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ABSTRACT

This federally-funded project developed computer-based simulations in the area of job-related social skills for youth, ages 16-21, who are handicapped and are in transition between school and work (i.e., high school juniors and seniors). This population included students with learning disabilities, mild retardation, and emotional disturbances. The job-related social skills curriculum which was developed, the SUCCESS program, focuses on two major skill areas: accepting criticism and asking for help. The program materials include three computer-based introductory lessons, 24 simulation lessons, lesson guides, worksheets to be used with the computer lessons, and role play materials. Development of the curriculum involved: analysis of critical employment situations and their social skills components, design and development of computer-based simulations to teach the social competencies, implementation and evaluation of simulation materials in school and work settings, and dissemination of results and products. A chronological description of project activities during 1985-1988 is presented. Information is also provided on products developed, evaluation procedures and data, and recommendations regarding curriculum implementation. (SW)

Contract No. 300-85-0157

USING SIMULATION TECHNOLOGY TO PROMOTE SOCIAL COMPETENCE OF HANDICAPPED STUDENTS

Brief Final Report (Deliverable #4)

- Submitted to -

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Office of Special Education Programs
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I. INTRODUCTION

The University of Denver (DU) was awarded a 42-month contract from the U.S. Department of Education's Office of Special Education Program (OSEP) to develop computer-based simulations in the area of job-related social skills for learning handicapped youth, aged 16 to 21, who are in the transition between school and work. The official start date for this project was September 30, 1985, and the project was to be completed by March 29, 1989. For a variety of organizational, administrative, and fiscal reasons, however, the decision was made to close out the contract on March 31, 1988. The purpose of this report is to provide (a) a historical account of all project activities from the beginning of the project up to the final activities; (b) a description of all products developed under the contract; (c) a discussion of evaluation data collected to date, along with a description of relevant evaluation procedures; and (d) recommendations regarding future implementations of the completed job-related social skills curriculum (SUCCESS program) and additional research and evaluation activities.

Rationale and Objectives of the Project

The U.S. Department of Education estimates that more than 300,000 handicapped youth leave school annually. Of those that are in high school programs, it is further estimated that less than one-third receive instruction or training related to employment. In those existing programs for handicapped youth, most of the instructional time is concentrated on improving academic and vocational competencies, with less attention being paid to improving social competence related to gaining and retaining stable employment. Yet, research shows that frequently it is social competency that largely determines whether or

not handicapped persons are successful in seeking and retaining employment. Thus, the purpose of this project was to study the effectiveness of computer-based simulations as an approach to helping handicapped youth acquire, transfer, and generalize specific job-related social competencies.

The project was initially planned to proceed through four stages: an analysis of critical employment situations and their social skills components, the design and development of computer-based simulations to teach the identified social competencies, the implementation and evaluation of simulation materials in school and work settings, and the dissemination and marketing of project results and products. These four stages roughly corresponded to the 4 years of the project. Due to marketing lead-time requirements of the publisher selected to manufacture and distribute the finished products, the dissemination and marketing activities, originally planned for the last year of the project, were moved up to year 2 and the evaluation activities were correspondingly moved to years 3 and 4.

Population to be Studied

The general population to be studied in this project was learning handicapped youth in the age range of 16 to 21 years. In particular, three subgroups within this population have been identified: the learning disabled (LD), the mildly retarded (MR), and the emotionally disturbed (ED). The population meeting these critera were to be found among secondary school students in the transition between school and work (e.g., juniors and seniors in high school).

II. HISTORICAL ACCOUNT OF PROJECT ACTIVITIES

Key Project Activities and Events

The following is a chronological description of key project activities and events, beginning with initial project activities in October of 1985, and ending with termination of the contract on March 31, 1988.

A project kick-off meeting was held on October 2, 1985, during which key University of Denver/Denver Research Institute (DU/DRI) staff met to discuss schedule and activities for the first 3 months of the project. A staff meeting schedule was set up on a weekly basis, with meetings to be held each Wednesday. Contact was made with the Project Officer, Dr. Jane Hauser, and arrangements were made for a teleconference to go over project goals and reviewer comments. The teleconference was held on October 16 with all DU/DRI project staff in attendance.

Per the request of the Project Officer, contacts were made with Louise Appell and Hellen Pollack of Macro Systems, Inc. to closely coordinate our respective efforts on this project. Project member, Dr. Joe Lamos, met with Louise Appell at the Closing the Gap conference on October 31. At that time proposals were exchanged and our respective approaches were discussed. It was agreed to maintain close contact throughout the project and to coordinate our efforts as much as possible. Differences in our approaches were discussed as well as potential ways to maximize the complementarity of our efforts. Contacts were also made with Patti Zembrosky-Barkin and Philip Browning at the University of Oregon who were involved with a related OSEP project (Project LIVE).

Project Consultant, Dr. Steve Hazel from the University of Kansas Institute for Research on Learning Disabilities (KU-IRLD), visited DU/DRI on October 29. During this visit, technical assistance was received on existing social skills curricula to be included in our review, simulation design considerations, effective dissemination strategies, and strategies for working effectively with Review Board members.

