DOCUMENT RESUME

ED 259 699 IR 011 731

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TITLE A Case Study of Curriculum Decision Making in a K-12 Computer Literacy Program.
PUB DATE [Apr 85]
NOTE 23p.; Paper presented at the Annual Meeting of the American Educational Research Association (69th, Chicago, IL, March 31-April 4, 1985).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; *Computer Literacy; Computers; *Curriculum Design; *Curriculum Development; Curriculum Enrichment; *Elementary School Curriculum; Elementary Secondary Education; School Districts

ABSTRACT

As more school districts install computers at all grade levels, order and evaluate instructional software, and send educational personnel to computer seminars, curriculum decisions concerning computers become mandatory. To clarify the conditions or factors which might affect the rationality of a school district's decision on computer literacy requirements in the curriculum, a participant observation study was conducted in a midwestern metropolitan area over the period of an academic year. This paper describes the rationale for selection of the specific school district, the methodology used in the study, and the computer literacy issues debated by each of the three committees that were formed to look at specific issues pertinent to grades K-3, 4-6, and 7-12. The three major issues addressed by the committees were: what the term "computer literacy" means for students in grades K-3; whether computer assisted instruction (CAI) or programming should be the emphasis in grades 4-6; and how changes in the computer literacy level of elementary school students would affect the existing computer course for eighth graders. Each committee's deliberations and findings on these issues are reported, and the concluding section discusses limitations of the study and presents recommendations for future action. A list of references is provided. (JB)

A Case Study of Curriculum Decision Making in a K-12 Computer Literacy Program

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School districts across the country are installing computers at all grade levels, ordering and evaluating instructional software, and sending teachers and administrators to computer seminars. Yet another innovation, the use of computers, is finding its way into the school curriculum. As with any major curriculum innovation, administrators and teachers are being forced to make decisions concerning what content concerning computers will be taught when to what students. The process of resolving these curriculum issues of scope and sequence is of interest due to the fact that computer literacy, or computer content, will probably be the most frequently considered major curriculum innovation of the 1980's. Further, because of the potential cost, impact on students, and high public visibility of an innovation such as computer literacy, school districts must be concerned that their curriculum decisions are as rational as possible and involve key constituents with the appropriate expertise.

Rationality and Curriculum Decision Making

While it is generally admitted that one cannot make scientifically rational decisions in many educational matters (Mann, 1975), various writers have proposed modified, "real world" models of educational or curriculum decision making which, at a minimum, require educators to define the problem, consider a limited number of policy alternatives and the evidence concerning their consequences (Kirst & Walker, 1971; Mann, 1975; Peterson & Williams, 1972; Schaffarzick, 1976; Walker, 1979). To implement even this minimal degree of rationality, curriculum decision makers must not only have access to information concerning program alternatives in the content area under review, but the ability and opportunity to use this information in their deliberations.

To clarify the conditions or factors which might affect the rationality of a school district's consideration of computer literacy, a participant observation study was conducted in one district over the period of an academic year (1982-1983). In this paper, the rationale for selecting the Bellevue School District[1] and the methodology used in the study are first described. The remaining sections include a description and analysis of the computer literacy issues debated by committees established for the purpose of considering the new content area.

Selection of the Case

Through an initial survey of 14 school districts in a Midwestern metropolitan area, the Bellevue School District (ADM 3,200) was selected as one of several possible cases for the study. In an interview with the researcher (August 1982), the superintendent, Dr. Simon, explained that during the previous year, he and the director of instruction/personnel had perceived an urgent need for computer literacy in the Bellevue District. Using funds recently raised for program improvement, the two administrators had authorized the installation of computers in labs at the elementary, junior and senior high school levels. Several teachers had received computer training. Some software had been purchased and computer content was being taught on a trial basis. Dr. Simon stated that during the upcoming year (1982-1983), special study groups would be formed for the purpose of making decisions concerning the scope and sequence of a K-12 computer literacy program.

Bellevue's consideration of computer literacy was selected for study because it appeared to conform to conditions which previous research (Hampson, 1975; Schaffarzick, 1976) had indicated were conducive to high levels of

[1] Fictitious names are used for the school district and the persons involved in the case study.

rationality and participation in curriculum decision making. That is, Bellevue had both formal curriculum decision-making procedures and paid curriculum personnel. Also, due to the visibility of computer literacy as a subject area and the scope (K-12) of the proposed program, the curriculum change consideration was high in the program variables of magnitude and sensitivity.[2] Finally, at the practical level, deliberations concerning the scope and sequence of computer literacy were just beginning, and thus, key decision-making events could be observed by the researcher.

