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ABSTRACT
        An investigation of the relationship between teaching
experience, teacher concern level, and achievement of learning a new
teaching skill for teachers in elementary school science is described
in this report. For the purpose of studying these relationships, a
computer-assisted instructional program was developed to teach the
identification and use of behavioral objectives in science. The
sample (34 experienced elementary school teachers and 26
undergraduate elementary education majors) was given a pretest and
posttest on both the Teacher Concerns Statement and Behavioral
Objective Achievement Test. After the pretest, each subject worked at
the computer terminal with the computer program, and then, as a
group, was administered the posttest. Major findings were:
individuals without teaching experience tend to have a higher level
of achievement than those with teaching experience; there was no
significant relationship between the level of teacher concerns and
achievement in identifying and using behavioral objectives for either
experienced or inexperienced teachers; there was a significant
positive correlation between teaching experience and teacher concern
level; and teaching experience and teacher concern levels were not
useful in predicting teacher achievement. (PR)

TEACHER CONCERNS

AND

COMPETENCE ACHIEVEMENT

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A Paper Presented at The Forty-Fifth Annual Meeting

of The National Association For

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The problem confronting science educators over what and when
to teach specific skills to preservice and inservice teachers continues
to be in uncharted domain. Is there such a thing as a panacea which,
when identified, will allow educators to stipulate that at a certain
time a teacher is more apt to become proficient at a given task? Is
there even a broader predictor which will allow us to specify what
general kinds of things should be included in our method courses at
the undergraduate or graduate level?

One type of variable which may give us a hint of what to teach
to whom and when may be the concerns an individual expresses about
teaching. Fuller (1969) has posited a conceptualization of teacher
concern. From the results, she describes levels which are being used
in this study to operationally define psychological readiness.

If Fuller is correct in her assumption that the level of teacher
concern is an indication of readiness to learn how to teach, then
preservice and inservice teachers with mature concerns, whether they
have teaching experience or not, would be able to achieve more com-
petence in skills and subject matter which are consonant with their
concern than those whose concerns are not consonant with the material
to be learned. The conceptual model of this study is described in

Figure I. As an individual enters a learning situation, he brings his past experience and his concerns, which together indicate his readiness. If the content of the learning situation is in accord with his concern level, it would be expected that his achievement would be high. On the other hand, if the content is not consistent with his concerns, it would be expected that his achievement would be low.

The Study

The problem of this study was to determine in elementary teachers what relationship exists among teaching experience, teacher concern level, and achievement of learning a new teaching skill in teaching elementary school science. In an attempt to determine these relationships, a computer-assisted instructional program, INOBJ, was developed to teach the identification and use of behavioral objectives in science. This problem led to the generation of four specific research questions:

Research Question I: Is there a relationship between teaching experience and achievement in identifying and using behavioral objectives in science?

Research Question 2: Is there a relationship between the initial teacher concern level and achievement in identifying and using behavioral objectives in science?

Research Question 3: Is there a relationship between teaching experience and teacher concern level?

Research Question 4: Is it possible to predict achievement in identifying and using behavioral objectives in science from teaching experience and teacher concern level?

ENTER

PAST
EXPERIENCE

TEACHER CONCERN LEVEL:
A READINESS INDICATOR

IS COURSE CONTENT CONSISTENT
WITH TEACHER CONCERN LEVEL?

