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ABSTRACT

The attitude of public school teachers, educational researchers, and "outstanding" teachers towards educational research was examined and compared. Attitude was theoretically identified as one factor which can impede communication. A validated instrument was administered to a random sample of each population. A simple ANOVA (analysis of variance) justified a set of orthogonal contrasts, which indicated that teachers, "in toto," have a less positive attitude toward the referent than do researchers and "outstanding" teachers. The evidence suggests that interested persons should propose strategies to improve the teacher's attitude towards educational research. (Author)

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THE FUTILITY OF EDUCATIONAL RESEARCH IN CURRICULUM DEVELOPMENT

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INTRODUCTION

Nearly three quarters of a century ago Rice stood before a national convention of school administrators and was severely chastised for "taking the time of such important men" to present the findings of his research.

Less than five years ago Wolf, in The Educational Researcher, presented an editorial which began: "Look out, all you teachers, counselors, administrators, and teacher educators; we researchers have been thwarted by your apathetic behavior long enough."

Throughout the intervening seventy year period educational research had been ridiculed, scorned, or, at best, ignored by a substantial number of practitioners in education. A variety of opinions had been proffered to explain this non-sequitur but empirical investigation and evidence were lacking.

Most approaches to the resolution of the problem could be subsumed under the rubric of "product" or "delivery system" improvement. The underlying assumption apparently based on the mercantilist precept that "the customer is always right." Operating in this mode researchers had altered their products and tinkered with its packaging, but they had been reluctant to investigate any of those variables that might be attributable to the consumer.

THEORETICAL BASE FOR THE STUDY

If the research-to-practice continuum could be conceptualized as a closed system it seems obvious that an early-occurring event would be communication.

Communication theory has been developed, and inherent in that theory is a construct denoted "noise." Shannon and Weaver described noise as a force in the channel which reduces message flow. Berlo held that noise could also be present as an attribute of the sender or receiver, and Borosage specifically cited attitude as a potential noise. That is to say: the attitude of a receiver toward the sender or the content field of the message can inhibit the communicative process.

In this context it seemed desirable to measure the attitude of practitioners toward research, for if a negative attitude existed new approaches to the problem of converting research findings into practice might be suggested. It also seemed propitious to assess the attitude of recognizably superior teachers toward research. For if research findings are useful to the effective practitioner then the outstanding teacher would have, as a part of his gestalt, a positive regard for research.

DESIGN AND METHODOLOGY

Instrumentation to measure the variable "attitude toward educational research" was not available. Utilizing the procedures described by Likert a preliminary, one-hundred item Scale of Attitude toward Research (SOAR) was developed by Carriker.[1]

A pilot study established the feasibility of such research and verified the SOAR as a research tool.[2] Subsequently the SOAR was reduced to a forty item scale comprised of those items which were found to be most discriminatory on the basis of the Ss attitude toward educational research.[3]

The Ss for the study were randomly selected samples drawn from the membership list of the AERA (N=45), the membership of the Kansas-NEA (N=45), and the population of Kansas teachers who were considered to be "outstanding educators." (N=28).

For this research it was assumed that active AERA members, on the average, would hold what could be described as a positive attitude toward research. Further that the Kansas-NEA membership represented all Kansas public school teachers, and that those practitioners who had formally been named[4] as "outstanding educators" would randomly represent the population of all superior teachers in Kansas.

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[1]The final SOAR follows as Appendix A.

[2]The reliability coefficient of the preliminary SOAR was found to equal .90; while that coefficient on the final SOAR was calculated to equal .94.

[3]The item analysis for the pilot version of the SOAR is presented as Appendix B.

[4]On the basis of criteria suggested by the Kansas JAYCEE organization in their annual commendation process for recognizing outstanding educators. These criteria were assumed to be as valid as any available for identifying superior teachers. The sample (N=28) represented the entire number of Kansas teachers who were so designated for the 1970-71 academic year.

Additionally the investigator was interested in assessing the contribution that age, gender, highest degree earned, type of undergraduate school attended, and some other independent variables would make toward any observed variance in measured scores on the SOAR.

Eight null hypotheses were developed to test the generalized hypothesis of no significant difference among education professionals with respect to their attitude toward educational research.

The data were analyzed with a simple analysis of variance (ANOVA) followed by a set of orthogonal contrasts for samples of inequal size or the Scheffe technique where appropriate.

