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A comparison of the way teachers perceive educational computer software written for junior high school students with the way students actually feel about the software through the use of a modified northwest regional educational laboratory evaluating tool

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A COMPARISON OF THE WAY TEACHERS PERCEIVE EDUCATIONAL COMPUTER SOFTWARE WRITTEN FOR JUNIOR HIGH SCHOOL STUDENTS WITH THE WAY STUDENTS ACTUALLY FEEL ABOUT THE SOFTWARE THROUGH THE USE OF A MODIFIED NORTHWEST REGIONAL EDUCATIONAL LABORATORY EVALUATING TOOL

RESEARCH REPORT

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CHAPTER I

INTRODUCTION

Adults through the ages have always assumed the role of omnipotent judge of what is good and bad for kids. After all, were adults not youngsters themselves? Teachers, being adults, also normally hold this view which commonly arrives along with adulthood, parenting, and especially teacher education. Down through the ages, this idea of knowledge through experience has proven to have a great deal of validity although in light of current educational concepts such as individuality and recognition of varying backgrounds and environments of teachers and students, holes have been punched in the experience concept.

In light of the quite new widespread use of computers in education, educators simply do not have an experience background upon which to make adequate judgments in this area. The simple method remains the tried and true method. "This is what I think, and therefore, this is what we will do." The time has come to validate whether teachers can adequately evaluate the materials written for kids to use on computers.

Problem Statement

The problem of this study is to determine whether teachers' perceptions of how junior high school students will view computer software will compare favorably with how students actually view the software by analyzing the results of a modified Northwest Regional Educational Laboratory evaluating tool. Identical evaluating tools will be used by both teachers and students.

Research Goals

The research was conducted with an eye towards answering the following questions:

1. How do the teachers' projections of students' views compare with the students' actual views?

2. Is there a significant difference between teacher and student views?

3. How could the results be used by the classroom teacher?

Background and Significance

Since computers in education is such a new area of the overall school curriculum, there has not been much time and/or opportunity for in-depth evaluation of the available software. At this point, the only real evaluation of software intended for student use has been done by teachers and other adults. Student documentation of attitudes and views of programs has been severely lacking, consisting

mainly of teachers' perceptions concerning student opinion and perhaps observations of students using the programs.

The study will be valuable to the classroom teacher by demonstrating either the competence shown by teachers who are responsible for critiquing educational software or by showing any demonstrated lack of perception concerning how kids actually feel about the program under scrutiny. The astute teacher, truly concerned about the success of his/her students and thereby his/her program, may consider, as a result of this study, altering his/her perceptions of software to more closely align his/her views with those of his/her students. The computer programmer should also paruse the results of the study to see whether he/she is reaching students at the intended grade level and whether their programs are having the intended affect upon those students.

Furthermore, an additional benefit derived from student evaluation of software, according to Crovello (2) is that "Students take genuine, increased interest in education when they are asked for their valued opinions, and computers can provide the opportunity." Therefore, the involvement of students in the evaluation process would have the added benefit of peaking their interest in the curriculum and hopefully a consequent increase in their level of achievement.

Limitations

The value of the study will be limited by the following factors:

1. the number of students and teachers involved in the study,

2. the difficulty of generalizing the results obtained from a limited response group to the population as a whole,

3. the relatively few teachers available to the researcher who are teaching computers in the junior high school, and

4. the use of a modified version of an existing measuring tool to fit the jargon and terminology background of the students involved.

Assumptions

In this study it is assumed that:

1. the evaluating instrument will produce valid results,

2. the students and teachers polled will give honest and truthful responses, and

3. that no prior computer experience by the students would modify their answers outside of those responses normal for their age and maturity level.

Procedures

Teachers for this study were those who were at the time teaching computers in the intermediate schools in York County, Virginia. The students consisted of an entire class being taught by the researcher and therefore accessible to him.

Data collected through the responses were compared on the basis of norms. The normal or typical teacher response was compared to the typical student response for each of the questions on the measuring instrument.

Definition of Terms

Software is defined as those components of a computer system consisting of programs that determine or control the behavior of the computer.

A computer is defined as an electronic device for performing predefined (programmed) computations at high speed and with great accuracy.