Methodology

The researcher used the data collection techniques which are associated with participant observation: direct observation, informant and respondent interviewing, and examination of documents. In the following sections, these techniques are discussed in terms of their appropriateness for this particular study. The section concludes with a description of data recording and analysis procedures.

Direct Observation. The technique of direct observation of meetings was selected as the primary source of data for the following reasons. The deliberation surrounding a major curriculum innovation is a vaguely defined process which occurs in a complex social organization. In such a situation, teachers, administrators and other subjects might be unaware of the actions or relationships outside of their particular sphere. Also, the same actors might find it difficult to describe events in terms of the appropriate concepts, or they may be unwilling to verbally reveal what might be construed

[2]Schaffarzick's study (1976) identified, four program variables of importance in a curriculum change consideration: magnitude, severity, sensitivity, and origin of change suggestion.

as deviant, or less than ideal, behavior.[3] Smith (1978) describes this reluctance to admit what really happens when he states that individuals in organizations "often mask what is happening in the setting... That is, they create formal doctrines, develop facades, or perhaps 'wallpaper over' significant issues and events" (p. 341). The technique of direct observation was therefore used in the hope that the researcher could penetrate the mask of formal doctrine which seems to surround the curriculum development process in public school systems.

Decisions concerning what events to observe were initially guided by reference to the overall research problem: What are the factors which might influence the rationality of the computer literacy consideration and who is involved? Therefore, whenever possible, the following events were observed.

1. Meetings where the computer literacy program was likely to be discussed:
   Meetings of the core computer instruction planning committee and meetings of the three planning committees for grades K-3, 4-6, and 7-12.
   Faculty meetings concerning curriculum materials such as computer software.

2. Classes were computer literacy was in the pilot stage:
   Elementary level.
   Junior High School level.
   Senior High School level.

In addition, the researcher attended meetings of the Bellevue Board of Education, the Bellevue Community Council, and the school improvement advisory committees to become familiar with the decision-making atmosphere in the district.

[3] The advantages of direct observation are derived from McCall and Simmons (1969, p. 62). This researcher has applied their general description to a specific organization: a public school system.

Figure 1 contains a chronological chart of the events observed in the case study.

Insert Figure 1 about here

Interviewing and Examination of Documents. The researcher conducted numerous interviews in the first two months of the investigation in order to gain factual information about past curriculum development practices and the institutionalized norms of the Bellevue District. However, as the study progressed and the researcher became a more familiar presence in the district, opportunities for informal interaction with subjects arose both prior to and after meetings. During these informal interactions, the researcher used the technique of respondent interviewing to determine subjects' feelings, perceptions, and motives regarding the various aspects of the computer literacy deliberations. Various documents (i.e., board of education minutes, Teacher Corps reports) were examined to obtain information about past events and about events at which the researcher could not be present due to scheduling conflicts.

Data Recording and Analysis Procedures. The verbal content of all meetings and interviews was described in written reports based on notes taken during each field contact or immediately following it. Analysis was an on-going part of the research process, as key conceptual categories or topics were indicated in the left margin of the field reports. In addition, written memos indicated emerging themes or puzzling questions which would guide the researcher to additional data sources (Glaser & Strauss, 1967; Iannaccone, 1975).

To aid in the final analysis and writing of results, an indexing system was developed early in the study, indicating the number, date, setting,

participants, and topics of each field contact (Whyte, 1976). The report of the results reflects the integration of key categories and themes into a conceptual scheme capable of explaining in terms of antecedents and consequences the curriculum decision-making events which took place. The topics and relationships in the conceptual scheme emerged through a process of both brainstorming and the systematic analysis of field reports (Smith, 1978).

The Content Issues Debated by Bellevue's Computer Instruction Planning Committees

At a principal's meeting in September 1982, Dr. Randall, the district's newly appointed director of instruction/personnel, announced the formation of three computer instruction planning committees for grade levels K-3, 4-6, and 7-12. A standing core committee consisting of Dr. Randall and representatives from each grade-level committee was also created at this time. Regarding membership, Dr. Randall specified the inclusion on each committee of school principals, parent, teacher, and industry representatives. Instructions concerning purposes and procedures were given in very general terms. Dr. Randall stated only that the committees were being formed for the purpose of making scope and sequence decisions and their deliberations had to be completed by May 1983.

