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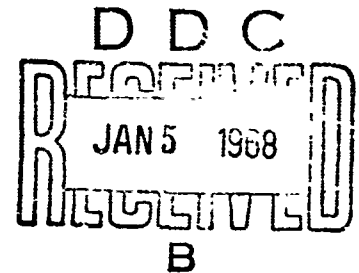
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OCTOBER 1967

APTITUDE LEVEL AND CONSUMER ACCEPTANCE OF PROGRAMMED INSTRUCTION

Larry G. Harding
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APTITUDE LEVEL AND CONSUMER ACCEPTANCE
OF PROGRAMMED INSTRUCTION

by

Larry G. Harding
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SUMMARY AND CONCLUSIONS

Problem

This study was undertaken to answer the question of whether students of different aptitude levels differ in their attitudes toward programmed instruction.

Background and Requirements

Attitudes of consumers are an important area of concern when evaluating one's programmed instruction effort. Previous research within the Naval Air Technical Training Command demonstrated that student attitudes were extremely favorable towards programmed instruction. The purpose of this study was to determine whether students of higher aptitude had different opinions of programmed instruction from lower aptitude students.

Approach

Navy and Marine students at the Aviation Mechanical Fundamentals School, Class A, at the Naval Air Technical Training Center, Memphis, Tennessee, were administered a 28-item attitude survey covering various aspects of programmed instruction. The students were then divided into four aptitude groups on the basis of their Navy General Classification Test or Marine Corps Verbal Expression Test scores. Analysis of variance procedures were then applied to determine whether any differences occurred between the groups on the attitude survey.

Findings, Conclusions, Recommendations

The study confirms the results previously obtained in demonstrating favorable student reactions toward programmed instruction. No differences in attitudes were detected between students of different aptitude levels. However, as the number of programs used in the schools increases, student attitudes, as well as the effectiveness of the programs, should be evaluated continually in order to achieve an optimal combination of programmed booklets and other types of instruction.

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APTITUDE LEVEL AND CONSUMER ACCEPTANCE OF PROGRAMMED INSTRUCTION

INTRODUCTION

Attitudes of consumers of programmed instruction are an important area of concern when one is evaluating one's programmed instruction effort. An assessment of consumer attitudes, along with the determination of a program's effectiveness in teaching, may reveal areas in which programmed material can be improved. In a previous study of consumer attitudes toward programmed instruction within eight schools of the Naval Air Technical Training Command, Fleischman¹ found that student attitudes were extremely favorable toward programmed instruction and that instructors and training administrators were, as a whole, also favorable, although less so than students. However, differences did exist between schools and between types of consumers.

A question which follows from the above study is whether any differences occur in attitudes toward programmed instruction between students of different aptitude levels. The present study attempts to answer this question.

METHOD

The consumer attitude survey developed for the previous study was administered to 347 students in the Aviation Mechanical Fundamentals School, Class A, at the Naval Air Technical Training Center, Memphis, Tennessee. The students were Navy and Marine enlisted men who were, generally, directly out of recruit training. The school runs 4 weeks and contains 160 hours of instruction. At the time the survey was administered there were 32.5 hours of programmed instruction being used in the course.

The attitude survey consisted of 28 questions and statements. (See Appendix.) The students were asked to respond to each item from a list of five alternatives ranging from very favorable to very unfavorable opinions of programmed instruction. To score the questionnaire, the alternative responses were credited with 4, 3, 2, 1, or 0 points from the favorable to the unfavorable extremes, respectively. A neutral or uncommitted response to a question was scored as two points. The sum of the item credits for the 28 items was taken as the student's total

¹Fleischman, H. L. Consumer Acceptance of Programmed Instruction. Research Report. Staff, CNATECHTRA, June 1967.

score. Unlike the first study in which the survey was administered under anonymous conditions, in the present study it was necessary for the students to identify themselves in order to group them on the basis of aptitude.

To determine differences due to aptitude level, scores were obtained on the General Classification Test (GCT) for Navy students and the Verbal Expression Test (VE) for Marine students. Both tests are measures of verbal aptitude and are part of the Navy and Marine aptitude test batteries which are administered to all recruits. The correlation between these two tests has been found to be .83.² The GCT was designed to give a mean of 50 and standard deviation of 10 for all Navy recruits while the VE was designed to yield a mean of 100 and a standard deviation of 20 for all Marine recruits. In order to place these two tests on the same scale, the VE scores were divided in half. The scores on the two tests were then combined, ordered numerically, and divided into four groups. Group A consisted of the lowest 25% of the students, Group B the second 25%, Group C the third 25% and Group D consisted of the highest 25%.

