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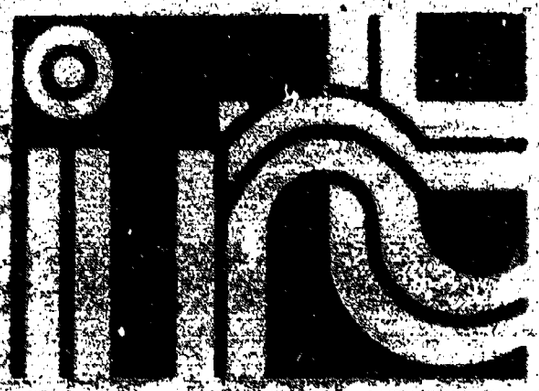
ABSTRACT

Findings are reported from two descriptive studies of preservice teacher education students' conceptual change in response to reading methods instruction. The first study, involving 14 preservice teachers, focused on how students applied what was taught in the reading methods course; the second study (14 participants) examined students' conceptual change during instruction. Both studies employed observations and interviews. Results of the first study indicated that the preservice teachers gradually tended to change their thinking about reading instruction and that teaching a real student during the field practicum contributed to this change by encouraging a restructuring of cognitive information presented in the methods course. Findings of the second study, focusing on whether preservice teachers change their cognitive conceptions and the characteristics of the changes, indicated that students apply methods course information in stages and that there are wide differences in the way they organize that information. A discussion is presented on implications for future studies of the process and structure of methods courses, and on ways in which they may be made more effective. (Author/JD)



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AN EXPLORATION OF PRESERVICE TEACHERS' CONCEPTUAL CHANGE DURING READING METHODS INSTRUCTION

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and Gerald G. Duffy

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Abstract

This paper reports the findings from two descriptive studies of preservice teacher education students' conceptual change in response to reading methods instruction. The first study focused on how students applied what was taught in the reading methods course; the second examined students' conceptual change during instruction. Both studies employed observations and interview techniques. The results indicate that students apply methods course information in stages and that there are wide differences in the way the subjects organized that information. Implications for future studies of the process of teacher education are provided.

AN EXPLORATION OF PRESERVICE TEACHERS' CONCEPTUAL CHANGE DURING READING INSTRUCTION[1]

Sandra Michelsen, Jeannine LaSovage, and Gerald G. Duffy[2]

Recent research on teacher effectiveness has helped researchers and teacher educators understand how instruction is accomplished in real classrooms. We premised that a strong analogous relationship exists between teacher effectiveness and teacher educator effectiveness because many of the process variables that influence outcomes in elementary classrooms also influence outcomes in reading methods instruction.

Researchers have identified several categories of process variables important for teacher effectiveness. These include time on task, management, direct instruction (Duffy, 1983), and, more recently, explicit teacher presentation and explanation of instructional information (Duffy, Roehler, & Book, 1983; Good, 1983; Pearson, 1984). In addition, recent research by Weinstein (1983), Doyle (1981), and others has emphasized the role of students in mediating instruction. As students process the information presented by teachers, they interpret it according to their own prior knowledge and experience; in short, they restructure instructional information. Consequently, teacher effectiveness depends not only on opportunity to learn and expository explanation but on the teacher's ability to (1) listen to student responses, (2) make judgments about how students have restructured instructional information, and (3) respond to such res cturing with appropriate spontaneous elaboration

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[1]This paper was presented at the American Reading Forum, Sarasota, Florida, on December 9, 1983.

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that links the cognitive frames of teacher and students (see Roehler and Duffy, in press).

We report here the initial steps in applying this rationale to teacher education. Like classroom teachers, reading professors must provide explicit presentations and explanations regarding how to teach reading. However, preservice teachers mediate such instruction, restructuring it to fit their own interpretation of what reading is and how teaching occurs. Professors should respond to such restructuring in ways that would help the preservice teachers align their understanding of the content more closely with the professor's concept.

We hypothesize that in typical lecture-based reading methods courses there is too little connection between the understanding of teacher educators and their students. As a result, the teacher candidate has difficulty fitting new knowledge with old knowledge and much of the information presented by the teacher educator is unconnected and isolated, rather than being an integral part of a whole. However, a field practicum in which prospective teachers use reading methods information when teaching children may serve as the cognitive link between student and teacher educators. Within the realities and constraints posed when teaching a real student, both the teacher educator and the teacher candidates may reconstruct their conceptions because the field practicum provides a "common ground" for both.

Research Questions

We examine reading methods instruction from two perspectives: (1) how preservice teachers conceptualize knowledge about reading instruction and (2) how preservice teachers restructure their conceptualization of methods course content following instruction provided during a field practicum. These questions guided our research:

1. To what extent during the field practicum associated with the reading methods course do preservice teachers apply what has been taught in their reading methods course?

2. Do preservice teachers change their cognitive conceptions about reading instruction as a result of methods instruction?

3. What characterizes the preservice teachers' changes (if any) in conceptual understanding?

Procedures

We conducted two descriptive studies. In the first study, 14 preservice teachers participated during the first two terms of a three-term, field-based reading methods course during the 1982-83 academic year. The second study involved 10 preservice teachers enrolled in the same program during fall of 1983. Both were taught by the third author of this paper.

Study 1

As part of their reading methods course, the preservice teachers participated in a field practicum. The practicum took place in an urban elementary school. The students planned, designed, and implemented reading instruction for groups of children twice a week during 18 weeks from September 1982 through March 1983. We observed each preservice teacher at least three times and conducted interviews following each observed lesson. We collected three sets of data:

1. university reading methods course materials (syllabus, lecture notes, professor's statements of intended outcomes)

2. observer's ratings and evaluative notes regarding the preservice teachers' lesson implementation, and

3. follow-up notes written to the second author by the preservice teachers.

