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ABSTRACT

This study focused on the personal dimensions of the change process, and on teacher concerns about using microcomputers in the classroom. Eighteen senior high school teachers volunteered to complete the Stages of Concern Questionnaire (SoCQ), which yields reliable data on seven distinct stages of concern. Based on their SoCQ profiles, three "users" and three "non-users" were interviewed to determine their present and projected uses of computers in teaching. The database created by this study was used to design a set of inservice activities that over a 3-day period for 15 hours produced a significant change in teachers' concerns towards microcomputers. It was concluded that a change model assuming a person-level orientation to an innovation is a promising approach to be used for inservice training. (19 references) (DB)

THEORY AND PRACTICE:

IMPLEMENTING COMPUTER TECHNOLOGY IN A SECONDARY SCHOOL

by

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ABSTRACT

The introduction of computers in the schools represents a dramatic change. Bentzen [1], Goodlad [2], and Hall [3] have documented the important roll of the individual in the change process. Our research focused on the personal dimensions of the change process, and on teacher concerns about using microcomputers in the classroom. Eighteen teachers at the senior high school level volunteered to complete the Stages of Concern Questionnaire that reliably yields data on seven distinct stages of concerns (Hall et al. [4]). Based on their SoCQ profiles, three "users" and three "non-users" were interviewed to determine the present and projected uses of computers in teaching. This data base was used to design a set of inservice activities that over a three day period for 15 hours, produced a significant change in teachers' concerns towards microcomputers. A change model assuming a person-level orientation to an innovation is a promising approach to be used in inservicing.

INTRODUCTION

Over the years, some educators have reached the dismal conclusion that many educational innovations simply do not work, no matter what form the planned change takes in augmenting the goals of a system [1, 2, 6-9]. Others concur that change should be viewed as a complex process entailing many important variables, such as time, clarity, credibility, the curriculum, energy, institutional incentives, and the resistance of teachers to change. Hall [10] has amply verified that one of the critical variables in any change effort remains the individual teacher. He further notes that a major reason for our failure to implement innovation has been the inattention accorded the individual involved in the change process.

Aware of the current climate affecting change, especially within the context of the adoption of microcomputers by teachers for educational purposes, we drew upon the research findings, tools and insights of optimistic authorities in educational innovation [11-19]. Specifically, our research focused on the personal dimensions of change by focusing on teacher concerns and the use of microcomputers in high schools.

BACKGROUND SUBJECTS - PROCEDURES

At the outset of the study, three schools located in a semi-urban district outside a major urban city were identified as potential target sites to receive data-based inservice education in microcomputers. The concerns of 78 teachers (47 in a high school, 7 in one junior high and 24 in an elementary school) were assessed with Hall's Stages of Concern Questionnaire [4]. Eighty-three percent of this pool indicated concerns at Stages 0 and 1, "Awareness" and "Informational", respectively, thereby informing us that initial efforts at introducing microcomputers in these schools had to be oriented to providing information and reducing those concerns Hall et al. [4] referred to as "self" concerns in contrast with "task" or "impact" concerns.

Observations and discussions with central administration and principals at each site revealed that only the high school had an adequate number of microcomputers and facilities to enable participants to have "hands-on" experience with micros. From the original pool of 47 high school teachers, 18 were selected for inservicing. The principal and his assistant cooperated in their selection which was based on these criteria: (a) intensity of concern--(high concerns at Stages 0, 1, 2); (b) enthusiasm; and (c) leadership qualities. This process of selection resulted in a judgement sample with the following characteristics. Most of the academic subjects were represented (Science, Math, Social Studies, Business, English, Foreign Language, Occupational Education, Media and Library, and Learning Disabilities); teachers were experienced (mean number of years teaching was 16); and their concerns profiles demonstrated high intensity scores in "Awareness", "Informational", and "Personal". Though the final sample was non-random, it was was representative of the

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content areas of most high schools. Moreover, the school principal was involved in an initial stage of the process since he nominated this cluster of teachers who would introduce microcomputers in their classrooms for instructional purposes. (Since the major objective of the study was the design and delivery of a data-based intervention for one school, the sample was deemed adequate.) Further, data were the results derived from the semi-focused interviews of three "users" and three "non-users" of microcomputers. Each interview lasted 30 minutes and focused on probes designed to elicit information that matched the varying stages of concern in the SoCQ. From these interviews we gleaned that "non-users" wanted information about the specific uses of micros in the classroom, their capabilities and available software; whereas "users" expressed interest in a greater use of graphics and word processing features of micros, their management functions, and learning different programming languages.