An analysis of variance was calculated to determine whether there were any significant differences between the groups on the consumer attitude survey. In addition, the individual items were examined for differences between groups.

RESULTS AND DISCUSSION

The aptitude test scores for each of the four groups are shown in Table 1.

Table 2 shows the results of the consumer attitude survey for each of the groups. All four groups were favorably disposed toward programmed instruction as each group had a mean score significantly above the neutral response of 2×28 or 56. These means of 77.38, 76.44, 79.17, and 78.92 are comparable to the results obtained in the earlier study by Fleischman in which the students from this same school had a mean of 76.35 with a standard deviation of 15.49 ($N = 167$). Differences due to the fact that the data in the first study were collected anonymously, whereas in this study the subjects had to identify themselves, did not show up in the results.

An analysis of variance was calculated to determine whether any differences existed between the groups on the attitude survey. Table

²Rimland, B. Personal Communication. April 13, 1967.

TABLE 1
Means and Standard Deviations on Aptitude Measure

Group	N	Mean	S. D.	Range
A	87	49.90	3.84	31 - 53
B	87	55.41	.95	53 - 57
C	87	58.63	.98	57 - 61
D	86	63.92	2.98	61 - 74

TABLE 2
Means and Standard Deviations on the Consumer Attitude Survey

Group	N	Mean	S.D.
A	87	77.38	14.70
B	87	76.44	15.77
C	87	79.17	15.07
D	86	78.92	15.74

3 presents the summary data for the analysis. The results yielded an $F = 0.62$ which is not significant. This indicates that no differences were found between the different aptitude groups in their attitudes toward programmed instruction.

The 28 questions on the survey were then analyzed separately to determine whether any differences occurred between the groups on specific items. Of the 28 analyses of variance computed, two resulted in F values high enough to indicate significant differences. However, these differences were significant at only the .05 level and therefore, considering the number of analyses computed, might have occurred by chance.

TABLE 3
Analysis of Variance Summary Table

Source of Variation	SS	df	MS	F	p
Groups	438.15	3	146.05	0.62	NS
Error	80,570.62	343	234.90		
Total	81,008.77	346			

The fact that no significant differences between groups were found on the survey does not seem to have been caused by characteristics of the questionnaire itself, since differences were detected in the first study between schools and between students, instructors, and administrators. Since the survey has been shown to be sensitive to differences in the past, the finding of no differences between aptitude levels in this study is somewhat surprising. One would expect differences between aptitude level groups on such questions as: "To what extent do you find the programs repetitious?" and "Is programmer instruction a boring method of learning?" However, the fact that no differences exist on these questions might be explained by the self-pacing aspect of the programs.

CONCLUSION

The results of this study have indicated that no differences occurred between students of different aptitude levels in their attitudes toward programmed instruction. In addition, the study confirms the results of an earlier study in demonstrating the favorable student reactions toward programmed instruction within the Naval Air Technical Training Command. These results may change when the student aptitudes drop below that of the sample used in this study. At the present time data are being gathered on students with substantially lower aptitudes than those used in this study.

Finally, the extent to which programmed instruction can be utilized in a course is important. As the number of programs used in the schools grows, student attitudes, as well as the effectiveness of the programs should be continually evaluated in order to achieve an optimal combination of programmed and conventional instruction.

APPENDIX

CONSUMER ATTITUDE SURVEY

Directions

The purpose of this questionnaire is to help in the evaluation of programmed instruction in the Naval Air Technical Training Command. It is felt that one of the best ways to do this is to go directly to the students who are using it. Therefore we are asking you to answer this questionnaire as carefully and as honestly as you can.

All answers should be marked on the answer sheet. Do not write in the question booklet. Choose the one answer from among the five alternatives which in your opinion best answers the question or completes the statement. Be sure to answer each item.

On the answer sheet, write in your name, service number, today's date, name of school, and name of questionnaire.