Using the systematic techniques of descriptive field studies, we qualitatively analyzed the data. We screened evidence that the preservice teachers met course objectives; we used notes taken by observers as the students taught

lessons to children to establish teaching characteristics of teacher candidates, and we used interviews to help us determine the preservice teachers' perceptions of their teaching behaviors and their instructional decision-making.

Study 2

The second study was a follow-up on the first. It took place the following year in the same elementary school as Study 1. As in Study 1, the school served as the practicum site for an experimental teacher education program in which teacher educators and field instructors collaboratively plan methods course content and participate in field supervision. Of the 29 students enrolled in this program during the second year, 10 were randomly selected for this study. On Tuesdays and Thursdays, they attended methods courses and were observed teaching children in a field practicum which was organized and conducted just like the one in Study 1.

We wanted to know if and how the field practicum functioned to help preservice teachers adjust their concepts of reading methods instruction. We used cognitive maps[3] to trace the students' conceptual progress through the program. By the end of the course, we anticipated that the students would conceptualize the teaching of reading much as the reading professor did on his cognitive map. We constructed the baseline cognitive maps and the first interim cognitive map after eight weeks of methods instruction.

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[3]To build a cognitive map, each subject was asked to arrange 44 terms (definers) associated with reading instruction in any manner deemed appropriate. The words were originally generated by a graduate reading methods class and were used as mind joggers, representing no particular conceptual position in reading (e.g., sight words, phonics, motivation, etc.). Subjects were encouraged to eliminate words and ask for additional words. The resulting organization of words on a large piece of paper was a representation of the way the student organized the 44 definers about reading.

At the beginning of fall term 1983, each preservice teacher initiated reading instruction for a below-grade-level reader in conjunction with the first of three reading methods courses. Each preservice teacher taught his/her student twice a week and each was observed teaching this student at least four times during the fall term. All lessons and post-instruction debriefing sessions were taped. We collected four sets of data:

1. two cognitive maps of reading instruction constructed by each preservice teacher: (1) before the reading methods course instruction began and (2) after 8 weeks of the 10-week term,
2. audiotapes of each subject's explanations of their maps,
3. observer's notes during the reading methods course regarding how the preservice teachers mediated the information during lectures, and
4. tape recordings of the preservice teachers' reading lessons and post-instruction debriefing sessions.

To determine the potential for continuing this line of study, we randomly selected 3 of the 10 preservice teachers and qualitatively analyzed their September and November cognitive maps of reading instruction.

Findings

Study 1

In Study 1, we found that the preservice teachers do apply information taught in the reading methods course to their practicum. However, this application happened gradually, in three stages.

Stage 1. The first stage can be characterized as the "cognitive overload" style. The typical frustration associated with the first stage shows in the statement of one preservice teacher who had learned to assess reading needs but had not yet determined what to do about it:

> Each time I use a test or something of my own and find a skill my kids don't know, I get excited. I mean, I know how to figure out what they don't know. But then, well, I have to go about trying to learn about the skill. It's like a double whammy. I have to be able to find out what they don't know, learn it myself, so I can teach it to them. I'm the one stuck with most of the learning.

This preservice teacher experienced cognitive overload. Despite receiving expository explanations relative to her concerns during lecture sessions, she was unable to apply such information in the practicum. Two instructional behaviors resulting from cognitive overload were evident during the practicum. First, preservice teachers concerned themselves with achieving and maintaining activity flow. Assigning dittos and workbook pages was their major instructional activity. Second, they often misinformed pupils. For instance, 12 preservice teachers told children that words they could successfully sound out were called sight words, while 5 others explained to children that words they did not know instantly were sight words. (Actually, sight words are words that they do know instantly.)

Stage 2. The second stage can be characterized as isolated skill instruction. It occurred when the preservice teachers were able to assess student reading needs and provide isolated one-time lessons to meet these needs. The preservice teachers' comments at this stage indicated that they operated on the assumption that reading skills are isolated from real reading and that skills are worth teaching for their own sake. However, some preservice teachers were aware at this stage that such isolated instruction might not be totally appropriate:

> I get angry sometimes. I put so much work into diagnosing what the kid needs to learn, learning about the skill myself, and then trying to see how to really teach it. Then you (the instructor) ask me, "why is learning that skill important?" I can see I get lost and just do the skills and think I'm terrific cause I picked it out and did a lesson. But that isn't great! They (the skills) aren't any good if kids can't use them. It's so easy to be--well, just a technician, teaching this skill and that skill. I realize I have to learn about the reading process--me, myself. Skills are for reading--not what I learned, skills for skills.

It is also at this second stage that the preservice teachers began to restructure their understanding of reading instruction in response to the practicum situation, as indicated by this comment:

> I can see that I have spent a lot of time on me, relearning what I was taught. I am finding out what reading is about. I thought that if I could figure out what a child needs to learn, teach it, that that was my success. But as a teacher, I have to move way past me--put the emphasis on my students learning new skills and seeing why, reading real things and seeing that they are using what they know. I can't be their teacher if I am the one doing most of the learning.

Stage 2, then, appeared to be a time when the cognitive overload that was so noticeable earlier began diminishing, and the preservice teachers assimilated and accommodated some of the methods instruction.