Overview of Chapters

In this first chapter, an attempt has been made to explain the nature of the research and to develop an interest in the reader to continue with the rest of the report in order to ascertain the results which have been obtained. If the reader is involved with computers in education, there should be a natural interest in continuing the report. It is a fond hope that others will also look forward to the results for the determination of how well adults can or cannot predict student judgments.

The following chapters will show:

Chapter 2 - what the authorities see as the proper procedure for evaluating software,

Chapter 3 - the methods and procedures used in collecting the data,

Chapter 4 - the results and findings, and

Chapter 5 - the conclusions and recommendations.

CHAPTER II

REVIEW OF LITERATURE

When the topic for this research paper was chosen, it was known that it would be difficult to locate sources dealing with student evaluation of software. What was not realized was that it would be nearly impossible to obtain this sort of information.

The contention is that the reasons for this lack of published information is two fold. First and foremost is the newness of the wide-spread use of computers in an educational setting. Computers, as an area of study, have been a curriculum in post-secondary education for several decades. However, as an area of the curriculum for all students to study and utilize in primary as well as secondary levels, this is a very recent development indeed.

The second and perhaps not so obvious reason for a lack of information in this area is the persistent feeling of adults (therefore of teachers) that they know how kids think and exactly what is best for them. This can be demonstrated by the simple question of how often are kids, in even the non-computer curriculums, involved in planning or evaluating the course of study or daily activities.

Most authors concerned with software evaluation aim their evaluating procedures at adults. The spectrum begins with Riordan (6) specifying that only teachers should evaluate programs, and continues with Neumann (4) who establishes a committee of two principals and two teachers. The evolution terminates with Dearborn (3) who would utilize an unwieldily group consisting of the assistant superintendent, an executive assistant, the supervisor of media, the supervisor of data processing, and assorted curriculum specialists.

Only one source could be located which indicated that students should or even could be involved in the evaluation of computer software. Crovello (2) states that "students are important evaluators ...". He further states that "the more common role of students as software evaluators is by actual use of the program, followed either by their own assessment or by the assessment of the program by others in terms of the subject matter, etc." Even Crovello only sees the benefits of student evaluation as a method to "...increase their feeling of accomplishment..." and so that "they can feel they are contributing to the educational process, not just taking from it." Nowhere in the reading has the question even arisen as to what degree a teacher can predict how students will view educational software which has been written supposedly for their age group.

It is felt that since this was essentially a wide-open topic, the information received concerning student/teacher evaluation correlation (or lack thereof) would be of value to educators, computer programmers, and hopefully to others. Hence, the research proceeded with renewed vigor.

CHAPTER BIBLIOGRAPHY

1. Cornelius, Richard, "Don't Buy a Computer - Buy Software", NASSP Bulletin, V 66, n 455 (September, 1982), p 22-25.

2. Crovello, Theodore J., "Computer Software Evaluation: Who, When, Where, Why?", American Biology Teacher, V 44 n 7 (October, 1982), p 429-446.

3. Dearborn, Donald E., "A Process for Selecting Computer Software", NASSP Bulletin, V 66, n 455 (September, 1982), p. 26-30.

4. Neumann, Robert, "A District Softwarea Evaluation Plan That Works", Electronic Learning, V 2, n 2 (October, 1982), p 46.

5. _____, "The Software Line-Up: What Reviewers Look for when Evaluating Software", Electronic Learning, V 2, n 2 (October, 1982), p. 45-48.

6. Riordan, Tim, "How to Select Software You Can Trust", Classroom Computer News, V 3, n 4 (March, 1983), p. 56-64.

CHAPTER III

METHODOLOGY

Since the aim of this report is to compare two sets of data (those predicted by the teachers and those produced by the students), this report falls under the general heading of descriptive research. The report attempts to describe the existence of either a parallelism of or disparity between the evaluation of software by students and teachers.

Students for the project were obtained by selecting one of the eighth grade classes in computer programming at Yorktown Intermediate School in York County, Virginia due to the availability of the school to the researcher. The particular class was a group being taught by the researcher and was conducted when the students first entered the program and prior to any in-depth instruction in computers.