While not mentioned by Dr. Randall at this meeting, it should be noted that at least two issues were not open to debate by the committees. First, the overall scope of the computer literacy program, K-12, had been set previously by the district's superintendent and there seemed to be a basic agreement by all parties that Bellevue's students, from the primary up to the high school level, would have equal or common exposure to computer content. Second, the issue of where computer instruction would take place had been decided with the installation of computer labs during the previous year. It was a district

policy that all computers would be located in labs and not in classrooms. This "lab assumption" certainly had curriculum implications, however, the committees never addressed these implications nor any alternatives concerning the placement of computers.

In spite of the above restrictions, the three committees began deliberations with a certain freedom to decide what computer literacy content would be taught within their assigned grade levels. Each committee defined the content problem in a different way and depending on their definition of the problem, needed different types of information or expertise to aid them in the decision-making process.

The K-3 Committee. This committee was chaired by Ms. Getz, an elementary school principal who had taken a number of computer programming courses and had attended several seminars in computer education. Ms. Getz selected as members of her committee interested parents and teachers of primary grades in Bellevue's three elementary schools. The committee met once a month, from December through March.

The major issue which the K-3 committee considered was: What did the term, computer literacy, mean for students in grades K-3? Did computer literacy mean merely awareness or should programming be included in their definition of literacy? Committee members' suggestions for possible content included letter recognition and keyboarding, instruction in how to operate the computer, programming with Turtle graphics, and the use of tutorial software. Committee members struggled with the writing of a philosophy statement and objectives, while expressing confusion over the availablity of tutorial programs appropriate for primary students and the potential difficulty of programming content.

To clear up the confusion over content, K-3 committee members needed two different types of information. First, they needed information concerning what K-3 students could do with computers from a developmental perspective. Guidance in this area traditionally comes from either the research literature or more practical teacher-oriented articles based on the literature. Yet in a new content area such as computer literacy, such information was not readily available. Indeed, Ms. Getz informed committee members that she had searched the literature and found articles on K-12 computer literacy. However, she had found little mention of content for the primary grades beyond an Electronic Learning article (Bitter, 1982) listing K-3 objectives and activities. In spite of the admitted shortcomings of the literature, the committee continued to rely upon articles provided by Ms. Getz as the basis for their development of a course of study.

The committee's continuing uncertainty over the definition of computer literacy could be considered a result of their following Ms. Getz's lead in depending upon theoretical articles as a sole source of information. However, members could have obtained some information concerning the feasibility of certain types of content by referring to Bellevue's own pilot-test of computer instruction for primary students in the elementary demonstration lab created the previous year. Indeed, several members suggested that they should visit the elementary computer lab and "get a picture of what K-3 students do." Information from the pilot-test was never obtained, as the teacher in charge of the lab did not serve on the K-3 committee, and the suggestion to observe the lab was not encouraged by Ms. Getz.

A second type of helpful information would have been some suggestions or input from central administration concerning what the content priorities

for the primary grades should be. However, this information also was not readily available because Dr. Randall was not communicating with Ms. Getz or the committee on an informal basis and the core computer instruction planning committee did not meet until early February. At the core committee meeting, Dr. Randall, overriding Ms. Getz's objections, indicated that K-3 students should have some exposure to the history of computers and their applications. When Ms. Getz brought up the issue of defining computer literacy, the following confusing exchange took place.

Dr. Randall: Literacy is knowing the operation of the machine, its functions.

Ms. Getz: If that is literacy, what is awareness, history?

Dr. Randall: Awareness is how the machine works, how to turn it on. Being literate is being very capable of running the machine.

There was no further discussion of the literacy issue at this meeting of the core planning committee.

In the final meeting of the K-3 committee, Ms. Getz and one other committee member wrote a set of goals and objectives based largely on the article from Electronic Learning (Bitter, 1982). The course of study emphasized an introduction to the machine and its parts, with some references to the use of Turtle graphics and tutorial software. Also included were objectives pertaining to the history of computers and their daily applications.