Stage 3. The third stage can be characterized as the integration stage. Late in the second term of the three-term course sequence, the preservice teachers seemed to have absorbed much of the information from the methods class into a coherent structure. For instance, note the comment by the following student:

> I used to think that when you came to observe me, I'd be successful if I was teaching some skill and could prove to you I had data to support why I was teaching it. Now I think that's crazy. That's not what teaching is about. Sure, I have to know what a child doesn't know, but no way is that what's important. I have to know how to teach it so he can use it on his own in real reading. My knowing the skill and doing a task analysis, well, I know now it isn't busy work--I have to do it to know what I'm doing. But it is a teacher "to-do-ahead" piece. The big piece is getting the kids to learn how to use the skill and me being able to plan activities and materials so they do use them--and in many different ways than I had thought--basals, books, magazines--all kinds of things.

As indicated by another student's statement, the preservice teachers appeared to be comfortable enough to reflect on themselves and their progress thus far:

> Funny, I just never saw reading as being *real* reading in school. When I'm teaching, it's like I keep falling back in the trap, where reading is doing a ditto or learning new words. I hate it when I see this happening. Used to be I needed you (instructor) to help me shake this. But I am starti[illegible] question myself now: 'What am I doing this for? Why is it [illegible]nt to teach them this anyhow?

As a result of these findin[illegible] concluded that these preservice teachers did not immediately apply what was taught in their methods class; instead, application occurred gradually and in stages. In addition, some preservice

teachers seemed to be restructuring their understanding of reading methods as a result of the instruction provided in response to practicum activities (note, for instance, the frequent mention of the field observation in the above quotes). It was hypothesized, therefore, that perhaps the practicum itself served as a means of bringing together the thinking of both the instructor and the prospective teachers. This hypothesis led to the second study.

Study 2

The first study indicated that the preservice teachers gradually tended to change their thinking about reading instruction and that teaching a real student during the field practicum contributed to this change by encouraging a restructuring of cognitive information. Study 2 looks more closely at preservice teachers' initial concepts about reading instruction and the way these concepts change during the course of methods instruction and field experience. In this study, we focused on whether preservice teachers change their cognitive conceptions and what characterizes these conceptual changes.

First, we examined the structure of how the prospective teachers arranged 44 words (definers) associated with reading instruction. This structure is referred to as a cognitive map. The particular arrangements among the 44 definers illustrates the preservice teacher's concept of reading instruction. Periodic cognitive mappings producing different structuring within the 44 definers demonstrate subsequent changes. We believe such repeated mapping substantiates the change in preservice teachers' conceptions of reading instruction in response to methods instruction.

The initial cognitive maps showed great variance in the preservice teachers' thinking about reading instruction. Preservice Teacher A's map (see Figure 1) is linear. It seems to be an hierarchial ordering of the 44 definers

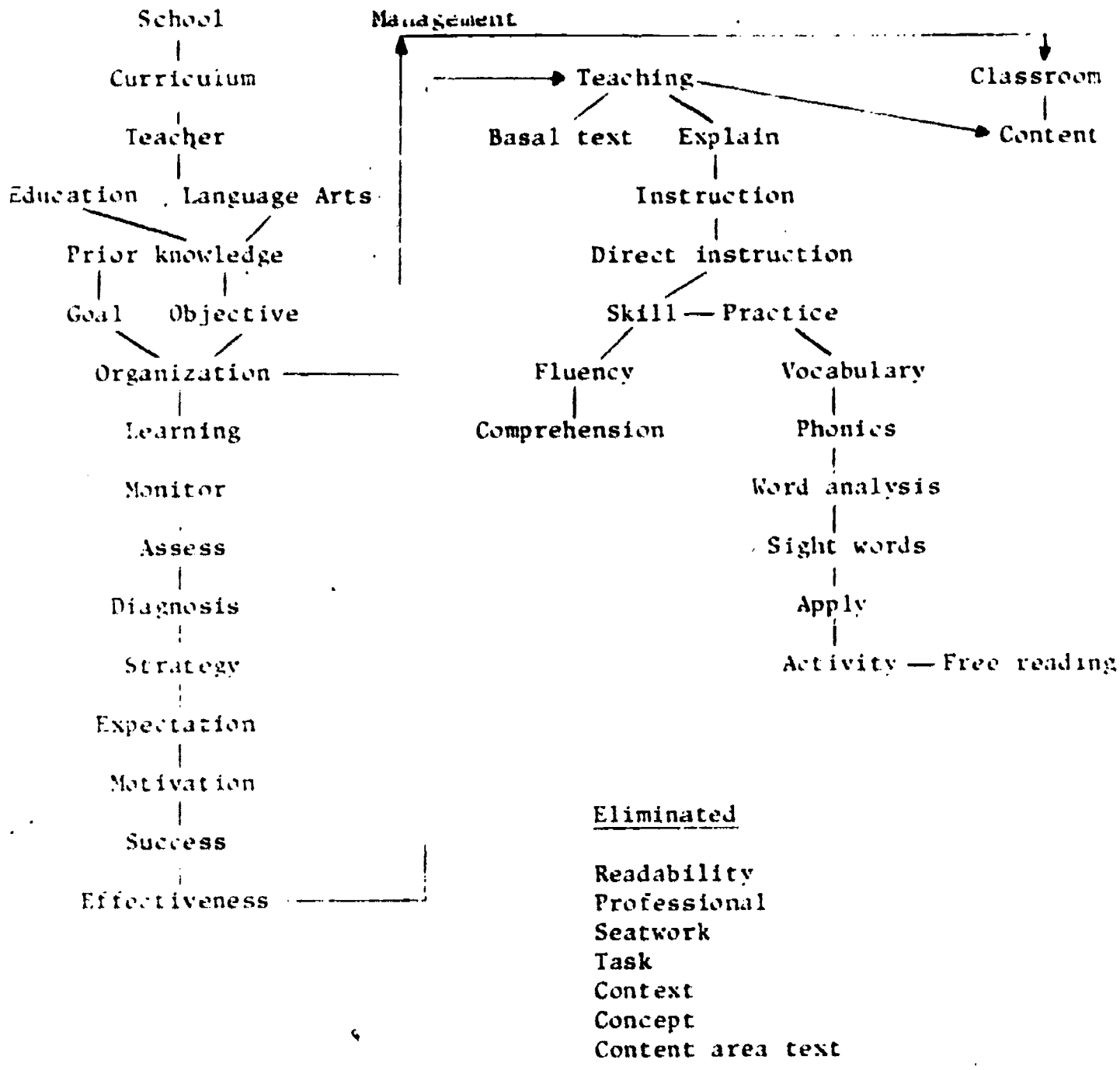


Figure 1. Preservice Teacher A's initial cognitive map.