YES →

HIGH ACHIEVEMENT OF
SKILLS AND COMPETENCIES
DEALING WITH NEW
CONTENT OF COURSE

NO

LOW ACHIEVEMENT OF
SKILLS AND COMPETENCIES
DEALING WITH NEW
CONTENT OF THE COURSE

RESOLVEMENT OF INITIAL
TEACHER CONCERN LEVEL
AND AROUSAL OF A NEW
TEACHER CONCERN LEVEL

NO RESOLVEMENT OF
INITIAL TEACHER CONCERN
LEVEL OR AROUSAL OF A
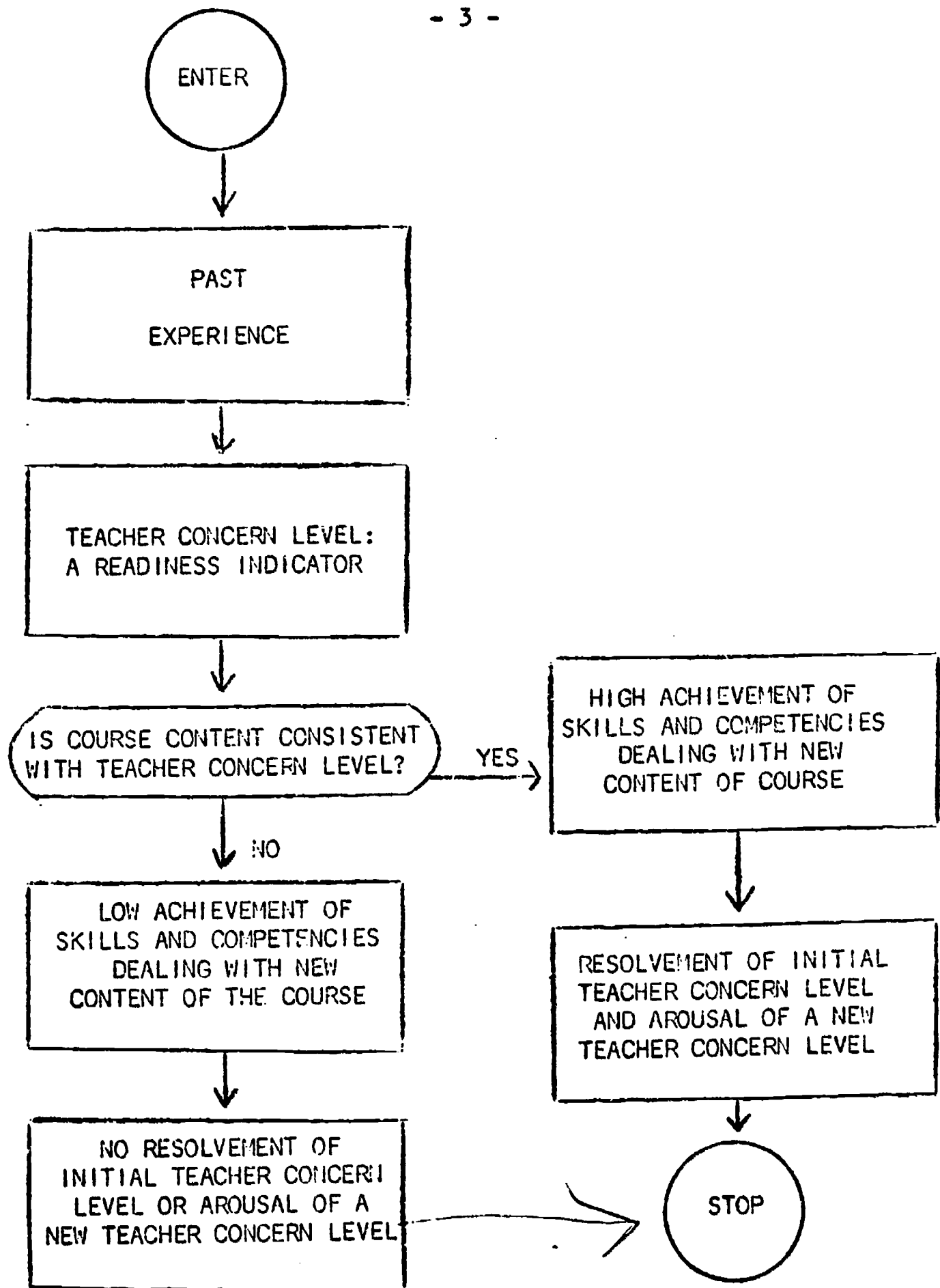NEW TEACHER CONCERN LEVEL

STOP

Figure 1

Competence-Concerns Conceptual Model
for Teacher Education

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Subjects

The study was conducted using a sample of 34 experienced elementary school teachers and 26 undergraduate elementary education majors. For the entire sample the range of teaching experience was from 0-36 years and the range of teacher concern level was from 0-6 on a 7 point scale. The subjects were involved with courses of teaching science to elementary school children at The University of Texas at Austin during the summer and fall of 1970.

Procedure

Each subject was given a pretest and post test on both the Teacher Concerns Statement and the Behavioral. Objective Achievement Test. Following the pretest, each subject was scheduled for an opportunity to work at the computer terminal with the CAI Program INOBJ. This program included both response opportunities on the computer keyboard and response opportunities with light sensitive pen. The full program is described by Gardner (1971).