ANALYSIS AND FINDINGS

The ANOVA among researchers, Kansas teachers, and outstanding Kansas teachers rejected the null hypothesis at the .0002 level.[5] The set of orthogonal contrasts developed to ferret the loci of the difference showed that significant difference existed at the .05 level, between researchers and Kansas teachers and between outstanding Kansas teachers and undifferentiated Kansas teachers. No significant difference was found between researchers and outstanding Kansas teachers.

The analyses of the remaining independent variables showed highest degree earned to be a significant predictor of attitude. Difference was found to reside between those holding the doctorate and those holding only the baccalaureate degree. Master's degree subjects were indistinguishable from either of the other two categories.

The age level of the Ss were also significant. Those considered "middle-aged" were found to be more positive in their attitude than those denoted as "younger."

Sex, undergraduate college-type attended, grade level taught and swiftness of response to the questionnaire were not found to be significant variables on this criterion.

DISCUSSION IMPLICATIONS

The practitioner in education held a strikingly more negative attitude toward research than did the researcher. Assuming viability of communications theory this seems to lend strength to the assertion that educational research has

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[5]This p. value was calculated according to a formula suggested by Jaspen.

The various ANOVA's and contrasts are presented in tabular form as Appendix C.

been futile in curriculum development because the communications system between researcher and practitioner is dysfunctional.

Looking at some other aspects of the study it seems likely that as more graduate work is completed, and as teachers develop into "outstanding" practitioners, through whatever processes that implies, their attitude toward research becomes more positive and concommitantly the potential for communication is enhanced.

Those experiences provided in graduate school which develop a more positive attitude toward research have yet to be empirically identified; and the processes which lead some practitioners to recognized professional stature and others to anonymity are so little understood as to approximate random occurrences.

This suggests a promising entry point for further research, for the curriculum is simply not going to undergo any substantive change, as a result of research until practitioners hold research and researchers in a more positive regard.

APPENDIX A

EDUCATIONAL RESEARCH ATTITUDE INVENTORY: QUESTIONNAIRE

INSTRUCTIONS: In responding to these items please use the following code numbers. Respond by circling the appropriate number on the accompanying answer sheet.

Circle 1 on the answer sheet if you **STRONGLY DISAGREE**
Circle 2 on the answer sheet if you **DISAGREE**
Circle 3 on the answer sheet if you **TEND TO DISAGREE**
Circle 4 on the answer sheet if you are **UNDECIDED**
Circle 5 on the answer sheet if you **TEND TO AGREE**
Circle 6 on the answer sheet if you **AGREE**
Circle 7 on the answer sheet if you **STRONGLY AGREE**

(1) The findings of educational research are so specific that they have little adaptability to different teaching situations.

(2) A teacher can learn all they ever need to know about teaching without ever reading any educational research.

(3) Educational research should be better supported, financially, at the local level.

(4) An ability to do research would be of little help in facing the problems of teaching.

(5) In periods requiring federal budget tightening, one of the first cuts to be made should be educational research funding.

(6) Educational researchers are ivory-tower professors who don't know what real school teaching is like.

(7) The NEA should do more to encourage educational research.

(8) The development of new ideas and techniques is relatively more important than conscientiously plugging away at old methods and techniques.

(9) During a school year research findings should be presented and discussed at several faculty meetings.

(10) An ability to understand and conduct research will help a teacher do a better job of teaching.

(11) If a choice must be made between more spending for educational research or more for general school operations, the money should go to research.

(12) If it is true that "Those who can, do; and those who can't,

teach," then those who can do neither conduct educational research.

(13) Most teachers should belong to some organization which promotes research.

(14) Teachers are well enough educated to make professional decisions from their own experience and don't need to look for research evidence to back them.

(15) Teachers should find a broad knowledge of educational research findings helpful in developing their instructional programs.

(16) Educational research should be considered a luxury to be dispensed with when its cost takes away from other educational spending.

(17) Statistical evidence and inferences are not useful to teachers.

(18) In making professional decisions the teacher will find his philosophy and intuition more useful than statistical data and research findings.

(19) Research is a vital part of the educational profession.

(20) Typical research findings are so narrow as to be useless to teachers.

(21) We should spend more money for educational research than we are now doing.

(22) Practical experience and learning are more valuable to a teacher than someone else's experiments.

(23) The findings of educational research are too theoretical.

(24) The expense of educational research is out of all proportion to its value.

(25) Educational decisions should be made primarily on the basis of what we instinctively know is right.

(26) Teachers should have released time from teaching to use for conducting research of interest to them.