with few relationships and/or connections shown. Although A seems to sequence the words, she demonstrates no network of relationships.

Preservice Teacher B's map (see Figure 2) forms a loosely-shaped pyramid. Even though general education definers like "school" and "education" are arranged at the base and "apply" and "success" appear as the end result, no specific relationships among definers are indicated.

In contrast, Preservice Teacher C's map (see Figure 3) reveals some relationships between definers but no general structure or cohesiveness.

In summarizing the three preservice teachers' conceptions of reading instruction as they entered the field practicum:

1. A demonstrates an hierarchial ordering of general education and reading instruction definers.
2. B demonstrates a loosely shaped pyramid structure without any specific relationships indicated.
3. C demonstrates no real structure for education in general or for reading instruction.

After eight weeks of reading instruction (methods course lectures and practicum debriefing sessions), the three subjects reconstructed their maps. A's second cognitive map (see Figure 4) indicates that change occurred. The initial, linear structure changed into a more branched, interconnected one. Even though the second map still shows a linear relationship, change is indicated. Major instructional themes of the reading methods course such as "professional teacher," "teaching," and "strategy" are now structural units in the map connecting horizontally with other definers that are grouped under each unit.

B's second cognitive map (see Figure 5) also reflects change. B's loosely shaped, unconnected pyramid disappeared. Beginnings of a connective structure appeared in the instructional areas emphasized in the course, such as "assess," "instruct," "practice," and so on. Unlike A's second map, B's second map

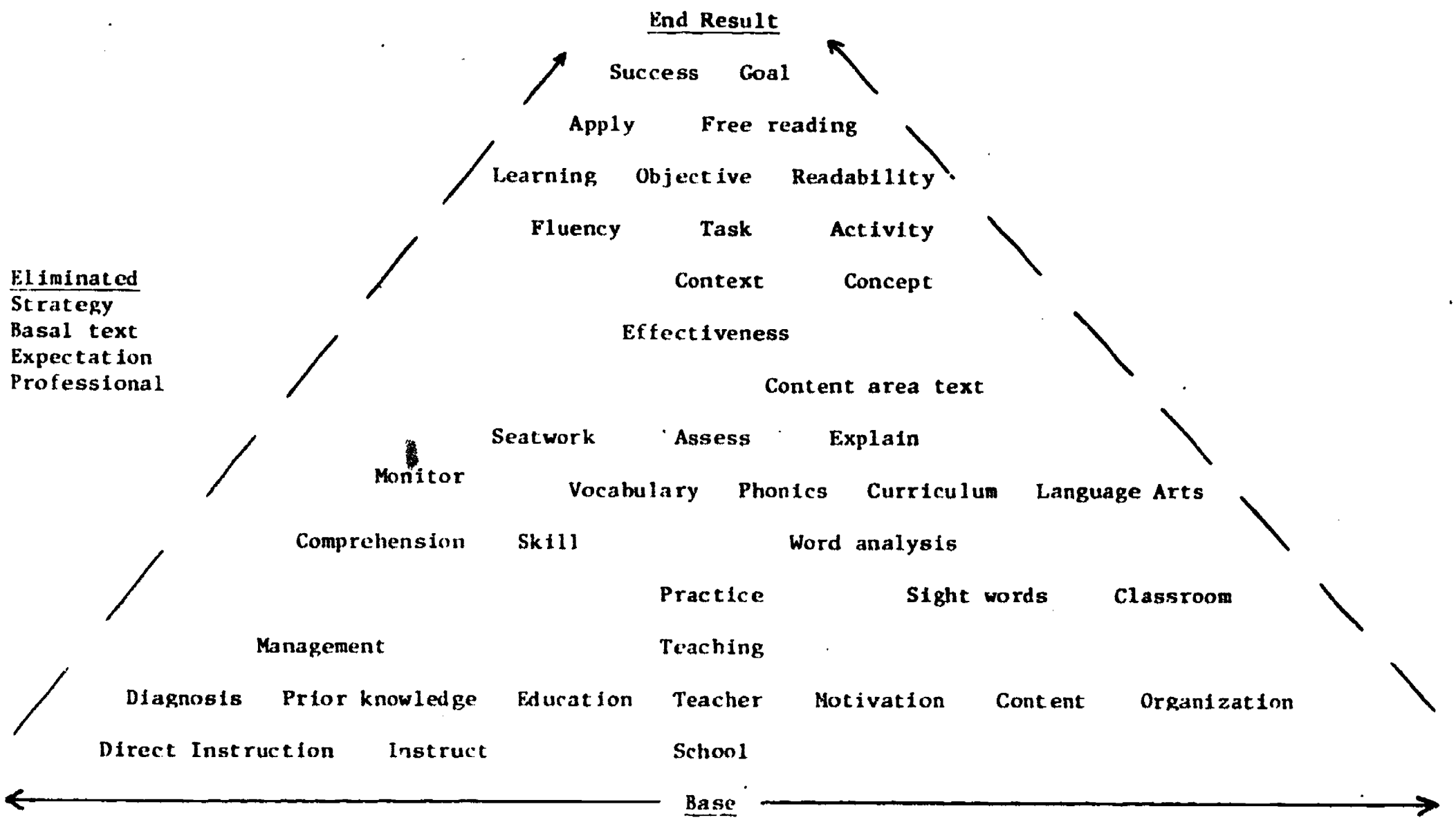


Figure 2. Preservice Teacher B's initial cognitive map.

