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SESSION V

DISCUSSION

October 8, 1982 - Afternoon

Chairman: B.A. SZABO (U.S.A.)

H. BALDAUF - Mr. Schneider, what kind of answers does the program accept? Are they prepared answers from which the correct one has to be chosen? If four answers are available and one guesses, there is a 25% probability of getting the right answer! Furthermore, you stated in your paper that the computer has "infinite patience" and one can go back as often as one wishes and there is always adequate time for one's work. On the other hand, you said: "what might happen, will happen". The computer can monitor progress and keep track of the time consumed. So the training manager may finally say: "Get out, you are too slow". I believe these methods are an addition to our traditional methods, but not that they will completely replace existing techniques.

R.W. SCHNEIDER - When we write a course, we basically start with a blank piece of paper and the system; and the author of the course builds all of that into the course. The author can say that the student will only have three chances to answer this question correctly and, if he doesn't answer the question correctly, then we are automatically going to send him to some intermediate work. So it is all based on the experties of the author.

B.A. SZABO - Can you give me an order of magnitude, say in manhours, or manyears of the effort required for writing such a course?

R.W. SCHNEIDER - Actually anybody who knows what they are talking about won't quote any hours, because there are too many variables. If you have a course with a lot of graphics, a lot of branching, it takes longer. Our courses have very simple "course", from the time the boss comes in and says "write a course on this" to the time that is operational (it is about an hundred hours for every one hour of student's work, so an hundred hours to one). If it is more complicate and has more graphics, it can go up to six hundred hours to one. It takes a long time.

J. BLAAUWENDRAAD - If you allow - Mr. Chairman - once more the same question. It's indeed individualized, but - on the other hand - it is unpersonalized or depersonalized in some way. I think this way of learning is too mechanical. You are right that it will be part of the market, but it is not all, for it never can be a substitute of that social aspect which is in learning and in instructing. Also a teacher (which has experience in design) can, in some way or another, carry over to the student his engineering judgement. It may be a boundary about which this type of instruction and learning will never can and should go.

B.A. SZABO - Can you give an indication of how many people are taking this kind of instruction and how do they feel about it?

R.W. SCHNEIDER - You are correct. What we try to do, when we write a course, is

that we try to make it personal. You may have taken or seen CAI courses and the computer would say "What is your name?" and you type your name and he says "Well this is what we are going to do". One of the things we have asked our software people for - and we have gotten - is that we can automatically pull off some of the variables, some of the primaters in a file, so we don't have to ask you what your name is, we know what your name is and we can pull your name out of a file automatically. That depersonalizes it a little bit. Also, when I try to write a course, I always try to write one with a dialog. It is not a book. It should not be read like a book. It should be a dialog, just like we are talking now. An other thing: CAI is not going to take the place of the college classroom, is not going to take the place of other areas, where other methods of instruction are used. But it is good for one thing: if you have ever done any teaching, you know that for certain courses there is a lot of dull and boring aspects to a course; it is good for those. Wouldn't it be nice to take those first two weeks a class when all the students take the dull and boring stuff and when they come in they are all ready to go. It also is good to bring all the students up to a certain level, so when they do come in your classroom they are all to a closer level to each other. We have, as far as number of people is concerned, approximately 40 students per week who are taking any of 35 different courses. A course lasts from half hour to two or three hours on a wide range of topics and they seem like they like it; if they wouldn't like they wouldn't sign up for it. In training sometimes that's what you want. If you are training somebody to do a dump of a system, all you want to go through is pushing a button, that's all. You don't want them to make any decision, just go through this procedure, and that's where training is good. It is not education, it is training.

B.A. SZABO - I have a similar question for Prof. Greenberg. You mentioned in your presentation that something like two thousand undergraduates are taking the course that you offer. Is this course compulsory and if so, how do these people relate to it?

D.P. GREENBERG - Let me try to clarify one misunderstanding. We have approximately two thousand undergraduate engineers at Cornell University and they are in approximately ten different departments. The objective is to make sure that each one of those students gets exposed to one course using computer aided design systems before they graduate. There are approximately, 15 may be even 20, courses now tought on the system. I don't think that any course has more then 150 or 200 students. If you consider the fact that some students may take 2, 3 or even 4 courses on the system, we are probably teaching in the neighborhood of 600 to 850 students per semester now, although they are not in a single course.

S. ELKMESHI - Although I am impressed with Prof. Greenberg's presentation,my question goes to Dr. Schneider. Concerning the general attitude that computer is a black magic thing, you are teaching other things out of computer: how that affects your students when you are teaching them about those things you mentioned? Mixing up these things together, if you teach them whatever works or these different courses you mentioned, how are they affected? I mean they can be easily trained without computer, but with computer are they more affected?

R.W. SCHNEIDER - There have been a number of studies in the United States and a rule of thumb is that you can, through computer aided instruction, cut the instructional time down by about 40% with the same level of mastery and, in the industrial training enviroment that's very important. In addition any student, any trainee can take a course whenever he wants to take a course, he doesn't have to wait for the scheduled classes. We have in our company a great extension of training programs, probably ten classes going on at anyone time, just within the company for the company people.

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