The teachers involved in the project were those teaching the computer curriculum in the intermediate schools of York County. Even though the population involved was small, it was decided that only those teachers involved with intermediate aged pupils would be utilized since they had more experience with this age group and would therefore have a better chance of predicting their reactions. This should add to the validity of the results. Even so, the small

number of teacher respondents must be considered as a limiting factor in this research project.

The number of student respondents is also quite small. Since the number of student participants is greater than the number of teachers, no great increase in reliability was foreseen by increasing the number of students involved.

Data was obtained through utilization of a modified version of an existing evaluation tool. The original tool has been in wide-spread use for quite some time and its reliability is a foregone conclusion. The modified version draws its reliability from the fact that the content has not been changed. Only the wording has been modified to more closely align itself with the vocabulary of an eighth grade student.

The modifications referred to were made with the assistance of junior high school English teachers from several different schools. This should aid in assuring that the document's questions will be understood by the students involved and thereby increase the hoped for accuracy of the results.

CHAPTER IV

FINDINGS OF THE STUDY

Prior to reading the results to follow, it is recommended that the reader peruse the tables located in the appendix. Familiarity with their contents will aid in an understanding of the forthcoming summation of the findings.

Following said review of the results obtained, one should notice the large disparity in responses from the two groups. Only in the classification of "Support Material" (as noted in Table C) was there any significant correlation of responses between the two groups.

The most informative comparison of responses seems to be the simplest of all, total responses in each of the categories (strongly agree, agree, disagree, and strongly disagree). The results are even more striking when grouped in only two general categories of agreement and disagreement.

As seen in Table I, total teacher responses overwhelmingly favored the agreement categories (91.67% in agreement vs. 8.33% in disagreement). Students on the other hand were split more deeply on their responses (68.78% in agreement vs. 31.22% in disagreement).

TABLE I

TOTAL RESPONSES

	SA	A	D	SD	TOTAL
Students:					
Number	68	192	74	44	378
Percentage	17.99%	50.79%	19.58%	11.64%	100%
	SA+A		D+SD		TOTAL
Number	260		118		378
Percentage	68.78%		31.22%		100%
	SA	A	D	SD	TOTAL
Teachers:					
Number	28	49	7	0	84
Percentage	33.33%	58.33%	8.33%	0%	100%
	SA+A		D+SD		TOTAL
Number	77		7		84
Percentage	91.67%		8.33%		100%

Key:
SA - Strongly Agree
A - Agree
D - Disagree
SD - Strongly Disagree

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Teachers and other interested parties should take note of the disparity between the responses of the students and those of the teachers. Apparently teachers are not able to predict, as accurately as they would hope, exactly how students will respond to a given computer program.

While a significant difference did occur in the responses of the teachers and students, the teachers can take heart in at least one aspect of the study. Over two thirds (68.78%) of the student responses concurred with the 91.67% agreement answers of the teachers. Although nearly one third (31.22%) of the students disagreed with the high satisfaction prediction ratio of teachers, the teachers did predict what the majority of students would feel about the quality, purpose, etc. of the computer program in question.

One must remember, however, that education is not intended to meet the needs of the majority of students. It should, nay, it must meet the needs of all students.

Recommendations

Based upon the findings of this study, the following recommendations are made:

1. Student involvement in evaluating computer programs should be utilized and expanded both by the computer programmers writing educational software and the school authorities responsible for selection of software for the various school districts.

2. A similar study should be conducted using a different computer program to see how the results would compare.

3. Similar studies should be undertaken with both younger and older students to determine if the results translate to other age groups.

4. A similar study should be made utilizing a larger sampling of both students and especially teachers to prevent a possible biasing of the results from such a relatively small statistical sample.

NORTHWEST REGIONAL EDUCATIONAL LABORATORY

COURSEWARE EVALUATION

Revised for Student use by Louis O. Beatty

Rating: Circle the letter abbreviation which best describes your judgement.