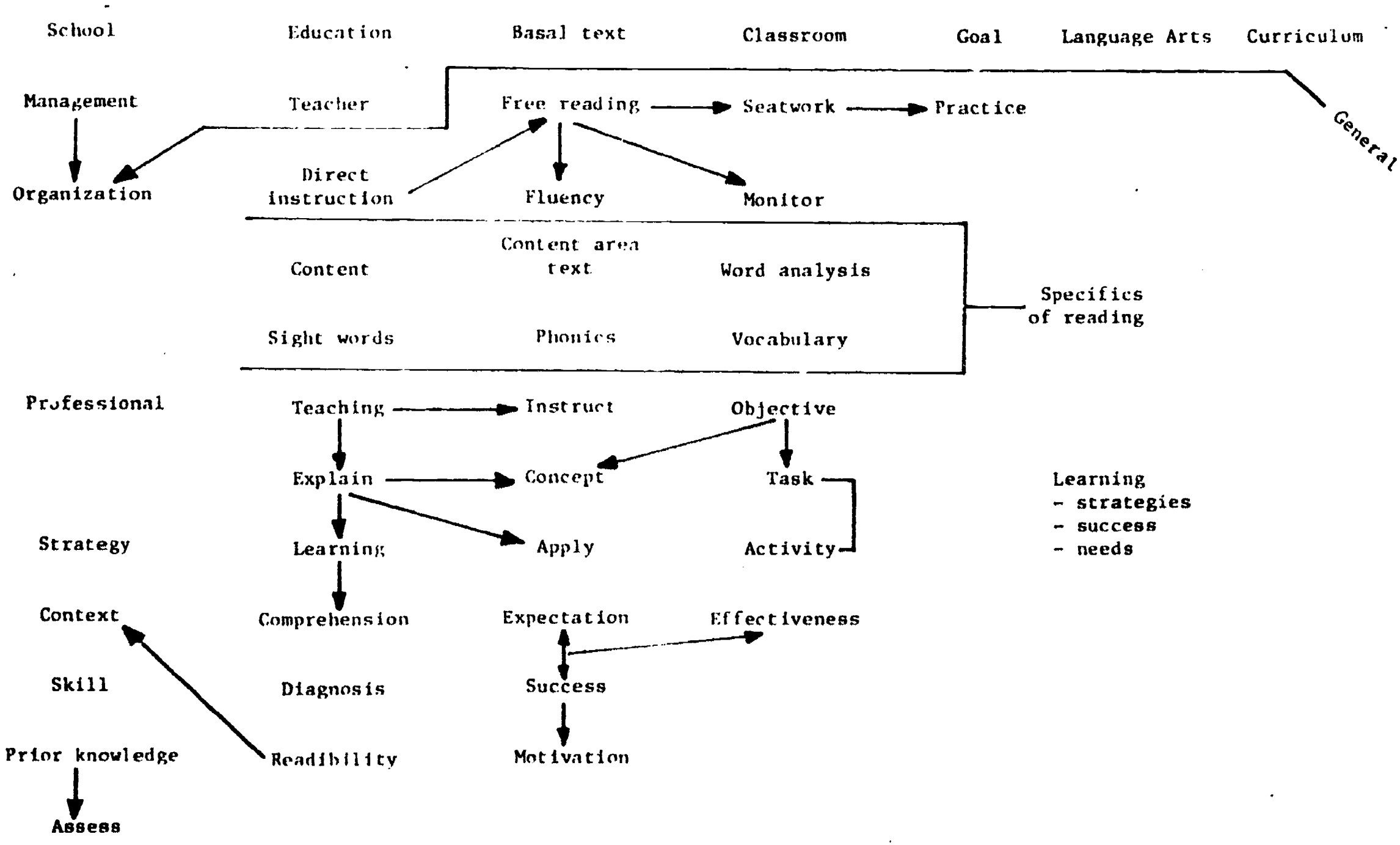


Figure 3. Preservice Teacher C's initial cognitive map.

