubt significantly contributes. The problems he states, seem as relevant today as they were seventy years ago.

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