The 4-6 Committee. This committee was chaired by Mr. Adams, the principal of the only one of the elementary schools to contain a fully staffed and operational computer lab (the original demonstration lab). While admitting that he had no expertise in computer instruction, Mr. Adams selected for membership on the committee a variety of "experts," including the computer teacher in his own school's lab, Mrs. Stevens, and a part-time computer teacher

from another elementary school. The parent representative was his school's secretary, who, professing an interest in computers, had taken on the responsibility of cataloguing incoming software programs. In contrast to the other grade-level committees, meetings were not called on a regular basis and there was no attempt to involve all members in the development of the 4-6 course of study. Mr. [illegible] relied upon Mrs. Stevens to develop a draft set of goals and objectives which became the basis of discussion at the committee's only meeting (in December) prior to the core committee meeting in February.

The major content issue which the 4-6 committee considered was: Should computer assisted instruction (CAI) or programming be the emphasis in grades 4-6? The draft document prepared by Mrs. Stevens referred to the use of tutorial software in grades 4 and 5 and to the introduction of BASIC programming in grade 6 in addition to continued use of CAI. To resolve the issue of relative emphasis in these two areas, the committee needed information concerning the potential benefits of one or the other type of content for elementary students. Some of this information was given to the committee by Mrs. , who had participated in computer courses and seminars and in field trips to other school districts. Mrs. Steve stated that while university experts were criticizing the quality of tutorial software and recommending programming content for elementary students, there seemed to be a lot of different opinions on the subject. Mrs. Stevens also referred to her personal experience as a computer teacher. She stated that students were getting bored with a steady diet of tutorial software, but they had begun to do graphics programming and found it exciting and interesting.

While the committee relied on Mrs. Stevens for the latest information concerning the CAI vs. programming issue, she did not have the time or the

expertise needed to effectively communicate her findings to other key decision makers such as the core planning committee. In other words, Mrs. Stevens observed students daily interacting with the different types of computer content. However, there was no systematic monitoring or recording of these interactions which could be used as evidence in answering questions such as the following. Were software math drills related to Bellevue's math curriculum or to the difficulties which a particular student was having? Did some students have more difficulty than others with programming tasks and what type of programming tasks could sixth graders complete?

This type of formal, pilot-test information was needed for two reasons. First, several members of the 4-6 committee indicated that, through informal channels, 7-12 committee members were complaining that an introduction to BASIC programming should be reserved for the computer literacy course taught in the eighth grade. Formal evidence of sixth graders' successful completion of programming tasks could have helped to justify introduction of this type of content at the elementary level.

Second, there was a generally held assumption throughout the district that CAI should be the content focus at the elementary level. Indeed, at the core committee meeting in February, Dr. Randall asked the 4-6 representative: "Computer assisted instruction is the bread and butter of what you do, isn't it?" Later in that meeting, Mr. Adams raised the CAI vs. programming issue by asking if computer literacy merely meant exposure to tutorial software or did the district intend to demand student mastery of specific computer literacy criteria. If the latter, then perhaps they should consider the possibility that educable mentally retarded students could not do programming. Dr. Randall's sole response to this question was that all the research indicated that computers

were excellent for handicapped students. Given Mr. Ad s' lack of experience with computer instruction, there is a possibility that discussion of this issue could have been more substantial if Mr. Adams had had some type of formal evidence to help him articulate the issue more clearly.

In the second and final meeting of the 4-6 committee, a revised draft of computer literacy goals and objectives was discussed. There were five major goals in the areas of computer history, awareness of the machine parts, CAI, introduction to BASIC programming, and computer careers. The history, awareness, and career goals had been included at the suggestion of Dr. Randall. The document did not reflect the resolution of the CAI vs. programming issue. However, based on comments made by Mr. Adams, one can assume that experimentation with different types of content (unmonitored) would continue.

The 7-12 Committee. This committee, chaired by Mrs. elli, the high school assistant principal, consisted of the junior high school principal, computer teachers from the junior and senior high schools, and two parents who had computer-related jobs. The committee met once a month, from October through March. The committee addressed many issues related to computer use, such as facilities for CAI in content areas at the high school level, a keyboarding course for seventh graders, and word processing in business classes. However, of particular interest to this study were their debates concerning the content of computer courses.

With regard to the junior high school program, a major content issue of concern to the committee was: Would the semester-long eighth grade course in computer literacy, which had been piloted the previous year, have to be changed to accommodate incoming elementary students who already had certain computer skills? Currently, the eighth grade course included content in the following

areas: computer history, parts of the machine, computer careers, and an introduction to BASIC programming on the PET computer.

Mr. Cummings, the eighth grade computer teacher, expressed his information need very clearly at the committee's first meeting when he stated that he needed to know what was going on at the elementary level. Since his computer literacy course was required of all students, he was concerned about possible duplication of content. The 7-12 representative to the core planning committee was charged with the responsibility of obtaining information concerning the elementary program. However, since the core committee did not meet until February and no informal communication took place, the information was not immediately available for consideration by the committee.

