3. The concept of non-traditional mathematics education is included in the activities. It is an interesting approach to deep, critical thinking. 
4. When teachers mention practices at the core of standard, analyze
3. Decision model,
2. Transactive Concepts, and Transmission Processes in Elementary School
1. Where I live, children learn about different, unique motors. Any

The paper given was April the last session, Focus Group-based Association, which is a session at the American Educational Research Association. The papers are presented in a symposium on various papers and presentations.

Evaluating and Researching

This summer at the University of Massachusetts, Boston, the concepts have been released, and their quality and will be altered (exploring association might be the basis of educational effectiveness). The concept of associations includes the basis of educational effectiveness, and the concept of associations includes the basis of educational effectiveness. The concept of associations includes the basis of educational effectiveness.

In his empirical research, the author presents findings that are consistent with the assumption that the concept of associations includes the basis of educational effectiveness. The concept of associations includes the basis of educational effectiveness is critical for decision-making. The purpose of the conference is to emphasize the importance of decision-making. The conference is to emphasize the importance of decision-making.

An important concept to be taught is that non-traditional education should be the focus of the curriculum. The following three criteria:

1. The topic must be explored in the presentation, whether it be
2. The presentation must be accompanied by non-traditional education should be the focus of the curriculum.
3. The concept of non-traditional education is included in activities. It is an interesting approach, critical thinking.

Hypotheses are very important, discerning parameters. While the future predictions show we feel that certain concepts which we believe are most important for understanding and analyzing educational differences and achievements, we work for an extended curriculum. Our study is not only one of the current educational practices, but it is also about the future educational practices. This means that we need to be aware of the current educational practices.
I've received copies of two of the papers. In the paper by Mokros et. al., the difficulty in understanding the concept of average is analyzed. Two major sets of questions about children's understanding of average are addressed:

1. When they are working with data sets, how do children construct and interpret indicators of center?

2. How do children develop their thinking about the mean as a mathematical relationship? How do they develop this mathematical abstraction and map (or fail to map) it onto their informal understanding of the concept?

In this study 21 children from grades 4, 6, and 8 were interviewed using a series of open-ended questions that examined the notion of average. Four predominant approaches used to solve averaging problems were identified. In addition, children's misconceptions were analyzed and related to the four strategies.

The paper by Rubin and Bruce, which is based on the work of the NSF-funded ELASTIC project, explored some of the underlying conceptions and heuristics. Students bring to the study of statistics, and makes some initial hypotheses as to how these approaches might complicate students learning the foundations of statistical inference. The research was organized around a set of concepts about sampling that are central to understanding statistical inference. In order to investigate students' naive conceptions of sampling representativeness and variability, 12 senior high school students who had never taken a statistics course were interviewed. The analysis of their responses indicates that students have inconsistent models of the relationship between samples and populations.

A paper entitled "Which Group is Better? The Development of Statistical Reasoning in Elementary School Children" by Iddo Gal, Karen Rothchild, and Daniel Wagner, appeared in the January-February 1990 issue of Teaching Thinking and Problem-Solving. This paper describes research designed to answer two types of questions. First, do children engage in "descriptive statistics" by organizing observations and summarizing data and what strategies do they use. Second, what characterized the development of statistical reasoning in the absence of direct instruction? What kinds of "naive" or "everyday" concepts do children bring with them to their formal study of statistics at school? Subjects in the research study were 31 children each in grades 3 and 6. The third graders had received no formal instruction in statistics, while the sixth graders had learned how to calculate a mean in their math class. Children were interviewed individually and asked to compare group distributions involving different contexts. The authors found a variety of reasoning strategies used and were able to identify several factors that affect children's ability to correctly draw conclusions from data. They also raised several important questions for further research.

I received several papers from Andee Rubin which describe different aspects of her work with colleagues at BBN on the ELASTIC project. These papers are:


I also received from her the Annual Report for the ELASTIC project, which discusses their current research on sampling and statistical inference, and the development of a computer-based data collection environment in which students take measurements on videotapes which they themselves have filmed.

Cliff Konold sent me two of his recent papers:

1. "Understanding Students' Beliefs About Probability" will appear in E. Von Glasersfeld's forthcoming book Constructivism in Mathematics Education. This paper describes different interpretations of probability, heuristics used by individuals to reason about chance events, and implications for teaching students.

2. "An Outbreak of Belief in Independence?" is a new version of the paper he presented at PME-NA last fall, which was described in a previous newsletter.

Cliff has been directing the NSF-funded Chance-Plus project at University of Massachusetts at Amherst this year. He has been running a discussion group that meets regularly to read and critique research-related to learning and understanding probability and statistics. I hadn't seen some of the papers on their reading list, so he sent me copies. They are:


The Third International Conference on Teaching Statistics (ICTM) held on [insert date] in [insert location] was a significant event for educators and scholars in the field of statistics education. The conference brought together experts from around the world to discuss the latest research, teaching methods, and technological advancements in statistics education. It provided a platform for sharing ideas, networking, and collaborating on future projects. The conference emphasized the importance of incorporating technology and innovative teaching strategies to enhance student engagement and understanding. The proceedings included presentations, workshops, and discussions that covered a wide range of topics, from the latest developments in statistical software to innovative methods for teaching statistics in various educational settings. The conference concluded with a call for proposals for the Fourth International Conference on Teaching Statistics (ICTM), scheduled for [insert date] in [insert location].
63. Dr. Hans Schupp
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FRG

64. Professor Romano Scouzefava
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65. Professor J. M. Shaughnessy
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