(27) Learning about contemporary educational research should be a part of the in-service education of a teacher.

APPENDIX A

(28) Research does not have enough effect upon what happens in schools.

(29) The plain common sense of a teacher will guide him in his work just as well, or better, than a lot of material read in research papers.

(30) Our educational leaders should not rely so much upon educational research in making their decisions.

(31) Teachers should accept educational research as an important and necessary part of the education profession.

(32) Educational researchers are parasites wasting money which could be put to better use in helping schools.

(33) It is best to wait until those ideas which seem good on the basis of research evidence are proven good by actual experience.

(34) Concepts which are based on educational research should definitely influence one's teaching.

(35) Teachers should accept, as do drug manufacturers and medical doctors, that it may take thousands of dollars and many failures to perfect a new treatment for their clients.

(36) Teachers read all the research they need just in preparing assignments for their evening and summer college courses.

(37) Good teaching is, and always will be, more a matter of talent than training.

(38) There should be an immediate moratorium on all educational research until our schools settle down to business.

(39) The budget of most school districts should include money to be given to local teachers who are willing and competent to conduct locally significant research.

(40) I try to be among the first of my fellow teachers to accept and use information gained from educational research.

APPENDIX B

Table 1

Item Analysis--SOAR Pilot Study
Items Empirically Weighted

Item No.	Item Weight	Correlation With Total	Item No.	Item Weight	Correlation With Total
1	0	0.0	51	0	0.0
2	1	0.0348	52	0	0.0
3	0	0.0	53	1	0.3168
4	0	0.0	54	0	0.0
5	1	0.2763	55	1	0.5006
6	0	0.0	56	0	0.0
7	-1	-0.1755	57	-1	0.7364
8	-1	0.5550	58	-1	0.2688
9	0	0.0	59	-1	0.6955
10	-1	0.0425	60	0	0.0
11	0	0.0	61	0	0.0
12	0	0.0	62	1	0.4603
13	1	-0.1377	63	1	0.3971
14	0	0.0	64	1	0.3173
15	0	0.0	65	0	0.0
16	1	0.0834	66	0	0.0
17	1	0.4833	67	1	0.6302
18	-1	-0.4765	68	0	0.0
19	0	0.0	69	0	0.0
20	0	0.0	70	-1	0.3963
21	1	0.3343	71	-1	0.5894
22	0	0.0	72	0	0.0
23	0	0.0	73	-1	0.6403
24	0	0.0	74	1	0.5685
25	0	0.0	75	0	0.0
26	0	0.0	76	1	0.6940
27	0	0.0	77	-1	0.7628
28	0	0.0	78	1	0.6355
29	-1	0.2796	79	1	0.2907
30	0	0.0	80	0	0.0
31	0	0.0	81	0	0.0
32	0	0.0	82	0	0.0
33	-1	0.3819	83	0	0.0
34	-1	0.3652	84	-1	0.5611
35	-1	0.4253	85	0	0.0
36	-1	0.3100	86	0	0.0
37	0	0.0	87	0	0.0
38	0	0.0	88	0	0.0
39	0	0.0	89	-1	-0.1596
40	0	0.0	90	0	0.0

APPENDIX B

Table 1 (continued)

Item No.	Item Weight	Correlation With Total	Item No.	Item Weight	Correlation With Total
41	1	0.3597	91	0	0.0
42	1	0.0	92	-1	0.5354
43	0	0.0	93	1	0.3650
44	1	0.2219	94	0	0.0
45	1	0.4695	95	1	0.4050
46	-1	0.6520	96	1	0.4999
47	0	0.0	97	0	0.0
48	1	0.7520	98	-1	0.3584
49	0	0.0	99	0	0.0
50	0	0.0	100	-1	0.3413

N = 61 Mean = 210.131 S.D. = 22.484

Reliability: Uncorrected, odd-even = .8209
Corrected, odd-even = .9016

APPENDIX B

Table 2

Item Analysis--Truncated SOAR
Weighted Items

Item No.	Item Weight	Correlation With Total	Item No.	Item Weight	Correlation With Total
1	1	0.2571	21	-1	0.6829
2	1	0.2996	22	1	0.4773
3	-1	0.6174	23	1	0.4380
4	1	0.4485	24	1	0.3066
5	1	0.6024	25	1	0.6096
6	1	0.3599	26	-1	0.3804
7	-1	0.3559	27	-1	0.5787
8	-1	0.3404	28	-1	0.6175
9	-1	0.3374	29	1	0.5548
10	-1	0.4519	30	1	0.6346
11	-1	0.3025	31	-1	0.7684
12	1	0.4144	32	1	0.6045
13	1	0.1762	33	1	0.2829
14	1	0.5711	34	-1	0.5396
15	-1	0.6698	35	-1	0.5294
16	1	0.7535	36	1	0.4267
17	1	0.2944	37	1	0.3739
18	1	0.5216	38	1	0.5076
19	-1	0.7542	39	-1	0.3762
20	-1	0.2818	40	-1	0.3867

