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Department says students need to apply mathematics to real life

By Pam Mooman
Reporter

Word problems, with their application of theoretical knowledge to practical situations, often conjure up nightmarish images for many people.

"In high school, everyone avoided word problems because they were harder than computing numbers," Jamie Minderhout, a junior finance major, says. "Anybody could go home and use a calculator."

The concept of applying mathematical theory to practical situations is at the heart of a debate centering around the benefits of conceptual knowledge as opposed to those of procedural knowledge.

Dr. Vincent Schielack, assistant mathematics department head, explains the basic differences between the two methods of approaching and solving math problems.

"I don't like that word 'procedural,'" he says. Schielack says that in a broad sense, "procedural" could describe the entire practice of problem solving.

Dr. H.E. Lacey, mathematics department head, agreed, saying he preferred the term "computational" to "procedural."

"Conceptual, taken to the extreme, is new math," he says.

New math was a program that placed an emphasis on abstraction and application.

Actually, conceptual mathematics is recognizing how one thing is related to something else that has been solved, Schielack says.

"This is not a new math type movement," he says.

Dr. Clarence Dockweiler, professor of mathematics education at Texas A&M and a specialist on math anxiety, says he has strong feelings that the math curriculum should move in the direction of conceptual math.

"Our understanding of mathematical concepts is pretty lousy," he says.

Dockweiler says children should be taught the basic math operations in elementary school — addition, subtraction, multiplication and division.

"In high school, everyone avoided word problems because they were harder than computing numbers. Anybody could go home and use a calculator."

— Jamie Minderhout,
junior finance major

"Kids need to have an understanding of these concepts," he says. "After kids learn the basic concepts, they should be given a calculator."

Dockweiler says that would probably be the main curriculum change he would make.

"Changes in that level come about in a couple of ways," he says.

First, there are in-service education programs to retrain teachers in their teaching methods, he says.

Minderhout agreed that the programs were needed, saying that teachers as well as students seemed to shy away from word problems and practical applications.

Secondly, Dockweiler says the state already is requesting new math textbooks. If it is state mandated, then the new textbooks will emphasize conceptual mathematics, he explains.

"But if teachers don't know how to teach it, it still won't help," he adds.

"I think a lot of people will argue this point," he says. "The quality of public-school teachers has declined." Schielack explains that he feels this decline is due to low salaries for teachers.

Some elementary teachers never liked math, he adds. And if a student got a bad start in the first and second grades, even if he had good instruction in the third and fourth grades, he still cannot catch up, Schielack says.

Lacey says teachers may not emphasize conceptual math because it's easier to teach computational skills.

Schielack says the United States has a spiral curriculum. That is, something is taught, then in a couple of years is returned to and taught again.

"The problem is not with the spiral curriculum, but the bands aren't

very far apart," Schielack says.

"I don't think any moves are sudden," he says. "I think it's been building gradually over a long period of time. Mainly, it's due to the difference in test scores between the United States and Japan."

The United States is trying to be more competitive with nations receiving high test scores, Schielack says.

Lacey says that as many as 50 percent of students going into science and engineering aren't prepared to take calculus.

"In the fall, there will be substantial upgrading of courses they can take for credit," he says.

Schielack says students lack estimation skills. They are unable to determine when a number is incorrect, he says.

Dockweiler says that even in the basic or primary grades children can

gain knowledge from technical curriculum, thereby producing better educated students who are better equipped to function in society.

Dockweiler explains that math anxiety cannot be separated from other types of anxiety — for example, test anxiety. It is the same simply applied to math concepts, he says.

"There are an awful lot of things that contribute to math anxiety," he says.

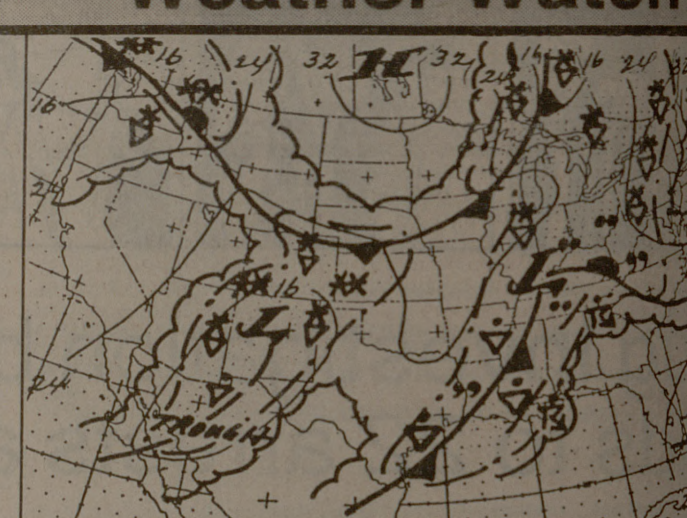
First of all, he says a basic lack of understanding might make students anxious.

"If students don't understand a concept, and they are confused with the concept, then that is anxiety," he says.

"With a capital A," he adds, "mathematics is a basic life situation, and they are confused with the theories and concepts and how to apply them."

"I now feel that if word problems of real-life situations had been stressed more in high school, it would have made college math a lot easier."

Weather Watch



Key:

- ☁ - Lightning
- ☁ - Fog
- ⚡ - Thunderstorms
- ☔ - Rain
- ❄ - Snow
- ☂ - Drizzle
- ❄ - Ice Pellets
- ☔ - Rain Shower
- ❄ - Freezing Rain

Sunset Today: 6:02 p.m. Sunrise Thursday: 7:14 a.m.

Map Discussion:
The arctic high will move into the Canadian maritimes while another is pushing yet a new arctic air mass southward through the Northern Plains. The cold front from western Kentucky to southern Texas will slowly move eastward. Arctic air will cover much of the country Thursday through Saturday with prospects of a significant winter storm affecting much of the Eastern U.S. over the weekend.

Forecast:
Today: Overcast and cool with a high of 47, winds northeast at seven to 12 mph, with light drizzle possible through mid-afternoon.
Tonight: Mostly cloudy with a low of 34 and light easterly winds.
Thursday: Cloudy early morning becoming partly cloudy with a high of 56 and northeast winds near 10 mph.
Weather Fact: Winter - The coldest season of the year; the season during which the sun is over the opposite hemisphere; the "hibernal" season. Popularly and for most meteorological purposes, winter is taken to include December, January, and February in the Northern hemisphere; and, in the Southern hemisphere, June, July, and August; the reverse of summer.

Prepared by: Charlie Brant
Staff Meteorologist
A&M Department of Meteorology

Board takes first step to approve proposal for genetics degree

The Texas Higher Education Coordinating Board in Austin took the first step Friday in approving a request by Texas A&M University to add a bachelor of science degree program in genetics.

Ross Hise, director of program inventories, said the proposal will have to be approved at the board's April 22 meeting before Texas A&M can offer the program to students.

"This approval is unique," Hise explained, "in that it carries the stipulation that the board will review the success of A&M's bachelor's degree program before it will approve the same degree for any other public school."

This stipulation was made because genetics has been approved for a

doctorate degree but not for a baccalaureate degree.

The coordinating board's committees met Thursday to discuss each agenda item before the 18 members voted Friday.

Hise said there were no dissenting votes on the A&M proposal.

If the board approves A&M's proposal at its next meeting, it could be at least two years before students who have completed the basic requirements of the science degree plan can begin specializing in genetics.

"It usually takes a couple of years after a plan is approved by the board for the University to organize the curriculum, hire faculty and offer the courses for registration," Hise said.

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