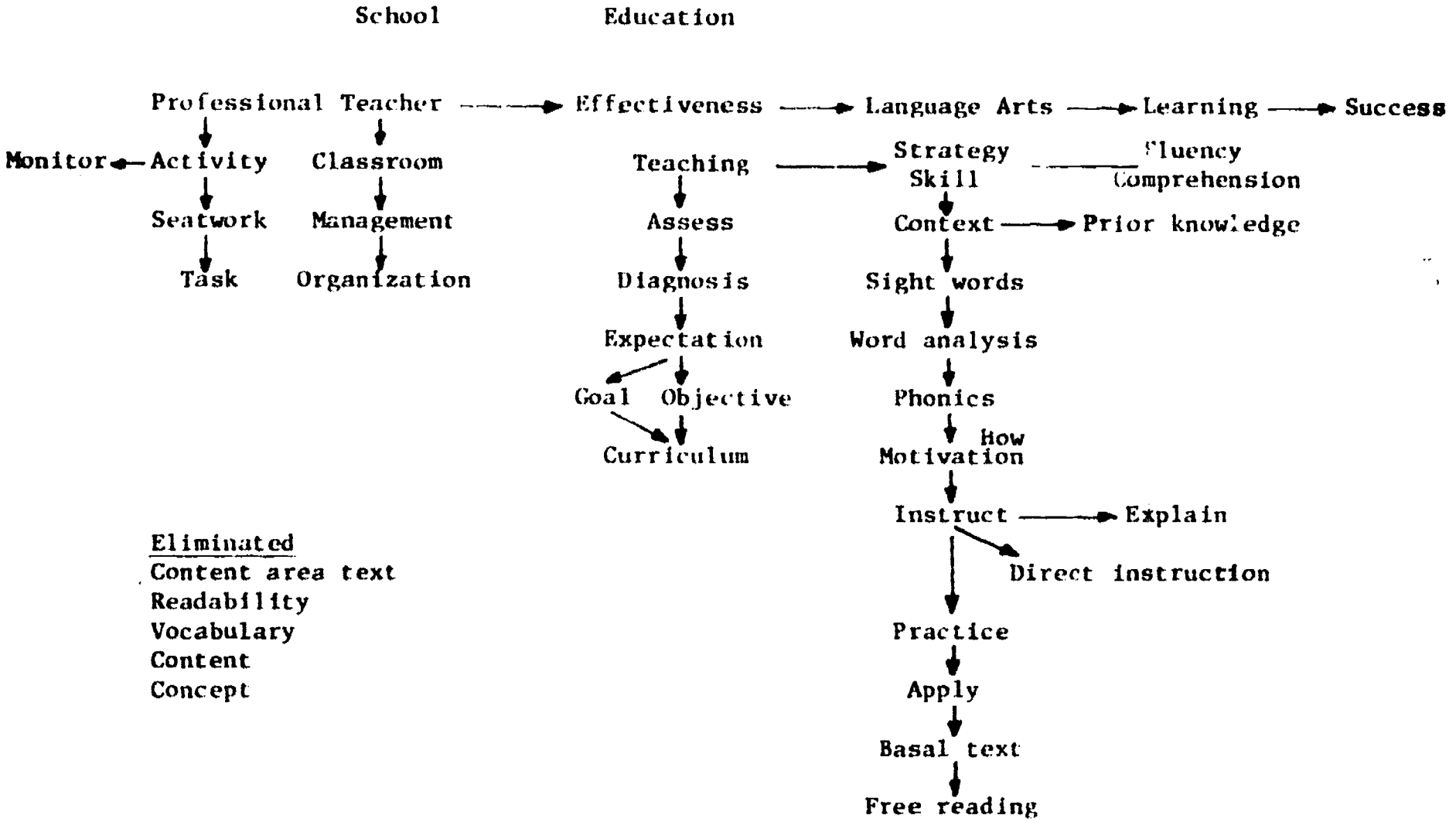
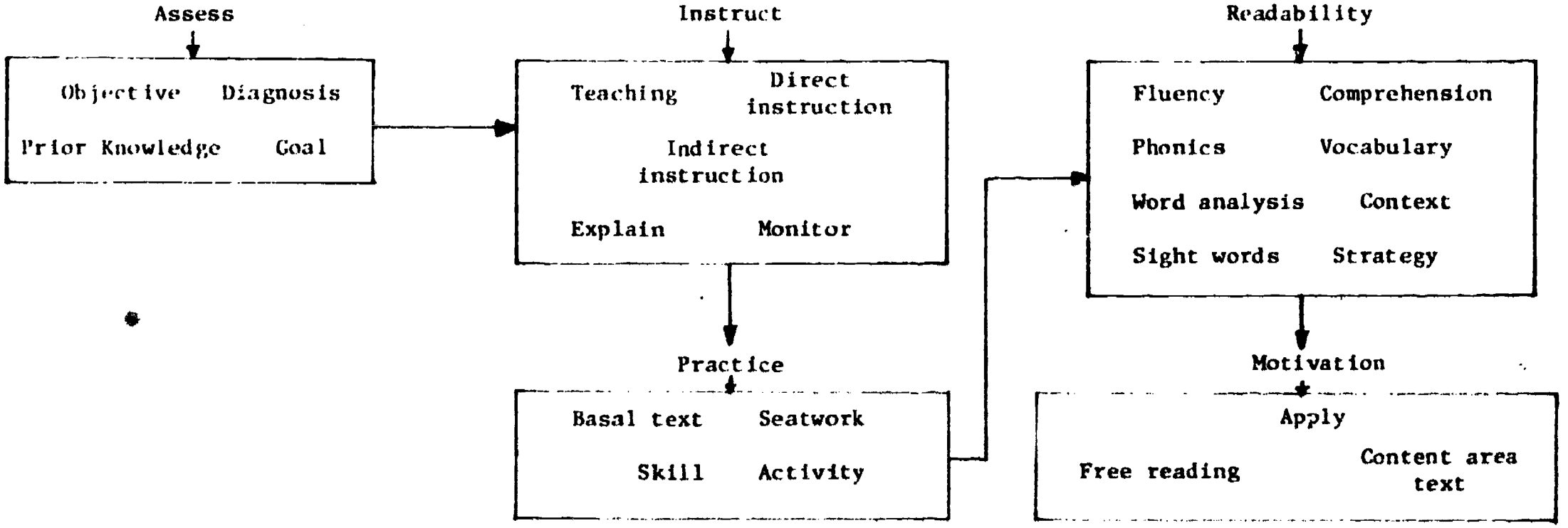


Figure 4. Preservice Teacher A's reconstructed cognitive map.



