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ABSTRACT

Rich visual stimuli provided by the television medium may affect youngsters' cognitive processes and strategies in academic performance. Previous studies have revealed that television viewing enhances their achievement test scores through grade four, but scores decline after grade four. This paper suggests that visuals used in instructional context are not comparable in quality to those presented in television. In addition, curriculum beyond grade four level emphasized verbal content, and some youngsters find it difficult to shift the cognitive process from random scan in the visual mode to sequential and linear scan in the verbal mode. Inadequate reading ability and comprehension of verbal materials further affect performance in other academic areas. It is suggested that systematic training may solve this difficulty; however, empirical research evidence is needed in order to determine the various factors accounting for the score decline. (SC)

Influence of Visual Domain on Score Decline: Some Conjectures

by

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Invited Preliminary Comments for the CEEB/ETS Panel on Score Decline

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I had not realized how difficult this topic was until I started consciously thinking about it after my telephone conversation with Dr. Breland. If I have learned anything from my efforts in the last few days while attempting to propose possible explanations from the visual arena on the test score decline situation, it is that this is a very complex problem. However, the complexity of this problem should not prevent us from coming up with some causes and possible solutions. I am sure with the collective wisdom of the Panel on Score Decline of ETS and CEEB and the individual contributions of its distinguished members along with some other workers with genuine interest and curiosity, the solution should be imminent in the near future.

Harnischfeger and Wiley (1976) have presented a very insightful analysis of the achievement test scores decline and the problem that beset analysts in attempting to probe it further and propose some explanations. Parenthetically, Harnischfeger and Wiley (1976) concluded that the influence of television viewing on students was cumulative and differential. According to their interpretation more television viewing resulted in score decline in grades beyond grade 4; however, the same was not true for students in preschool to grade 4 levels. They interpreted that the cumulative adverse affect of television was due to the time the students "wasted" in watching TV instead of spending it fruitfully in studying their school subjects.

Then why is not the same explanation appropriate for children of grade 4 and under. This paper will deal preliminarily with the influence of the visual domain on test score decline and the possibilities of subsequent research to confirm some of these conjectures.

The introduction of television in our culture has had a pervasive effect in a variety of realms. It is suggested that television and other electronic and other visual displays have provided much stimulation for the appropriate hemisphere of the brain. It is also suggested that such visual stimulation was never before available in our culture to such an extent and in such a variety. It is possible that neural mechanisms of the brain may have been altered in ways yet unknown to us through the available empirical research.

Cognitive psychologists have suggested that "cognitive space" is critical in processing information and depends on the storage and processing requirements. Could it be that the processing space available to the TV generation for processing exclusively verbal materials in verbal mode is diminished. This notion needs to be verified. A possible approach to such investigations is to assess differences in cognitive spaces of individuals subject to differential television and visual exposure.

Television programs are generally masterfully planned and delivered. This is especially true of programs with instructional relevance such as Sesame Street and Electric Company. The level of expectation of students in terms of instructional delivery, content, and diversity might have changed. Not many significant adjustments in content, style, and delivery of instructional materials seem to have been made since TV became available.

The visual materials used in classroom instruction are in many instances outmoded and employed in very conventional strategies which are not compatible with what the students see on television. An assessment of the level of expectation of students and the context of instructional delivery might provide appropriate data on the underlying causes of achievement score decline. Motivation, interest, perseverance, and dedication in the school related tasks are some of the variables that have gone unnoticed for quite some time. Motivational, interest arousing, and instructional value of visuals used in instructional contexts should be assessed. My notion is that these variables have suffered a decline similar to achievement scores. Since we do not have historical records on these the sooner a beginning is made the better.

The phenomenon of cultural bias is well-known in the testing literature. Isn't it likely that the introduction of visual innovations in any culture could bring about "cultural shift". Obviously, the potency of television in its pervasiveness cannot have passed us by without affecting our cognitive processes and strategies. As it has been alluded to in the previous section, the conventional instructional approach may result in "cognitive conflict" in a large number of students who are affected by the popular visual stimuli. We have a new generation, a generation which employs "visual languaging" unknown to the non-TV generation. Content validity of achievement tests and testing strategy should be examined in the light of cultural shifts.

Research in connection with Sesame Street has generally revealed that children gain in knowledge from television viewing. This evidence is con-

cordant with slight increase in achievement test scores through grade 4, but why then the decline after grade 4? This may well be due to the fact that curriculum and testing material have abundance of nonverbal and pictorial content until grade 4. Beyond grade 4 more emphasis is placed on verbal content. The test content in mathematics, social studies, science, etc. must be comprehended from the written content before responses are selected again in the verbal context. The decline may in large part be due to the pervasive influence of decline in reading and comprehension scores.

My conjecture is that the visual and the verbal scans are developmentally different. Unless systematic training is provided to switch over from a random scan in the visual mode to a linear in the reading mode the decline in reading scores may not be arrested. The concomitant effect of this decline in reading ability and comprehension may affect the scores in other academic areas. From our preliminary study of this phenomenon it appears that the visual scan is random and it becomes sequential with training in the introduction of reading materials. It is likely, therefore, that a large number of individuals do not make a systematic transfer from random scan to a linear, sequential scan. This notion is concordant with the evidence from neuro-physiological and neuro-psychological research of Luria and others. Luria has made a distinction between simultaneous and successive synthesis; whereas, pictorial and visual materials are processed involving simultaneous synthesis. However, from Paivio's and my own research, it appears that there is a possibility of the two syntheses working together depending on the materials employed. More specifically, the integration of two syntheses would depend on the codability of the

material in one mode to the other. So, in the present state of our knowledge, it would appear that there are some tasks which exist in purely one or the other mode and are not easily codable. These tasks would generally be abstract in their specific mode. Further research is needed to determine how these mode specific abstractions are applied in relevant contexts. Also, it is important to determine the nature of visual abstraction so that appropriate educational implications of the visual domain can be formulated.

Reference

Harnischfeger, A., & Wiley, E. Achievement test scores drop. So what? Educational Researcher, 1976, 5(3), 5-12.