

# How we think (IA howwethink00deweiala).pdf/206



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Scientific observation

III. As the center of interest of observations becomes less personal, less a matter of means for effecting one's own ends, and less æsthetic, less a matter of contribution of parts to a total emotional effect, observation becomes more consciously intellectual in quality. Pupils learn to observe for the sake (*i*) of finding out what sort of perplexity confronts them; (*ii*) of inferring hypothetical explanations for the puzzling features that observation reveals; and (*iii*) of testing the ideas thus suggested.

should be extensive

In short, observation becomes scientific in nature. Of such observations it may be said that they should follow a rhythm between the extensive and the intensive. Problems become definite, and suggested explanations significant by a certain alternation between a

and intensive

wide and somewhat loose soaking in of relevant facts and a minutely accurate study of a few selected facts. The wider, less exact observation is necessary to give the student a feeling for the reality of the field of inquiry, a sense of its bearings and possibilities, and to store his mind with materials that imagination may transform into suggestions. The intensive study is necessary for limiting the problem, and for securing the conditions of experimental testing. As the latter by itself is too specialized and technical to arouse intellectual growth, the former by itself is too superficial and scattering for control of intellectual development. In the sciences of life, field study, excursions, acquaintance with living things in their natural habitats, may alternate with microscopic and laboratory observation. In the physical sciences, phenomena of light, of heat, of electricity, of moisture,

of gravity, in their broad setting in nature—their physiographic setting—should prepare for an exact study of selected facts under conditions of laboratory



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