Background

Early on, Computers were mysterious
- Few people were comfortable using them
- Most showed up in universities
- Natural question: using computers to aid teaching?

No royal roads to learning geometry
- Everyone has to do it the same
- Similar to running a four minute mile
  - Coaching & money help, but there is no easy way

Hawthorne Effect

Any change improves performance
- People react subconsciously to someone caring by performing better
- Enhanced performance only lasts until the change becomes the norm
- Best way to teach is to change the way you teach constantly

Early CAI

Can we use computers to speed up or make easier or help learning in any way?
- The Grader
  - Aided teachers in grading programs by comparing expected output to actual output
  - Not maintained after three years
- Common for programs developed to aid professor were not used very long
  - Subconscious realization that machine learning lacks something
May 29, 2006

Hamming on Hamming: Learning to Learn

Socialization of the human person is left out of computer learning
- Learning to get along with people
- Learning to adjust to different professors
- Education includes human contact

PLATO
- University of Illinois project to link people up to increase learning
- Claimed 10% increase in learning
- No data to back it up

Programmed Book
- Next page based on answers to questions
- Good students give wrong answer just to see what the book will say (out of boredom)
- Lots of talk but no evidence it works

Computers are best for teaching mechanical tasks
- Can concentrate on areas the student is having the most trouble with
  - Multiplication tables
- Children may still react better when they here they are wrong from a teacher

Pilot Trainers
- Run simulations that are too dangerous to practice with real aircraft
- Wide range of experience
- Teaching instinct and conditioned responses versus thinking

What are we trying to do?
- Weight lifting class
  - Lift 250 lbs to graduate
  - Too hard and students get discouraged
  - But what if we made the requirement to lift 125 lbs twice (the student still lifts 250 lbs)?
    - Do not get the same results
- Do not make problems easier, just push students to work harder and learn for themselves

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Aspects of Education

“That which you learn from others you can use to follow, that which you learn for yourself you can use to lead”

- Rapid learning is an important part of education
- No one has the same definition of an educated person

Transfer of Training

The ability to use old ideas in a new situation is important

- Students must learn to recognize formulas in many different forms
  - \( \text{INT}[dx/x] = \log x + c \)
- Learning not memorizing

Education

Proper education changes through time

- In early England education included learning Latin and Greek
  - People were able to create empires, so the education worked for the times
- Our education today is different
- Education in 2020 will probably be different

Conclusion

CAI aids in training but there is no proof it aids in educating

- Training is teaching conditioned responses
- Education is high-level thinking
  - Sometimes you need to deviate from patterns
  - This course is designed to educate