N = 61 Mean = 196.115 S.D. = 25.246

Reliability: Uncorrected, odd-even = 0.8901
Corrected, odd-even = 0.9419

APPENDIX C

Table 1

Summary Table for Analysis of Variance Among Means of Researchers, Outstanding Kansas Teachers, and Kansas-NEA Members

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	2	18079.0000	9039.0000	10.5135*
Within Groups	84	72223.0000	859.7976	
Total	86	90302.0000		

$p = 0.01$, R: $F \geq 4.98$

*Reject: There is a significant difference among the means

Group	K-NEA	Outstanding	Researchers
Mean	187.60	202.86	220.72
S.D.	28.81	21.51	33.34
N	30	21	36

APPENDIX C

Table 2

t-test Contrasting Researchers and Kansas Teachers

H: $u_1 = 1/2\ (u_2 + u_3)$

p. = 0.05, One-tailed test

Df = 84

Reject: $t \geq 1.671$

$$t = \sqrt{\frac{15198.6}{859.8}}$$

$$t = \sqrt{17.0}$$

$$t = 4.12^*$$

*Reject: There is a significant difference; with the first mean (Researchers) being significantly larger than the second (Teachers).

Table 5

t-test Contrasting Outstanding Kansas Teachers and Kansas-NEA Members

H: $u_2 = u_3$

p. = 0.05, One-tailed test

Df = 84

Reject: $t \geq 1.671$

$$t = \sqrt{\frac{2876.6}{859.8}}$$

$$t = \sqrt{3.35}$$

$$t = 1.83^*$$

*Reject: There is a significant difference; with the first mean (Outstanding Teachers) being significantly larger than the second (Kansas-NEA Members).

APPENDIX C

Table 3

Summary Table and Scheffe Comparisons for an ANOVA Among Means of Holders of the Bachelor's Degree, the Master's Degree, and the Doctorate

Sources of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	2	11421.0000	5710.5000	6.0811*
Within Groups	84	78881.0000	939.0593	
Total	86	90302.0000		

p. = 0.01, R: $F \geq 4.98$

*Reject: There is a significant difference among the means.

Group	Bachelor's	Master's	Doctorate
Mean	191.06	208.05	217.25
S.D.	28.48	28.98	33.74
N	33	22	32

Scheffe Test for Multiple Comparisons:

Group	Bachelor's	Master's	Doctorate
Bachelor's	0.00	2.03	5.93*
Master's		0.00	0.59
Doctorate			

p. = 0.01, R: $F \geq 4.96$

Reject: Doctorate significantly higher than Bachelor's.

APPENDIX C

Table 4

Summary Table for Analysis of Variance Among Means of Professionals Grouped According to Gender

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	1	316.0000	316.0000	0.2985
Within Groups	85	89986.0000	1058.6580	
Total	86	90302.0000		

Retain: F-Ratio less than 1.0000

Group	Male	Female
Mean	206.44	202.50
S.D.	30.90	35.21
N	55	32

APPENDIX C

Table 5

Summary Table and Scheffe Comparisons for an ANOVA Among Means of Younger, Middle-aged, and Older Professionals

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	2	11025.0000	5512.5000	5.8409*
Within Groups	84	79277.0000	943.7737	
Total	86	90302.0000		

p. = 0.01, R: $F \geq 4.98$

*Reject: There is a significant difference among the means.

Group	Younger	Middle-aged	Older
Mean	193.32	217.70	211.06
S.D.	30.70	32.00	28.13
N	41	30	16

Scheffe Test for Multiple Comparisons:

Group	Younger	Middle-aged	Older
Younger	0.00	5.46*	1.92
Middle-aged		0.00	0.24
Older			

p. = 0.01, R: $F \geq 4.98$

*There is a significant difference between younger and middle-aged professionals, the latter scoring higher on the SOAR than the former.