The post test was administered to the population after they had completed the computer-assisted instruction.

Results

For INOBJ, a competency criterion was established at 15 of 18 correct items on the Behavioral Objective Achievement Test. Of the 60 subjects, six met the minimum criteria on the pretest. Nine failed to reach the minimum competency level after instruction. Of those who failed to reach the minimum criteria, five had over 13

years of teaching experience and the other 4 had one year or no
previous teaching experience. The concern level for the nine ranged
from 2.0 to 6.0. It might be inferred that teachers with substantial
experience tend to achieve lower proficiency with regard to new content.
Whether these results are due to the nature of behavioral objectives
or to a computer-assisted program may be worth further study. Generally,
students were successful in learning the identification and use of
behavioral objectives when taught by the computer-assisted instruc-
tional program, INOBJ.

Findings

The first question asked in this study was:

1. Is there a relationship between teaching experience
    and achievement in identifying and using behavioral
    objectives in science?

It was found that a relationship did exist between the length
of one's teaching experience and his achievement after instruction.
The data revealed that this is an inverse relationship (see Tables
I and 2). This finding is in agreement with the studies of Jacobson
(1968) and Stoneking and Welch (1961). It may be inferred that the
subject matter (behavioral objectives, science, and arithmetic prin-
ciples) deals with content which is of less importance to experienced
teachers. Further study is needed of the relationship between the
teachers' perceived relevance of content and their achievement.

Table 1

SUMMARY OF CORRELATIONS BETWEEN TEACHING EXPERIENCE AND ACHIEVEMENT

	Factor	Pretest Score of BOAT	Post test Score of BOAT
	Teaching Experience	-.0926	-.3938**
Means	5.6 years	10.65	16.05

*p $<$ .05
**p $<$ .01   (N = 60)

Table 2

RELATIONSHIP OF TEACHING EXPERIENCE AND ACHIEVEMENT CHANGE SCORES

Factor	Change	Covariable Pretest mean Score of BOAT	Criterion Post test mean Score of BOAT	Regression Slope	p^1	p^2
NE	Achievement	9.5385	16.1923	.1211		
					.0773	.0857
E	Achievement	11.5000	15.9412	.4000		

p^1 = Probability that the observed differences among group slopes
are due only to chance
p^2 = Probability that the observed differences among group intercepts
are due only to chance
NE = Individuals with no teaching experience (N = 26)
 E = Individuals with teaching experience (N = 34)

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Another inference may be that the instruction is not related closely enough to the actual classroom situation. If this is true, the teachers may be attempting to relate the subject matter to their prior classroom experience rather than to the present instruction. Scores on the achievement tests may indicate the degree to which the teacher feels the content relevant to his classroom. Those with little experience have difficulty distinguishing which content can or cannot be applied to the classroom; thus, they tend to have a higher overall content achievement level. With increased experience they will become more selective in the content they choose to learn and later apply in practice. In contrast, in a learning situation experienced teachers tend to screen out material which they feel irrelevant to their teaching experiences, thereby reducing their overall achievement level. As a compensation, that which he does achieve, he may put to use in the classroom, however, the experienced teacher's grasp of the selected material and his proficiency in putting it to use in his classroom may be strong. Further study is needed to find if in their teaching, teachers actually use the skills they demonstrate on their achievement tests.

It seemed apparent from the literature that the longer one teaches the less one is open to learning new skills. The adage, "you can't teach an old dog new tricks," appears to apply to teachers in this and other studies. However, more study is needed to ascertain the role that relevance plays in a teacher's achievement and his use of that which he achieves in his classroom.

The second question of this study was:

2. Is there a relationship between teacher concern level and achievement in identifying and using behavioral objectives in science?

From the original model (see Figure 1) it was expected that there would be a change in achievement depending upon the level of teaching concern. However, such a relationship was not found between teacher concern level and achievement (see Tables 3 and 4).

