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ABSTRACT

　　　　　　SEEN (Seeing Eye Elephant Network)· is a computer
program intended to help students write better essays by providing a
heuristic for invention and a means for audience feedback. In the
solo mode, the program prompts students to perceive what they have
seen--that is, to consider the literary work in an active way. The
program also .remembers--like an elephant--what the students say in
answer to the program's prompts. In the network mode, students can
share their work and get feedback by seeing how their work compares
with others' views or by getting other students' comments on their
work. In a tutorial that is currently being set up for a character
analysis, the solo mode prompts students to provide and consider
evidence in support of their own hypothesis, while the network
segment is designed to help the students sharpen their critical
insights by giving and getting feedback. In the fall of 1981 the
program was tested on students in an introductory world literature
class to determine if the students would improve their essay writing
after using the computer program: A preliminary analysis of the data
suggests that the improvement between the computer group and the
noncomputer group is not statistically significant. However, the
writing of the computer group did become much longer and more
detailed, while failing and marginal students seemed to improve on
the essay exam quite dramatically. (HOD)

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A Computer Program for Invention and Feedback

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This paper reports on the theory, field testing and preliminary

results of using a computer program in an introductory literature

class. The program is intended to help students write better essays

by providing a heuristic for invention and a means for audience

feedback, two aids that are recommended in rhetorical theory. A

microcomputer provided these aids on a one-to-one basis at a time

convenient to students. Furthermore, the micro traced each student's

activities and text-production at each session. This trace of

activity allows a field test, in a way not previously possible, of

rhetorical aids recommended in theory.

I set out to write a computer program that would provide a

heuristic for invention (Winterowd, 1975; Young, Becker and Pike,

1970) and audience feedback in a non-threatening environment (Moffett,

1968; Emig, 1971; Barritt and Kroll, 1978; Kroll, 1978). These two

writing aids also corresponded to the two modes of computer learning

advocated by Professor Thomas A. Dwyer, an expert on educational use

of computers: Dwyer has aimed to develop computer software to let

people learn in solo simulations while still involving them in a

network (See Dwyer, 1980). In my program, the heuristic corresponds
to solo mode; the audience feedback to the network mode.

The computer can provide these aids--better than a workbook,
because CAI is interactive, prompting; better for some students than a
classroom because the computer goes at the student's pace, without
authority figures or competitors.

Moreover, I programmed the computer to _trace_ the student's process
of thinking: the program not only records what the student writes in
the solo/tutorial section, but also notes in the network section what
the student saw and how s/he reacted.

For the heuristic, I chose _not_ to go with the general approach of
Burke's dramatistic pentad, the tagmemic matrix or Aristotelian
topics. (Besides, these approaches had already been programmed,
though without an audience component or a trace; Burns and Culp,
1980).

Instead, I remembered and analyzed the most agonizing writing
situation I had ever faced: writing a paper for Music Appreciation in
my junior year of college. I had listened to Brahm's Hungarian Dance
#5 for hours. (I can still hum the tune 19 years later!) But I.
didn't know what to write!

Sound familiar? Many times I've found that the student in an
introductory class is overwhelmed at the idea of writing an essay
because s/he faces the same problem. That is, the student in an
introductory class knows neither 1) _what the discipline considers as_
evidence nor 2) _the form or strategy acceptable in the discipline for_

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making an argument. It seemed to me that a heuristic would be most helpful if it were tailored to a discipline--that is, if it answered the student's question about the nature of evidence while prompting him or her to consider that evidence. Therefore, I developed a heuristic tailored for an introductory literature class--one which helped a student analyze a fictional character.

SEEN is that computer program: open-ended, interactive, with a heuristic to help a student generate ideas and with a network through which that student can share ideas with others. SEEN stands for Seeing Eye Elephant Network. In the solo mode, the Seeing Eye Elephant, the program prompts the student to "perceive" what s/he has "seen"--that is, to consider the literary work in an active way. The program also remembers--like an elephant--what the student says in answer to the program's prompts. In the network mode, the student can share his or her work and get feedback--by seeing how his work compares with others' views or by getting comments on his work written by other students.

The tutorial is currently set up for a character analysis, although alternate literary heuristics could easily be programmed. The following outlines the general format, the current application, and an actual response to the heuristic for character analysis (The sample responses were provided by a female Chemistry major who was a senior taking my World Literature class as a general education requirement, as described below.):

General format	Particular application (w/ sample response)
Pick an X.	Name a fictional character X in a literary work
	(X = Satan in Paradise Lost)
Create hypothesis:	Describe the character X by completing the
X = Y	following: X is ___Y___ .
	(Satan is tricky.)
Argue that X = Y	Provide evidence to show that X is Y:
--regarding	What does Satan do that shows Satan is
type A evidence	tricky?
	(He enters the body of a serpent to
	disguise himself. . . .)
--regarding	What does Satan say that shows Satan is tricky
type B evidence	(He tells Eve lies about the tree of
	wisdom to get her to eat from it. . . .)
--regarding	How do others react to Satan that shows
type C evidence	Satan is tricky?
	(God had originally thrown Satan out of
	heaven because he didn't trust him.)
--regarding	How does Satan compare to others in a
type D evidence	similar situation and how does this show
	Satan is tricky?
	(The other angels do not compare
	themselves to God & are not thrown out.)*
--regarding	If there is a 3rd person narrator, what does
type E evidence	he say that shows Satan is tricky?
	(He says that Satan chooses the subtlest of
	beasts for his embodiment.).
Consider	What evidence shows that Satan is not tricky?
conflicting	(Adam & Eve know that there is someone out
evidence	to get them.)*
	In light of this evidence, you can now revise
	your notice, explain the apparent contradiction
	or leave the exception without comment.
	[The student "explained" her contradiction
	by adding the following:
	(but they don't know what he will do or what
	he will look like.)