CONSUMER ATTITUDE SURVEY

1. In comparing work done using programmed instruction with studying in regular textbooks, I feel that with the same amount of time and effort I learned
 1. Much more with programs
 2. Somewhat more with programs
 3. About the same
 4. Somewhat more from textbooks
 5. Much more from textbooks
2. Had instruction been given in the usual manner instead of by programmed instruction, I would have learned
 1. Much less from the course
 2. Somewhat less from the course
 3. About the same
 4. Somewhat more from the course
 5. Much more from the course
3. Did you miss not being able to participate in class discussions or not asking questions as you would have in a conventional class?
 1. No, not at all
 2. No, not too much
 3. Not sure
 4. Yes, a little
 5. Yes, very much
4. If programmed instruction were available for more lessons, I would prefer programs
 1. Much more than conventional instruction
 2. Somewhat more than conventional instruction
 3. About the same as conventional instruction
 4. Somewhat less than conventional instruction
 5. Much less than conventional instruction
5. Assuming programmed instruction is to be used, out of a school day of 8 hours, how many hours at most would you recommend be spent on programmed instruction?
 1. 8 hours
 2. 6 hours
 3. 4 hours
 4. 2 hours
 5. 1 hour

6. With programmed instruction each student works at his own pace, while with regular instruction he has to move along at the pace set by the instructor. Do you feel that the opportunity for you to take as much time as you need on each subject makes programmed instruction more effective than regular instruction?
 1. Yes, much more effective
 2. Yes, somewhat more effective
 3. Can't say
 4. No, somewhat less effective
 5. No, much less effective
7. How do you rate programmed instruction for learning new materials?
 1. Excellent
 2. Good
 3. Uncertain
 4. Not too good
 5. Bad
8. How do you rate programmed instruction for reviewing materials?
 1. Excellent
 2. Good
 3. Uncertain
 4. Not too good
 5. Bad
9. During a typical school day, what method of instruction would you prefer to be used in the course you are taking?
 1. Definitely programmed instruction
 2. Probably programmed instruction
 3. A combination
 4. Probably regular classroom instruction
 5. Definitely regular classroom instruction
10. To what extent do you find the programs repetitious?
 1. Not at all repetitious
 2. Slightly repetitious
 3. Uncertain
 4. Too repetitious
 5. Much too repetitious
11. Compared to regular classroom instruction, how do you like the programmed instruction method?
 1. Much more than regular instruction
 2. Somewhat more
 3. Same as
 4. Somewhat less
 5. Much less

12. How much home study does the programmed instruction method require as compared with conventional instruction?
1. Programmed instruction requires much less
 2. Programmed instruction requires somewhat less
 3. No difference
 4. Programmed instruction requires somewhat more
 5. Programmed instruction requires much more
13. In preparing for an exam, do you prefer to study from programmed texts or conventional texts?
1. Prefer programmed texts much more
 2. Prefer programmed texts somewhat more
 3. No difference
 4. Prefer conventional texts somewhat more
 5. Prefer conventional texts much more
14. Do you find that material learned using programmed instruction is forgotten more quickly than material learned using conventional instruction?
1. No, a great deal more is quickly forgotten with conventional instruction.
 2. No, somewhat more is quickly forgotten with conventional instruction.
 3. No difference
 4. Yes, somewhat more is quickly forgotten with programmed instruction.
 5. Yes, a great deal more is quickly forgotten with programmed instruction.
15. Programmed instruction is the best method of learning for good students because they are not held back by the class.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
16. With programmed instruction students learn a great deal because they never get left behind by the class.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree

17. Programmed instruction offers a challenge to the student because it makes him think.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
18. The best way to learn is with a human teacher.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
19. Programmed instruction will ruin the educational system.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
20. Teachers can teach much better than programmed texts.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
21. Programmed instruction is a good way to learn because the student knows exactly how he is doing all the time.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
22. Programmed instruction is a boring method of learning.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree

23. Programmed instruction is the most efficient way to learn.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
24. Programmed instruction is more trouble than it's worth.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
25. Programmed instruction is an excellent way of learning because the student always finds out immediately whether he was right or wrong.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
26. Programmed instruction is a good method of learning because there is no pressure on the student.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
27. Programmed instruction is bad because there is never a teacher around to explain anything.
1. Strongly agree
 2. Agree
 3. Uncertain
 4. Disagree
 5. Strongly disagree
28. In terms of an overall evaluation of programmed instruction at this training activity, I believe that programmed instruction
1. Is making (or will make) a major contribution
 2. Is making (or will make) a contribution of some importance
 3. Is no better or worse than what we have had before
 4. Is (or will be) somewhat detrimental
 5. Is (or will be) very detrimental

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