Table 3

SUMMARY OF CORRELATIONS BETWEEN TEACHER CONCERN LEVEL AND ACHIEVEMENT

Factor	Pretest Score of BOAT	Post test Score of BOAT
Initial Teacher Concern Level	.1863	-.0461
Means 3.6800	10.6500	16.0500

*p < .05
**p < .01   (N = 60)

Table 4

RELATIONSHIPS OF TEACHER CONCERN LEVELS AND ACHIEVEMENT CHANGE SCORES

Factor	Change	Covariable Pretest mean Score of BOAT	Criterion Post test mean Score of BOAT	Regression Slope	p^1	p^2
IC	Achievement	10.0345	16.0690	.1601		
					.2512	.5279
MC	Achievement	11.2258	16.0323	.3332		

p^1 = Probability that the observed differences among group slopes are due only to chance

p^2 = Probability that the observed differences among group intercepts are due only to chance

IC = Individuals with immature teacher concerns (N = 29)

MC = Individuals with mature teacher concerns (N = 31)

One inference for these findings is that the skill of identifying and using behavioral objectives in science is a new one to the subjects, and therefore it is not associated with their concern level. A second inference is that teacher concern level is not a useful indicator of general psychological readiness. Rather, a specific concern about behavioral objectives might indicate a readiness to learn that specific skill. Thus, Fuller's hypothesis that teacher education needs to be designed to arouse and resolve concerns would be valid only if their concern arousal and the task resolution were specific. If further research showed this to be ture, many individual-ized instructional segments dealing with specific concerns could be

developed for use with both preservice and inservice teachers.

The third question considered in this study was:

3. Is there a relationship between teaching experience and teacher concern levels?

The significant correlations between teaching experience and teacher concern level strongly illustrate this hypothesized relationship (see Table 5). These results support the inference that teacher concern level is a natural outgrowth of teaching experience. The longer a teacher teaches the more concerned he becomes with the activities of the students and the less he is concerned with his own adequacies or inadequacies. Relating these findings to the previous question, a possible interpretation of the evidence is that a teacher's general concern about teaching does not accurately represent his concern in teaching a specific subject, such as science.

Table 5

SUMMARY OF CORRELATIONS BETWEEN TEACHING EXPERIENCE AND
TEACHER CONCERN LEVEL

Factor	Initial Teacher Concern Level	Post Teacher Concern Level
Teaching Experience	.3556**	.3325**
Means 5.6000	3.6800	3.4567

*p < .05
**p < .01

The final question raised was:

4. Is it possible to predict achievement in identifying and
using behavioral objectives in science from teaching
experience and teacher concern level?

The data revealed that teaching experience and teacher concern
levels were not useful in predicting achievement in this study. This
reaffirms the findings of the preceding questions. Teaching experience
correlated inversely with achievement. Teacher concern level did not
correlate with achievement. When combined as a set they were not use-
ful in predicting achievement. Further research is needed to see if
the same results would occur if the individual's specific concerns
related to the learning task were measured.

Table 6

REGRESSION ANALYSIS SUMMARY OF PREDICTING ACHIEVEMENT FROM
TEACHING EXPERIENCE AND TEACHER CONCERN LEVEL

Hypothesis	Criteria	Predictor 1 Teaching Experience		Predictor 2 Teacher Concern Level	
		Regression Coefficient	Beta Weight	Regression Coefficient	Beta Weight
4.1	Initial Achievement	.0636	-.1818	.0347	.2509
4.2	Post Achievement	.1551	-.4321	.1652	.1075
4.3	Change in Achievement	.0667	-.1013	.0577	-.2042