* Note that the program does not (and cannot) respond to inaccurate

or unclear responses. That is a job for people, who respond on the

Electric Bulletin Board.

While the solo mode, the Seeing Eye Elephant, prompts the
student to provide and consider evidence in support of his or her
own hypothesis, the network segment is designed to help the student
sharpen his or her critical insights by giving and getting
feedback. For example, after Kami wrote a full notice on Satan
being tricky, she got indirect feedback by looking at a notice with
a similar thesis:

> TELFON SAYS THAT SATAN IN PARADISE LOST IS CLEVER
>
> DOES: HE MAIPULATES EVE AND GETS HER TO EAT FROM THE TREE
>
> HE PRESENTED HIMSELF AS A SERPANT
>
> OTHERS: EVE IS FOOLED MANY TIMES BY HIS CLEVERNESS
>
> HOWEVER: HE CONTRODICTS HIMSELF SLIGHTLY WHEN HETRIES TO
>
> GET EVE TO EAT FROM THE TREE

Then she opted to see a comment written by the instructor (known to
the students as Snoopy):

> SNOOPY: CAN YOU BE MORE SPECIFIC? FOR EXAMPLE, HOW ARE
>
> ARGUMENTS CONTRADICTORY? ALSO, IS HE PARALLEL TO EVE IN
>
> WANTING TO BE GOD-LIKE? HOW DOES THIS SIMILAR SITUATION
>
> REFLECT ON SATAN'S CHARACTER?

This comment gives direction not only to Telfon, the notice-writer,
but also to readers of the comment, like Kami. Furthermore, she
has gotten support for ideas since Telfon's thesis and evidence are
similar to hers. But she also recognizes a difference, and this
pushes her to analyze and add the following comment on Telfon's

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notice: "I agree, Satan is clever, however he must use lies to achieve what he wants."

When Kami logged on again, she got <u>direct</u> feedback from students comment on <u>her</u> notice:

HELEN: SATAN TELLS EVE THAT EVE WILL BECOME WISE AS HE HAS FROM EATING THE FRUIT. HE THEN TELLS EVE THAT GOD IS AFFRAID OF HER BECOMING LIKE HIM.

ZAPION: TRICKY SEEMS TO BE KIND OF A SOFT WORD FOR SATAN. HOWEVER, IT'S ABSOLUTELY TRUE.

Here Helen pushes Kami's argument along by providing more concrete evidence, and Zapion supports Kami, but makes a criticism about her thesis, too.

In Fall 1981, forty students in my introductory World Literature class volunteered to use the computer program (after the first exam). After this pre-test, the computer group was matched for statistical analysis with forty students <u>not</u> using the computer. For each "computer" student, I have 1) a pre-test, 2) a matched non-user of the CAI program, 3) printouts of the computer students' "notices" developed in the tutorial segment and any comments made on the students' "notices" on the network, 4) a <u>trace</u> of what notices and comments the student saw on the network and finally 5) xerox copies of the students' essay exams.

My hypothesis was that students would improve their essay writing after using the CAI program. At this point, I still need to do a thorough statistical analysis of the computer group versus

the matched, non-computer group. More important, I need to
complete a trace of each student within the computer sub-group.
(The computer students were divided into four sub-groups with two
groups getting substantive feedback from the instructor and two not
getting instructor's feedback.)

At the moment, I have general impressions about the data.
First, the CAI program didn't seem to hurt anyone. Statistically,
the computer group did better than the non-computer group, but the
improvement doesn't look statistically significant.

The qualitative differences are more interesting: Generally
students' "notices" became much longer and more detailed as they
used the program. Failing and marginal students seemed to improve
on the essay exams quite dramatically. I conclude that the
tutorial did show them what the discipline considers as evidence.
And several students who got B's on the pre-test entered the A
range on subsequent exams. But generally, although students'
"notices" improved, students' essays on exams did not improve
significantly. If a careful analysis bears out these impressions,
then my next step will be to hypothesize about integrating CAI into
the total learning environment. My goal will be to show students
the form or strategy acceptable in the discipline for making an
argument. Finally, I want to see whether the audience component
helps students refine their ideas for clarity and accuracy. (At
this point I have no hunches about what the data will show in this
regard.)

Is the program worthwhile? Certainly the heuristic is. It
helps students to read and react to literature actively. A common
'theme in student comments on the program is that SEEN got them to
read differently--looking for specific kinds of evidence. That is,
they not only "perceived" more in what they "saw," they also "saw"
more.

I'm not sure yet about the value of the network. Perhaps it is
just too clumsy in its present form, but could be more useful if
programmed differently. Perhaps the test of their writing--a
timed, in-class essay exam--was an inappropriately difficult way to
test whether students were able to transfer their heightened
perception of literature into essays that communicated their ideas
in a form acceptable to the discipline. Or perhaps more emphasis
should be placed on the strategies necessary to organize and
'communicate the ideas developed in the heuristic. These questions
may be answered by a fuller analysis of my materials or in future
field tests.

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