In subsequent meetings prior to the core committee meeting, the articulation issue was not debated. Instead, the eighth grade course was discussed only in a procedural way, as Mr. Cummings was requested to develop his general outline into an official course of study with goals and objectives. At the core committee meeting in February, the 7-12 representative mentioned the concern over articulation and the 4-6 representative gave him a copy of their draft set of goals and objectives. This draft document was given to 7-12 committee members at the next meeting. After a brief discussion, it was agreed that while changes in the eighth grade course might be needed, such changes were several years down the road.

With regard to the high school program, the major content issue debated by the 7-12 committee was: What programming languages should be taught? An issue related to programming language content, the possible need for math prerequisites, also was debated. To resolve the issue of concern to the committee, members needed information concerning the computer requirements being set by colleges and the needs of industries hiring computer-trained

personnel. Both types of information were available to the committee. Mrs. Corelli brought to the first meeting copies of an article indicating that the College Entrance Examination Board had selected Pascal as the computer language for its advanced placement test. When asked which languages high school graduates needed, the two industry representatives indicated that because so many different languages were used by companies, it would be preferable for job applicants to have a general conceptual understanding of the logic and capabilities of computers. However, there was no discussion of this latter suggestion. Several minutes later, Mr. Moore, the high school computer teacher, outlined on the board a possible sequence of computer courses which referred only to languages and keyboarding.

In subsequent meetings, questions were raised concerning who could be found to teach the different computer languages and further doubts were expressed by the industry representatives. However, the school personnel on the committee proceeded with the language emphasis. At their third meeting, the committee approved general outlines prepared by Mr. Moore for the following courses: Computer I (introduction to BASIC programming); Computer II (extension of Computer I); and Computer Independent Studies (introduction to FORTRAN, COBOL, Pascal, or other languages). Content concerning computer applications was not considered even after four committee members visited a school district (in Janaury) which offered instruction at the high school level in math/science and business applications of computers.

The selective use of available information on program alternatives can be attributed to the absence on the 7-12 committee of any educators with in-depth experience in computer education. Mr. Moore, the teacher assigned the task of developing the high school course of study, had very low expertise in the content area. In an interview with the researcher, he stated that he

had some familiarity with the operation of computers, but he had never taken a computer course. He indicated his limited knowledge of programming languages in the following statement: "When students have finished my introductory programming course, they will know as much as I do." It appears that his limited exposure to the computer field prevented him from fully understanding and responding to the recommendations of the industry representatives and the model school district.

Conclusions and Recommendations

What did Bellevue's computer instruction planning committees actually accomplish? The courses of study which they developed overlapped considerably in content (i.e., repeated references to history, careers, parts of the machine, and introduction to programming in BASIC). One might predict that this overlap would eventually cause articulation or sequence problems. In addition, the objectives for each course of study were many and varied, with no indication of emphasis or depth of coverage, a problem of scope. Admittedly, computer literacy is a relatively new content area and still requires quite a bit of experimentation to determine optimal procedures, materials, and content for specific grade levels. However, the events in the case study show that certain factors, beyond the newness of the content area, limited either the committees' access to key information or their ability to use effectively information available to them. The two major factors which reduced the rationality of Bellevue's computer literacy consideration were lack of communication within and between grade levels and selective or ineffective use of information due to the absence of content or procedural expertise on the part of key committee members.

Communication Problems. For much of their existence, both the K-3 and the 7-12 committees operated "in the dark" or in a climate of ignorance

concerning certain types of information. The K-3 committee could have debated various program alternatives more effectively if they had been able to obtain information concerning what K-3 students were accomplishing with computers in Bellevue's own elementary demonstration lab. The 7-12 committee, responsible for the upper end of the computer literacy program, did not obtain information concerning content in the lower grades until after they had selected and approved content emphases for the junior and senior high school levels.

While Ms. [illegible]'s reliance on the theoretical literature explains in part the K-3 committee's lack of access to pilot-test information, a more serious problem for both the K-3 and 7-12 committees was the overall lack of committee coordination, a responsibility of Dr. Randall, director of instruction/personnel and chairman of the core planning committee. Throughout the duration of the grade-level committees' existence, there was no evidence that Dr. attempted to provide guidance or leadership by helping the committees solve their scope and sequence problems. Communication among committees certainly was not encouraged, as is evident in the calling of only one meeting of the core planning committee well into the school year. Further, when committee representatives attempted to discuss issues of concern to them at this meeting. Dr. Randall did not permit, or closed off, substantive debate.

