


APPLICATIONS OF THE ATI APPROACH


Gagné, R. M. (Ed.). Learning and individual differences Columbus, Ohio: Charles E. Merrill, 1967.
Sources of Information about Aptitude-Treatment Interactions

Edited by Richard E. Clark

INTRODUCTION

So many bibliographies have been offered in instructional technology that the obvious question is why another one is necessary. Instructional technology bibliographies typically provide lists of research surveys or "how to" monographs on various media or techniques of instruction. This list presents an in-depth survey of books, monographs, and articles on a specific approach to a systematic way of thinking about instruction. Essentially, aptitude-treatment interactions (ATIs) are one way of solving educational problems. The method makes the assumption that all educational outcomes are a function of interactions between characteristics of students on the one hand, and the matching characteristics of instructional techniques on the other hand; i.e., all learning is assumed to be the result of interactions between students and teaching methods and/or media.

Another reason for offering this bibliography at this time is that recent reviews of educational technology and communications research generally have been depressing. Too many studies simply have not contributed either to educational practice or to the growth of good theories. The ATI model may provide an alternative way to think about some of the questions that plague educators.

The idea is not new, of course. Forty years ago Kurt Lewin suggested the model in his classic formula "Behavior results
from the interaction between the person and the environment” or \( B = f (P \times E) \). For the researcher or the designer of instruction the ATI model emphasizes the necessity of including the individual differences of students in “software” development or in drawing conclusions from research on instruction. For the educational psychologist the model demands a thorough consideration of the interaction between traditional measures of student characteristics and the various ways we have found to present ideas and concepts. But, in addition to enhancing the communication between psychologists and designers of instruction, the bibliography is based on the notion that “there is nothing as practical as a useful theory.”

Although the ATI method may now be more useful to the researcher than the practitioner it is offered in the hopes that it will eventually improve instruction. Most important for those concerned with instructional technology and media is the potential of the ATI model for helping us to overcome Lee Shulman’s valid criticism that we “measure individual differences with micrometers and treatments with divining rods.” We expect that the instructional technologist will eventually make crucial contributions to the ATI paradigm, and subsequently, to educational practice. No other area of education has given more thought to instructional treatments. The concepts contained in the bibliography only suggest that we add two areas to our repertoire: first, a consideration of individual differences, and second, the process of matching students with instructional techniques.

At the time this bibliography is going to press the ATI model is still in its formative stages. Information about the methodology is still fragmented and incomplete. The bibliography is an attempt to pull together those writings that best characterize existing knowledge about aptitude-treatment interactions.

---

R.E.C.
I. Books, Monographs, and Dissertations

INTRODUCTION TO ATI METHODOLOGY

Cronbach, L. J. Beyond the two disciplines of scientific psychology. Invited address given at the American Psychological Association Convention, 1974.


Hunt, D. E. Person-environment interaction: A challenge found wanting before it was tried. Invited address to the Division of Educational Psychology, American Psychological Association meeting, Montreal, Quebec, August 1973.


Salomon, G. What is learned and how it is taught. The interaction between media, message, task, and learner. In D. Olson (Ed.), NSSE Yearbook: Media and symbols, the forms of expression, communication and education. Chicago: The University of Chicago Press, 1974.


APPLICATIONS OF THE ATI APPROACH


Hunt, D. E. *Person-environment interaction. A challenge found wanting before it was tried.* Invited address to the Division of Educational Psychology, American Psychological Association Meeting, Montreal, Quebec, August 1973.


Rathbone, C. *Teachers' information handling behavior when...*


Salomon, G. What is learned and how it is taught. The interaction between media, message, task, and learner. In D. Olson (Ed.), NSSE yearbook. Media and symbols, the forms of expression, communication and education. Chicago. The University Press, 1974.


Shavelson, R. J., Berliner, D. C., Bravitch, M. M., & Loading, D. The effects of position and type of question on learning from prose. The interaction of treatments with individual differences in learners. Research and development memorandum No. 98, Stanford Center for Research and Development in Teaching, Stanford University, School of Education, 1972.


REVIEW OF ATI RESEARCH


Hunt, D. E. Person-environment interaction. A challenge found wanting before it was tried. Invited address to the Division of Educational Psychology, American Psychological Association meeting, Montreal, Quebec, August 1973.


Salomon, G. What is learned and how it is taught. The interaction between media, message, task, and learner. In D. Olson (Ed.), NSSE Yearbook: Media and symbols, the forms of expression, communication and education. Chicago: The University of Chicago Press, 1974.
REVIEW OF ATI STUDIES


ATI THEORY AND METHODOLOGY


Meredith, E. Toward a taxonomy of educational media AV Communication Review, 1965, 13, 374-384
Salomon, G. Can we affect cognitive skills through visual media? An hypothesis and initial findings. AV Communication Review, 1972, 20, 401-422.
Salomon, G. & Clark, R. E. Re-examining the methodology of research on media and technology in education. Unpublished manuscript, The Hebrew University of Jerusalem, Jerusalem, Israel, April 1974. (Prepublication draft.) ED 098 971
Schwen, T. M. Learner analysis Some process and content concerns. AV Communication Review, 1973, 21, 44-72
Sells, S. B. Stimulus determinants of behavior New York: Ronald Press, 1963. (b)
Snow, R. E. Representative and quasi representative designs for research on teaching. Address to the annual meeting of the Division of Measurement and Methodology. American Educational Research Association, New Orleans, February 1973
CRITIQUES OF THE ATI APPROACH


ATI RESEARCH REPORTS

Visual and Verbal Learning Research

Cooper, J. C., Jr., & Gaeth, J. H. Interactions of modality with age and with meaningfulness in verbal learning. *Journal of Educational Psychology*, 1967, 58, 41-44.


Salomon, G. Cognitive effects of media. The case of Sesame Street in Israel. Address to the biannual meeting of the International Society for the Study of Behavioral Development, Ann Arbor.


**Developmental Learning Studies**


**CAI and Programmed Instruction**


Knight, H. R., & Sassenrath, J. M. Relation of achievement motivation and test anxiety to performance in programmed instruction. *Journal of Educational Psychology*, 1966, 57, 14-17.


**Instructional Techniques**


APPLICATIONS OF ATI RESEARCH TO THE DESIGN OF INSTRUCTION