Eliminated

Content	Language Arts	Organization
Education	Effectiveness	Professional
Curriculum	Expectation	Management
Learning	Classroom	Teacher
Concept	Success	School
	Task	

Figure 5. Preservice Teacher B's reconstructed cognitive map.

wasn't a rearrangement of her first. B had started an entirely new conceptual schema for reading instruction.

Preservice Teacher C's map contrasts with A's and B's. C's initial map appeared to have little cohesion and, despite the fact that C said she had learned a lot, her second map continues to reflect little cohesion. Although some content stressed during instruction does appear on the map (i.e., sight words, word analysis, context, phonics), it seems to reflect confused and fragmented thinking. C's 45-minute explanation of the map reflected little logical organization and was difficult to understand. In short, her cognitive map suggests that little change in her conception of reading instruction had taken place.

Characteristics of three preservice teachers' conceptual change. Three characteristics in the preservice teachers' changes in conceptual understanding emerged.

First, even though they received the same reading methods lecture instruction, the three preservice teachers produced different, second cognitive maps from each other. It appears that each one's conceptual framework of reading instruction interacted with the same reading methods instruction and produced widely differing interpretations. It should be noted that during eight weeks of reading methods lectures, the field instructor was unable to note evidence of significant mediation of the instruction by A, B, or C. Each exhibited attention during reading class with appropriate eye contact and the like, but they rarely answered questions or contributed to class discussions. The field instructor saw no overt evidence of cognitive processing, much less change, during reading class lectures.

Second, much of the conceptual change seems to be tied to the field practicum. For instance, A responded to the field practicum by asking questions

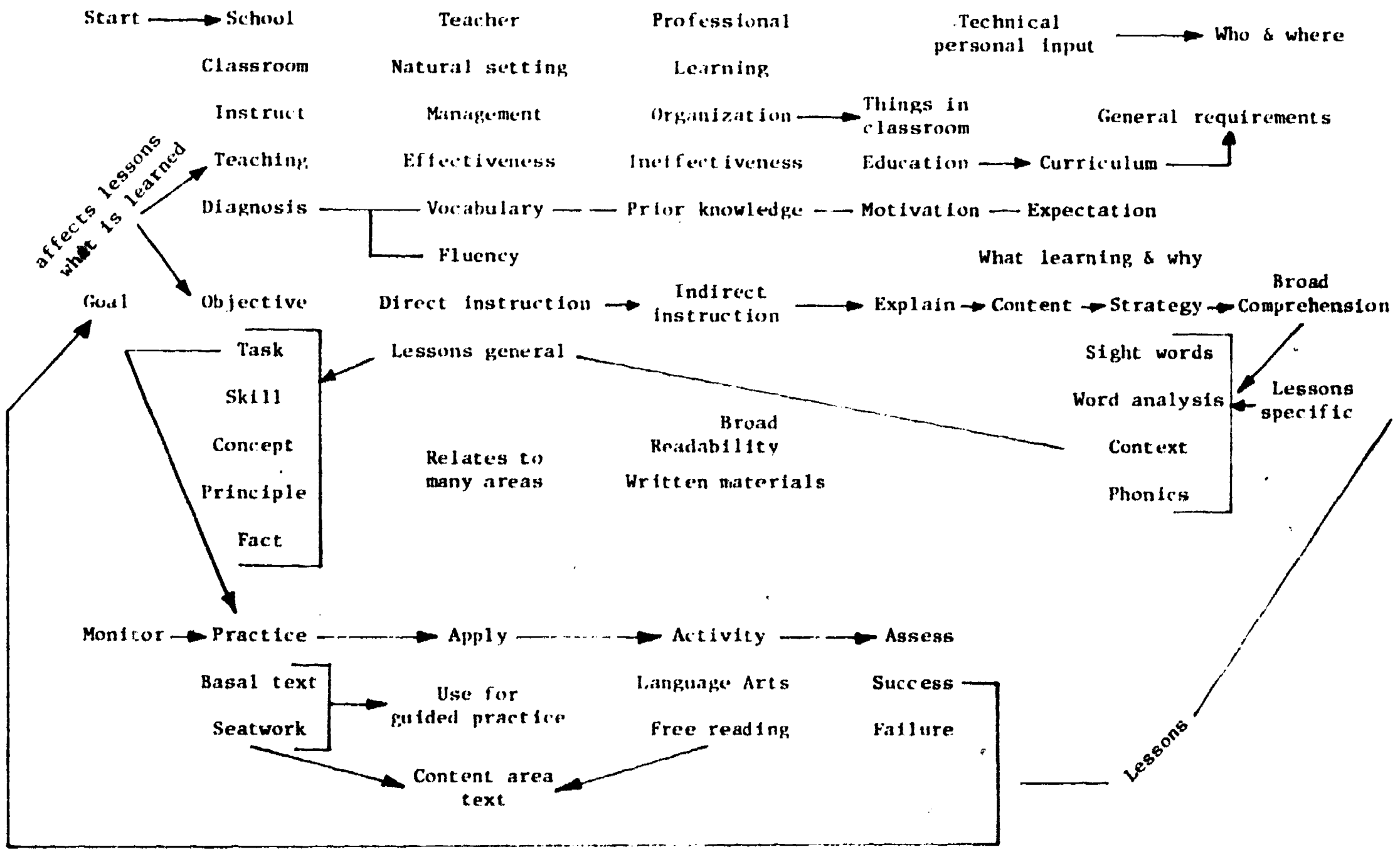


Figure 6. Preservice Teacher C's reconstructed cognitive map.

about her own lessons to make sure her understanding was correct and by asking for clarification when confused. After a lesson, A would take the lead in the debriefing session and readily made statements like the following:

Well, first of all, I think I'm really confused about . . .