SA - Strongly agree
A - Agree
D - Disagree
SD - Strongly disagree
NA - Not Applicable

SA A D SD NA 1. The information in the program is current and accurate.
SA A D SD NA 2. The information in the program has educational value.
SA A D SD NA 3. The program does not show false characteristics of any group of people.
SA A D SD NA 4. The purpose of the program is well-defined.
SA A D SD NA 5. The program achieves a purpose.
SA A D SD NA 6. The information is presented in a clear, well organized manner.
SA A D SD NA 7. The level of difficulty is appropriate for an eighth grade student.
SA A D SD NA 8. Graphics (pictures, charts, etc.) and sound are used for an educational purpose.
SA A D SD NA 9. Use of the program is interesting and not boring.
SA A D SD NA 10. The program encourages students to think creatively.
SA A D SD NA 11. The program makes use of student responses (answers).
SA A D SD NA 12. The student controls the rate of presentation and review.
SA A D SD NA 13. The student controls the sequence of presentation and review.
SA A D SD NA 14. Instruction takes into account the previous knowledge of the student.
SA A D SD NA 15. User support materials (written instructions) are thorough and complete.
SA A D SD NA 16. The written materials are clear, readable and appropriate to this program.
SA A D SD NA 17. The user support materials are helpful.
SA A D SD NA 18. A person using the program can do so without reading the instruction booklet.
SA A D SD NA 19. Teachers can easily make use of the program in their classes.
SA A D SD NA 20. The program makes good use of the abilities of the computer.
SA A D SD NA 21. The program works properly and does not appear to have operational errors.

Table 8

TOTAL RESPONSES TO EACH QUESTION

Students					Teachers			
SA	A	D	SD	Question Number	SA	A	D	SD
6	11	1	0	1	1	3	0	0
1	9	4	4	2	1	3	0	0
4	12	2	0	3	2	2	0	0
0	9	7	2	4	1	1	2	0
0	5	9	4	5	1	3	0	0
6	7	3	2	6	1	3	0	0
2	7	6	3	7	1	2	1	0
5	8	3	2	8	2	2	0	0
3	5	4	6	9	1	3	0	0
3	9	5	1	10	2	2	0	0
1	13	4	0	11	1	3	0	0
4	12	1	1	12	4	0	0	0
5	12	1	0	13	2	2	0	0
1	10	5	2	14	1	2	1	0
6	6	2	2	15	1	2	1	0
3	15	0	0	16	1	3	0	0
2	10	4	2	17	1	3	0	0
7	7	4	0	18	1	2	1	0
2	9	3	4	19	0	3	1	0
3	9	3	3	20	2	2	0	0
4	5	3	6	21	1	3	0	0

Key:

SA - Strongly Agree
A - Agree
D - Disagree
SD - Strongly Disagree

TABLE C

ANSWER GROUPING ACCORDING TO CATEGORY

	Students		Category	Teachers	
	SA+A	D+SD		SA+A	D+SD
Number	60	30	Information	18	2
Percentage	67%	33%	#'s 1, 2, 6, 7, 14	90%	10%
Number	27	27	Purpose	10	2
Percentage	50%	50%	#'s 4, 5, 8	83%	17%
Number	36	18	Effect on Student	12	0
Percentage	67%	33%	#'s 3, 9, 10	100%	0%
Number	79	29	Use of Program	23	1
Percentage	73%	27%	#'s 11, 12, 13, 19, 20, 21	96%	4%
Number	58	14	Support Material	14	2
Percentage	81%	19%	#'s 15, 16, 17, 18	88%	12%

Key:
SA - Strongly Agree
A - Agree
D - Disagree
SD - Strongly Disagree

BIBLIOGRAPHY

Articles

Cornelius, Richard, "Don't Buy a Computer - Buy Software", NASSP Bulletin, V 66, n 455 (September, 1982), p 22-25.

Crovello, Theodore J., "Computer Software Evaluation: Who, When, Where, Why?", American Biology Teacher, V 44, n 7 (October, 1982), p 429-446.

Dearborn, Donald E. "A Process for Selecting Computer Software", NASSP Bulletin, V 66, n 455 (September, 1982), p. 26-30.

Neumann, Robert, "A District Software Evaluation Plan That Works", Electronic Learning, V 2, n 2 (October, 1982), p 46.

_____, "The Software Line-Up: What Reviewers Look for When Evaluating Software", Electronic Learning, V 2, n 2 (October, 1982), p 45-48.

Riordan, Tim, "How to Select Software You Can Trust", Classroom Computer News, V 3, n 4 (March, 1983), p. 56-64.