AD-A257 214

Memphis State
U N I V E R S I T Y

OCT 27

(901) 678-2145

October 14, 1992

92-28144

|||||||||||||||||||||||||||||||

Defense Technical Information Center
Building 5, Cameron Station
Alexandria, Virginia 22304-6145

Dear Sirs:

This is the first status report of the ONR grant awarded to Arthur C. Graesser, entitled "Questioning Mechanisms during Tutoring, Conversation, and Human-Computer Interaction " (N00014-92-J-1826). This covers the work completed between June 16, 1992 and October 1, 1992.
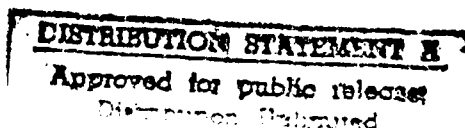
We have been performing in-depth analyses of the tutoring protocols of the college students who were learning research methods. These analyses examine the collaborative exchange and feedback mechanisms when a tutor asks deep-level questions (why, how, what-if), definitional questions (What does X mean?), and short-answer questions. We are particularly focusing on the feedback that tutors give to the students' answers because our earlier analyses indicated that this feedback (positive, negative, neutral) was uncorrelated with the quality of the students' answers (completely correct, partially correct, vague, versus error-ridden). We are analyzing the hesitations and pauses of tutor feedback, which might signal feedback at a paralinguistic level. We are analyzing the extent to which tutor questions are formulated to diagnose and repair student errors or to implement curriculum scripts. We also are analyzing tutoring strategies at a macro-level.

In the other project on the grant, we are analyzing sequences of speech act categories in dialogues between children. The 90 dialogues occur in the context of free play, a puzzle task, versus a 20-questions game. Our goal is to assess the extent to which various computational models can predict speech act category N, given the stream of prior speech acts, 1 to N. The current models being pursued are Elman's recurrent connectionist network and a recursive transition network.

We have enclosed the requested productivity report and the briefing materials.

Sincerely,

Arthur C. Graesser
Professor, Departments of Psychology and
  Mathematical Sciences

ONR PRODUCTIVITY REPORT

(October 1, 1991 to September 30, 1992)

Principal Investigator: Arthur C. Graesser
Memphis State University

QUESTIONING MECHANISMS DURING TUTORING, CONVERSATION, AND HUMAN-COMPUTER INTERACTION

Papers in refereed journals:

Graesser, A. C., & Kreuz, R. J. (in press). A theory of inference generation during text comprehension. Discourse Processes.

Graesser, A. C., & McMahen, C. L. (in press). Anomalous information triggers questions when adults solve problems and comprehend stories. Journal of Educational Psychology.

Graesser, A. C., Gordon, S. E., & Brainerd, L. E. (1992). QUEST: A model of question answering. Computers and Mathematics with Applications, 23, 733-745.

Graesser, A. C., Langston, M. C., & Lang, K. L., (1992). Designing educational software around questioning. Journal of Artificial Intelligence in Education, 3, 235-241.

Kreuz, R. J., & Graesser, A. C. (in press). The assumptions behind questions in letters to advice columnists. Text.

Long, D. L., Golding, J., & Graesser, A. C. (in press). The generation of goal related inferences during narrative comprehension. Journal of Memory and Language.

Magliano, J. P., Baggett, W. B., Johnson, B. K., & Graesser, A. C. (in press). The time course of generating causal antecedent and causal consequence inferences. Discourse Processes.

Magliano, J. P., Little, L. D., & Graesser, A. C. (in press). The impact of comprehension instruction on the calibration of comprehension. Journal of Reading and Instruction.

Books or book chapters:

Graesser, A. C., Byrne, P. J., & Behrens, M. L. (1992). Answering questions about information in structured databases. In T. Lauer, E. Peacock, & A. Graesser (Eds.), Questions and information systems. Hillsdale, NJ: Erlbaum.

Graesser, A. C., Langston, M., & Baggett, W. B. (in press). Exploring information about concepts by asking questions. In G. V. Nakamura & R. M. Taraban (Eds.), Acquisition, representation, and processing of categories and concepts: The contribution of exemplars and theories. San Diego, CA: Academic Press.

Graesser, A. C., Magliano, J., & Tidwell, P. (1992). World knowledge, inferences, and questions. In R. Beach, J. Green, M. Kamil, & T. Shanahan (Eds.), Multidisciplinary perspectives on literacy research. Champagne, IL: National Conference for Research on English.

Graesser, A. C., McMahen, C. L., & Johnson, B. K. (in press). Question asking and answering. In M. A. Gernsbacher (Ed), Handbook of Psycholinguistics. San Diego, CA: Academic Press.

`Graesser, A. C., Person, N. K. , & Huber, J. D. (in press). Question asking during tutoring and in the design of educational software. In. M. Rabinowitz (Ed.), <u>Cognitive science foundations of instruction</u>. Hillsdale, NJ: Erlbaum.