An important feature of the intervention was its scheduling. In support of the inservicing training, the principal arranged to have teachers released from their regular duties during the morning and afternoon for one week. Each group, therefore, spent 15 hours of inservice time during the school day. Each group received the same content for the same amount of time; a skillful and experienced computer specialist taught both groups for nine hours over a three day period. The last two days of the inservice period involved participants in appraising available software programs and in writing and running a basic program for their classrooms.

During the treatment period, we informally monitored the activities and behaviors of the participants by observing the following: the rate at which individuals acquired basic skills at the micros and the extent to which these skills were employed to complete assigned tasks, e.g. basic programming, evaluating software, modifying programs and so on. Because of this monitoring activity and follow-up discussions with the computer specialist, treatments for both groups were modified to better meet individual and group needs. For example, one group needed more work in mastering basic computer language and more in-depth explanation about the uses of micros in instruction, whereas the other group was given more practice in writing their own programs and evaluating software packages. At the end of the third treatment day, all participants completed the SoCQ a second time to determine the effects of the inservice treatment on their concerns (see Figure 1 for comparative data).

RESULTS AND DISCUSSION

Data from Phase I, or pre-treatment condition, and Phase II, or post-treatment condition (Figure 1) were analyzed and discussed in terms of significant findings representing a 10 point difference in each stage score (a rule of thumb suggested by Hall and his associates). Figure 1 includes the Phase I (pre-treatment) and Phase II (post-treatment) percentile scores of 18 teachers. An inspection of percentile scores between Phase I and Phase II indicates the magnitude and direction of change for each stage of concern, the vector-like quality of concerns theory noting no significant differences in Stages 1, 2, 3 may have centered on the history and control of micros in the particular school. Since the advent of computers in the school program, the coordination of the formal and informal use of the micros was controlled by a math teacher who had limited professional credibility with the staff.

On a more positive note, the success of our intervention efforts is dramatically demonstrated in the significant increases in "impact" concerns. For example, Stage 4 (16 points), Stage 5 (42 points), and Stage 6 (16 points) concerns of the subjects suggest that, after the intervention, teachers manifested intense concerns about the effects of computers on their students, the re-focusing of their instruction and ways to collaborate in using micros.

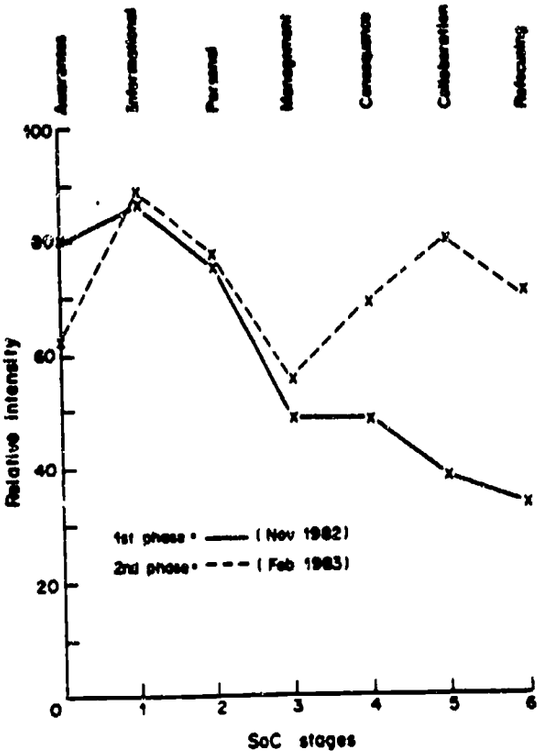

Fig. 1. Percentile scores of 18 teachers' concerns about computer tecnology as measured by SoCQ (November, 1982 and February, 1983).

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