APPENDIX C

Table 6

Summary Table of Analysis of Variance Among Means of Professionals Who Earned Their Baccalaureate Degree from Differing Types of Institutions

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	3	3037.0000	1012.3330	0.9629
Within Groups	83	87265.0000	1051.3850	
Total	86	90302.0000		

Retain: F-Ratio less than 1.0000

Group	Lib. Arts College	Teachers College	Univ.	Other
Mean	195.70	209.50	207.50	221.33
S.D.	28.61	34.07	32.83	38.63
N	20	24	40	3

APPENDIX C

Table 7

Summary Table of Analysis of Variance Among Means of Practitioners Who Teach at Various Grade Levels

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	3	331.8125	110.6042	0.1450
Within Groups	47	35861.5000	763.0105	
Total	50	36193.3100		

Group	Primary	Upper Elem.	Jr. High	Sr. High
Mean	122.57	122.15	128.00	128.20
S.D.	21.09	35.68	21.61	25.48
N	7	13	6	25

APPENDIX C

Table 8

Summary Table of Analysis of Variance Among Means of Subjects Who Responded at Varying Degrees of Promptness to the Mailed SOAR

Sources of Variance	Degrees of Freedom	Sums of Squares	Mean Squares	F-Ratio
Between Groups	4	1727.0000	431.7500	0.3994
Within Groups	82	88636.0000	1080.9260	
Total	86	90363.0000		

Retain: F-Ratio less than 1.000

Days Elapsed in Responding to SOAR

Group	Over 15	11-15	7-10	4-6	1-3
Mean	114.50	120.50	123.43	110.19	114.49
S.D.	28.91	24.80	23.74	34.64	35.82
N	8	4	14	26	35

APPENDIX D

ORTHOGONAL COMPARISONS WITH UNEQUAL SAMPLE SIZES

As a general rule, when comparisons are planned in advance, the investigator will draw samples of equal size. Suppose, however, that a mail survey is conducted, and the returns from the various samples are of unequal size. Orthogonal comparisons may be extended to samples of unequal size providing the following criteria are met:

(a) For each comparison, C_i: $\sum_{j=1}^{k} n_j c_{ij} = 0$

(b) For each pair of comparisons, C_i and C_k: $\sum_{j=1}^{k} n_j c_{ij} c_{kj} = 0$

Consider the situation in which the investigator wishes to compare sample one to sample two then samples one and two to sample three. For equal sample sizes, the coefficients would be:

$$\begin{array}{ccc} 1 & -1 & 0 \\ \frac{1}{2} & +\frac{1}{2} & -1 \end{array}$$

Suppose, however, that the sample sizes were $n_1 = 10$, $n_2 = 15$, and $n_3 = 20$. Criterion (a) above requires for the first comparison that:

$$n_1 c_{11} + n_2 c_{12} + 0 = 0$$

This can be easily solved by letting $c_{11} = n_2$ and $c_{12} = -n_1$. However, n_1 and n_2 are both divisible by five, so we will let $c_{11} = 3$ and $c_{12} = -2$.

The values of c_{21} and c_{22} for the second comparison must be chosen so that criterion (b) above is met. Because $c_{13} = 0$, we will not be immediately concerned with c_{23}. We must solve the equation:

$$n_1 c_{11} c_{21} + n_2 c_{12} c_{22} + 0 = 0$$

Substituting the values of n_1, n_2, c_{11}, and c_{12} which are known:

$$30c_{21} - 30c_{22} = 0$$

Thus, $c_{21} = c_{22}$, and these may be set equal to any convenient value. If we look ahead a little bit, we will see that $c_{21} = c_{22} = 4$ is a convenient solution, but any other value will work. Now we must choose c_{23} so that criterion (a) above is satisfied:

$$n_1 c_{21} + n_2 c_{22} + n_3 c_{23} = 0$$

Substituting the values of n_1, n_2, n_3, c_{21}, and c_{22}:

$$40 + 60 + 20c_{23} = 0$$

And solving for c_{23}, we get: $c_{23} = -5$. The reader should substitute into (a) and (b) to confirm that both criteria have been met.

The sum of squares associated with each contrast may be calculated using either sample means or sums:

$$SS_{C_i} = \frac{\left(\sum_{j=1}^{k} n_j c_{ij} M_j\right)^2}{\sum_{j=1}^{k} n_j c_{ij}^2} = \frac{\left(\sum_{j=1}^{k} c_{ij} T_j\right)^2}{\sum_{j=1}^{k} n_j c_{ij}^2}$$

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