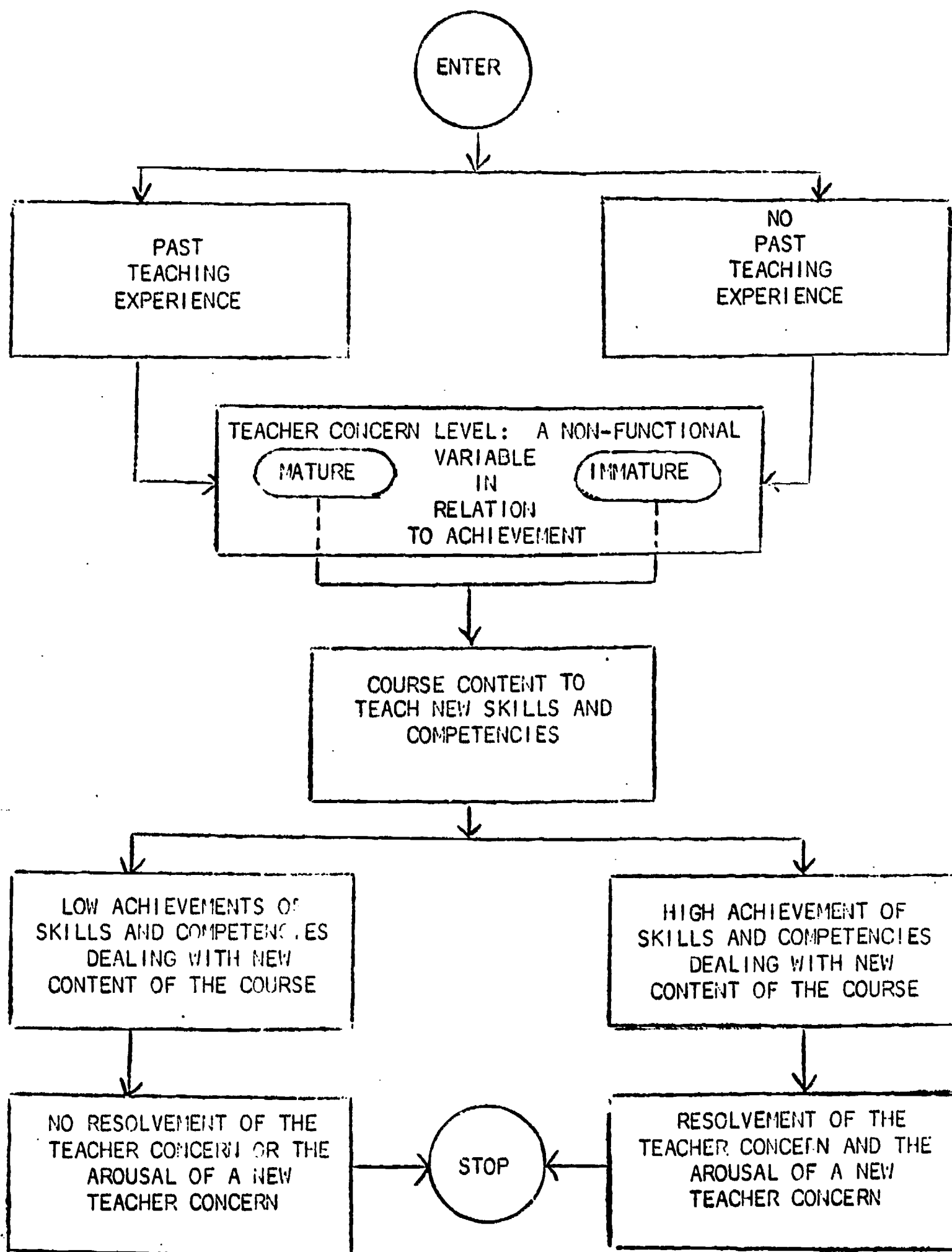*$p < .05$ ($N = 60$)
**$p < .01$

Figure 2

Modified Conceptual Model of Competence-Concerns

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Conclusions

The conceptual model of this study as illustrated in Figure I assumed an individual entered a learning situation with two variables that indicated his readiness, past experience and teacher concern level. If the content of the learning situation was in accord with his general teacher concern level, it was expected that his achievement would be high. On the other hand, if the content was not consistent with the concern level, achievement by the subject would be low. Based on the findings of this study, Figure 2 illustrates the needed changes in the model. These basic changes deal with the variables of past experience and teacher concern level. Past experience is now divided on the basis of those with teaching experience and those without, and the initial branching takes place at this point. Teacher concern level, although correlated with experience, is not related to achievement; hence the general concern level becomes a non-functional variable in relation to achievement. Those individuals without teaching experience tend to have a higher level of achievement than those with teaching experience.

The general level of teacher concerns was of little use in predicting achievement of the identification and use of behavioral objectives for either experienced or inexperienced teachers. It is logical to question whether general concern level is useful in predicting achievement of other skills or competencies used in teaching. Since experienced teachers tend to have a low level of achievement, more study is needed to determine the factors involved in this result

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and what can be done to remedy the situation.

Research is intended to help one look at an old situation in a new way. From the results of this study two major questions could be raised about the function of teacher concerns. From Figure 2 the question that could be raised is: Are teaching concerns a non-functional variable in the classroom utilization of achieved skills and competencies which are part of the preparation of teachers in science? An additional question is also apparent: Are teacher concerns about a specific task related to achievement of that particular task? Further study utilizing these models can probe and resolve these problems so that science teacher education programs will be viewed by teachers and critics as being relevant.

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