
MEASURED THINKING IN THE EDUCATIVE PROCESS

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ABSTRACT

This paper defends the thesis that the inculcation of (a) *scientific curiosity*, (b) *logico-experimental observation*, and (c) *a sense of critical judgment* comprises the major task of undergraduate scientific education. A native curiosity for knowledge is a prepotent endowment of individuals which gives education its initial access to the human mind and personality. This must be implemented to inquiry through the ingestion of a language of scientific expression, a facility in the use of value symbols, canons of inductive logic, a familiarity with observation techniques, ability to classify and name phenomena appropriately, and an attitude of critical suspended judgment into the student's system of mental habits.

It is a condition of education in science that it arouse a consuming thirst for new knowledge. Otherwise, what is called education does not educate. One of the preliminary steps in this process is the development of a facility for logico-experimental observation, or experimentation, implying the ability to think of *facts* as *things* so they can be observed at will and measured. A necessary phase of observation consists of recognizing facts, or things, at face value, and subjecting them to objective verification. The *unique* and the *atypical* have no value in science, being unpredictable. Generality of system is a vital necessity in scientific investigation, which means that facts must be seen as parts of a composite of relationships. Students must be taught to classify facts in terms of their relatedness to other facts and to give them names which describe them functionally and operationally. Because man never achieves perfection in observation and measurement, he must acquire new truths through repeated successive approximations, computing true measures mathematically, after error has been standardized, which can be done in conformity with the "law of error." The final tests of scientific education rest in critical judgment, while the ultimate utility of science reposes in social acceptance, a further challenge to education.

Finally, the popularization of science tends toward its vulgarization. The pedagogical dangers in scientific education are that the process may end with mere classification, nominalism, description, and popularization which is one of the crucial weaknesses of so called "general" or "integrated" courses in scientific education, which may easily result in sloppy, haphazard, folk values as the chief aims of classroom instruction in science and the acceptance of fantastic *nostra* and deceptions.