In interviews with the researcher, Dr. Randall freely confessed his lack of experience in the area of computer education. Yet, perhaps due to the newness of his appointment and the visible or sensitive nature of computer literacy, he was reluctant to convey this impression to his subordinates, the principals and teachers on the computer instruction committees. One must conclude that his decision to appear knowledgeable about computer literacy resulted in an avoidance of key issues and a costly breakdown in communication.

School districts considering computer literacy programs must address the problem of how much content expertise central administrators need to help them carry out their coordination duties effectively. While administrators probably should take some kind of "crash course" in computers as a subject area, they also must be willing to delegate or "give away" some of their authority by opening up lines of communication and encouraging staff members, especially teachers, to contribute their expertise. It appears unlikely that administrators such as Dr. Pandall would be willing to allow greater teacher responsibility in the curriculum decision-making process. However, in other districts, administrators might take the less short-sighted view that actions which contribute to the overall success of a curriculum innovation can only enhance their own prestige and that of their district.

Selective Use of Information. Both the 4-6 and the 7-12 committees suffered from an inability to effectively use available information concerning computer literacy content alternatives. While Mrs. Stevens had access to much theoretical and practical information concerning the relative benefits of CAI versus programming, she did not nave the curriculum expertise or the practical support (i.e., time, aides) to systematically monitor student performance on various types of tasks. Her anecdotal impressions were of little use in decision-making arenas beyond her classroom. Yet, in a new area such as computer literacy, evidence of student interaction with different types of content was desperately needed, not only by the Bellevue District, but by the computer field in general. If comptuer literacy as a content area is ever to have a reasonably developed scope and sequence, the feasibility of teaching certain types of content at certain grade levels must be explored fully. It is therefore recommended that districts considering computer literacy provide their teachers with the training and practical support to evaluate what is currently being taught or piloted.

While Mrs. Stevens lacked procedural expertise, it is clear that the 7-12 committee was severely limited by their reliance upon Mr. , the high school teacher with very low expertise in computers as a subject area. This low expertise was particularly damaging, as he was responsible for a new and complex content area that did not have well-established textbooks or scope and sequence plans. The case of Mr. Moore is probably not atypical in many districts due to the difficulty of finding teachers who are knowledgeable in one or more languages and in the variety of computer applications. Those teachers who do develop this expertise often leave teaching for more lucrative careers in industry. One can only recommend that districts examine closely the content expertise of computer literacy teachers before entrusting them with the responsibility of developing a course of study. Districts also must consider imaginative means of keeping their computer-trained teachers or of staffing computer courses.

In summary, while Bellevue's computer literacy deliberations were low in rationality, much can be learned from the case study which can guide other districts. Above all, as the content area continues to develop, administrators and teachers should consider the availability and use of information concerning alternatives.

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August 1982	September 1982	October 1982	November 1982	December 1982	January 1983	February 1983	March-May 1983
-Permission obtained to study computer literacy change suggestion	-Entry into the field: initial interview with Drs. Simon & Randall -Computer lab opens at Senior High School	-Oct. 5: Principals' meeting to establish computer instruction planning committees -Informant interviewing -Visits to all school buildings and computer labs -Oct. 28: meeting of 7-12 committee	-Informant interviewing -Nov. 11: meeting of 7-12 committee	-Dec. 2: meeting of 7-12 committee -Dec. 3: meeting of K-3 committee -Dec. 8: meeting of 4-6 committee -Dec. 14: field trip to model computer literacy program -Respondent interviewing	-Jan. 10: meeting of K-3 committee -Jan. 17: all-day teacher in-service with computer emphasis -Jan. 20: meeting of 7-12 committee	-Feb. 8: meeting of K-3 committee -Feb. 9, a.m.: meeting of core planning committee -Feb. 9, p.m.: meeting of 4-6 committee -Feb. 24: meeting of 7-12 committee -Respondent interviewing -Computer labs in operation at Brown and White Elementary Schools	-Mar. 8: K-3 "mini-meeting" -Mar. 28: meeting of 7-12 committee -Respondent interviewing -May 9: meeting of core committee to approve courses of study

Figure 1. Chronological chart of events in the Bellevue case study.