I wasn't sure how to get her to . . .

I don't know how I'm supposed to . . .

I really wasn't sure how to approach . . .

Was that good to do?

Consequently, the field instructor elaborated on method class content and specifically applied it to A's experience.

In another instance, A was confused about when "fade out clues." The following exchange occurred:

Instructor: Your material was creative. It was super! But you need to fade out the clues sooner, not use the green cards the entire time.

Preservice Teacher A: O.K. Yeah! I see! I was trying . . . I was fading out in instruction, but not for these (green cards used as teaching aids).

At the end of the session, A said aloud to herself, "Fade clues, I should have . . . yeah."

Similarly, B expanded her conceptual understanding as a result of the debriefing. For instance, B's initial lessons were very short and sketchy. Whenever the field instructor asked if there were anything else she needed to include, she said, "not really." When the field instructor enumerated four integral segments that were missing in a reading lesson, B included them in her next lesson. Discussing her lessons with the field instructor was particularly helpful to B in this regard. Similarly, B was able to use these sessions to make concrete the concepts discussed in abstract form during lectures:

Well, during the middle there I didn't think it was going too well because my sentences weren't at his level. And then, when he would get the word, I couldn't tell if he was using the strategy (context meaning) or not. He looked like he was but then he said he was sounding out the words. So then at the end when he figured out "dark" and "light" by using the strategy and he could explain what he did, I figured it was going a little bit better.

Third, creating such change is a complex and difficult task. For instance, C's debriefing sessions were very different from A's and B's. When C taught a sight word lesson, she needed much reteaching from the field instructor. The discussion proceeded as follows:

Preservice
Teacher C: I think it went rather well.

Instructor: Why did you think it was important for her to learn "blanket" and "plank" (as sight words)?

C: Well, I think it's important, in her reading for one thing and also to distinguish sounds, distinguish her consonants and vowels, and to learn how to spell different words that may sound alike, recognize how to spell those, how they have similarities, because of sound similarities and in spelling, and also differences, and how to distinguish between the sounds and the letter . . .

I: What really bothered me was that I felt it was a phonics lesson and a spelling lesson and not a sight word lesson. And I had a hard time figuring out why you began with "plank" and "blanket."

The instructor then proceeded to review what had been taught in methods regarding a sight word lesson, including the fact that the spelling and phonics emphasis was to be eliminated.

I: Now what are you going to be working on for next Tuesday's lesson?

C: Next Tuesday I think I'd like to start with sight words, just basic things such as sight words and work on to there from her concepts in strategies and so on. I think maybe sight words would be a simple thing to start with and then go on from there as to the meaning of words, and spellings, and . . .

I: No! For next Tuesday, just Tuesday! Just for 30 minutes!

C: For next Tuesday I'd like to work on her sight words--second and third grade mainly--a little bit of second--mostly third.

I: I think it's very important for you next Tuesday is to plan yourself a compact sight word lesson. Don't get it too broad. Keep it concise.

The following Tuesday, the field instructor went to see C's sight word lesson. She began the lesson by writing all the vowels and consonants on the board and then went over letter sounds including the sounds and rules for c, g, k, and so on. The field instructor stopped the lesson and arranged to meet C on the college campus for a long conference where she gave C an explicit model of a sight word lesson. This reteaching resulted in the satisfactory implementation of sight word lessons the next time C worked with her students. However, despite this, her second map indicates that C had not changed her conceptual structure very much. Even though C did finally produce a satisfactory reading lesson, real cognitive change apparently did not occur. C just followed directions without understanding them.

Discussion

This paper represents the beginning of a new line of research. Both the embryonic stage of its development and the descriptive methodology employed preclude drawing firm conclusions. However, the data do stimulate three basic issues for further examination.

The first issue focuses on the way teacher education is structured. Most reading methods instruction is conducted in a lecture format. If a practicum is used, it frequently serves as a site for summative evaluation. This study raises questions about this arrangement. Reteaching for C never would have occurred if her reading lesson was viewed as an end product of a lecture. Perhaps the lecture method alone or the lecture method with an evaluative practicum is not the best format. Instead, making methods instruction an

integral part of the practicum as well as the lecture would give methods instructors the opportunity to help students to more effectively process the lecture information.

The second basic issue focuses on the way to conduct investigations of teacher education. The cognitive map concept may serve as a tool to chart the developmental change of preservice teachers' thinking during methods instruction. The mapping exercise may be used to suggest that prospective teachers do change their cognitive conceptions about reading instruction as a result of methods instruction. If further research indicates the validity of cognitive mapping, teacher educators may find this tool useful to monitor their students' grasp of and direction of change. Revisions can then be made in course content and structure.

Finally, such cognitive change may not occur unless the field practicum is viewed as a site for continuing instruction rather than evaluation. If the field instructor had just merely assigned grades after lesson implementation without additional instructing, the preservice teachers would not have been able to correct their misconceptions. Traditionally, this has not been the case. The purpose of field experiences in reading has often been to evaluate how well preservice teachers design and implement 'nstruction. The expectation is that instruction occurred in the lecture and that students will now practice and apply what has already been learned in the reading methods classes. Two assumptions underlie this practice. First, it is assumed that university methods course lectures provide preservice teachers with adequate knowledge about reading and reading instruction. Second, it is assumed that preservice teachers conceptualize lecture information in the way intended by the instructor.

As such, this study is a beginning. It raises questions which should be pursued not only with the methodology described here but in a variety of ways. It is hoped that such studies will provide data regarding what teacher education currently is, what constitutes effective teacher education, and how future efforts can be improved.

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