Graesser, A. C., Person, N. K., & Huber, J. D. (1992). Mechanisms that generate questions. In T. Lauer, E. Peacock, & A. Graesser (Eds.), <u>Questions and information systems</u>. Hillsdale, NJ: Erlbaum.

Graesser, A.C., & Magliano, J.P. (1991). Cognition and context. In R. Cohen and A.W. Siegel (Eds.), <u>Context and development</u>. Hillsdale, NJ: Erlbaum.

Lang, K. L., Graesser, A. C., Dumais, S. T., & Kilman, D. (1992). Question asking in human-computer interfaces. In. T. Lauer, E. Peacock, & A. C. Graesser (Eds.), <u>Question and information systems</u>. Hillsdale, NJ: Erlbaum.

Langston, M. C., & Graesser, A. C. (1992). Question asking during learning with a point and query interface. <u>Proceeding of the 14th Annual Cognitive Science Society</u>, (pp. 921-926). Hillsdale, NJ: Erlbaum.

Langston, M. C., & Graesser, A. C. (in press). Students' questioning patterns as a function of time and goals. <u>Proceedings of the Sixth National Conference on Undergraduate Research</u>. Asheville, NC: University of North Carolina Press.

Lauer, T., & Graesser, A. C. (1992). Introduction. In T. Lauer, E. Peacock, & A. Graesser (Eds.), <u>Questions and information systems</u>. Hillsdale, NJ: Erlbaum.

Lauer, T., Peacock, E., & Graesser, A. C. (1992). (Eds.) <u>Questions and information systems</u>. Hillsdale, NJ: Erlbaum.

Technical Report:

Graesser, A. C. (1992). Questioning mechanisms during complex learning. Final report for grant from the Office of Naval Research (Contract number N00014-90-J-1492), Memphis State University, Memphis, TN.

Presentations

Bertus, E. L., Graesser, A., C. (1992, June). <u>The structure of discourse, world knowledge and understanding</u>. Paper presented at the Society for Text and Discourse, San Diego, CA.

Graesser, A. C. (1992, April,). Learning in dynamic environments: Issues in text and graphic design. (Roundtables with the experts). Paper presented at the American Education Research Association Annual Meeting, San Francisco, CA. (Invited)

Graesser, A. C. (1992, April). Exploring knowledge with a point and query interface. Symposium paper presented at the American Education Research Association Annual Meeting, San Francisco, CA. (Invited)

Graesser, A. C. (1992, September). Commentary on intelligent tutoring systems projects for Wissen-psychologie, Gustav Stresemann Institute, Bonn, Germany. (Invited)

Graesser, A. C. (1992, September). <u>Question processes during tutoring</u>. Colloquium presented at Southern Illinois University, Springfield, IL. (Invited)

'Graesser, A. C., & Langston, M. (1991, October). The process of exploring information about woodwind instruments. Paper presented at the Conference on Categorization and Category Learning by Humans and Machines, Texas Tech University, Lubbock, TX. (Invited)

Graesser, A. C., Huber, J. D., & Person, N. K. (1991, November). Question asking in tutoring sessions. Paper presented at the Psychonomic Society Conference, San Francisco, CA.

Graesser, A. C., Kreuz, R., & Person, N. K. (1992, June). The assumptions behind questions in discourse. Paper presented at the Society for Text and Discourse, San Diego, CA.

Graesser, A.C. (1992, February). Questioning processes during tutoring. Paper presented at the University of Trier, Germany. (Invited)

Graesser, A.C., Johnson, B.K., & Baggett, W.B. (1992, July). A three-pronged method for investigating inference generation. Symposium paper presented at the International Congress of Psychology, Brussels, Belgium.

Langston, M. C., & Graesser, A. C. (1992, July). Question asking during learning with a Point and Query interface. Paper presented at the Fourteenth Annual Conference of the Cognitive Science Society, University of Indiana, Bloomington, Indiana.

Langston, M. C., & Graesser, A. C. (1992, March). Students' questioning patterns as a function of time and goals. Paper presented at the Sixth National Conference on Undergraduate Research, University of Minnesota, Minneapolis, MN.

Person, N. K., & Graesser, A. C. (1992, June). Question asking in tutoring sessions. Paper presented at the American Psychological Society, San Diego, CA.

Trainee Date Chart	Total	Female	Minority	Non US Citizens
Number of Graduate Students	6	3	0	0
Number of Postdocs	0			
Number of Undergraduates	4	3	0	0

AWARDS/HONORS to PI or Members of PI Research Group

Graesser, A. C. Distinguished Research Award for 1991-92, Memphis State University.

Langston, M.C. Second place, University Research Forum, Sciences Division (November, 1991)

/

A-1