Over 100 publishers and professional organizations that were identified as active in the area of education of special populations of relevance and/or social skills training curricula were contacted to supply us with their latest developments in these areas. Reviews of existing job-related social skills curricula were begun, along with analyses of critical employment-related social interactions and potential simulation approaches.

During November of 1985 contacts were made with the three field sites (Adams County District 50, Jefferson County Secondary Schools, and Front Range Community College). Briefings were given on the project's goals, tasks, and support areas requested in terms of field site involvement during the project. Further points of contact were established at each site to provide infomation on exact nature of computer and video equipment that would be available for the computer-based simulations, as well as teachers and employers we can work with initially to provide further information on job-related social skill deficiencies in the three learning handicapped populations of interest (LD, ED, MR) and to identify students we could interview to gain a deeper understanding of their perceived job-related social skills problem areas. Also in November of 1985 student, teacher, and employer interview forms were designed to be used in the collection of information on job-related social skills deficiences and critical social situations in employment settings.

Project consultant, Dr. Steve Hazel from KU-IRLD, visited DU/DRI on November 18-19. During his visit, additional information on existing social skills curricula was exchanged and skill training components identified. In addition, DU consultant, Dr. Susan Harter, met with the project team and Dr. Hazel to further refine the theoretical framework on which the computer-based simulations will be based.

In December of 1985 interviews were scheduled and conducted with students, teachers, and employers associated with three of our selected field sites (Front Range Community College, Adams County District 50, Clayton Foundation). Information was collected regarding job-related social situations which are problematic for the student populations of interest (learning disabled, mildly retarded, emotionally disturbed), as well as social skill deficiencies related to these problem situations. This information was compiled as part of our analysis of critical employment-related social situations to be selected for computer-based simulation development. In addition, work continued on the review of existing social skills curricula and video materials and on the review of relevant literature on social skills training interventions and simulation technologies. Potential approaches to the training and simulation technology applications were documented as part of the analyses of feasible approaches. Also at this time a detailed application for conducting research at the fourth field site, Jefferson County Public Schools, was completed and submitted for District approval.

In January 1986 approval was received for field site testing within the Jefferson County Public School District. Further interviews with employers of mildly handicapped youth at three of the selected field sites were conducted to identify types of critical employment-related social situations that present

difficulties for the target population. These data were summarized to provide a basis for the design of an employer survey instrument that could be used to collect validation data for situations identified. Plans were established for conducting this survey in February with regional and nonregional employers of both handicapped and nonhandicapped youth in the transition from school to work.

The first meeting of the project's Review Board was held on January 14 with all selected Board members in attendance, along with project staff and project consultant Dr. Stevel Hazel of KU-IRLD. At this meeting the review board was updated on project status and agreement was reached on the preliminary categories of social skills/situations that are candidates for simulation development. These categories are: asking for help, giving help, accepting positive and negative feedback, giving positive and negative feedback, and expressing opposing points of view. Discussions with Review Board members were also conducted concerning technology and simulation delivery strategies. Review board members generally agreed that the technology chosen should be one that is most likely to be available within the next 3 years, as well as one that can make maximum use of simulation capabilities. The possibility of using animation versus live modeling was also discussed and it was agreed that animation offers some distinct advantages for the target population due to the ability to break skill components and situational cues down into easily discriminated and taught units. During the Review Board meeting, the opportunity was provided for individuals to indicate the task area (social skills, simulation technology, evaluation, dissemination) in which they would most like to be associated for the purpose of subsequent small working group meetings.

Meetings were held with administrators and special education teachers from the three participating Jefferson County high schools on February 20. At

that time they received a briefing on the project, progress to date, and preliminary design directions for the simulation materials. Individual contact persons at each of the schools were designated and follow-up interviews were conducted with students and teachers at each school. In addition, information on available technology for possible delivery of the simulation materials was collected.

During February 1986 an employer survey form was designed for the collection of validation information concerning the classes of job-related social skills and employment situations identified as target areas for the simulations. The survey forms were sent to 19 employers of both handicapped and nonhandicapped youth in order to analyze the comparability of social skills problems for youth in general versus the three handicapped populations of interest in this project (see Design Format Report (Task 3), submitted to the OSEP on March 24, 1986).

A major portion of the general design for the five levels of simulation materials to be developed was completed during this time period. The details of the three computer-based levels were laid out in terms of the specific skill components to be addressed, the instructional strategies to be incorporated, and job situations to be addressed. A cast of characters to be used in the simulations was defined, along with the simulation approach and focus for each level. The Level 4 role-playing design and Level 5 on-the-job support training were also defined in terms of general content and strategies.

Interviews with the Jefferson County field sites (teachers, students, and employers) were completed in early March of 1986. Discussions were also held at these sites with administrators to determine simulation technology alternatives

and their projections on the types of technology the schools would have available during the period of materials tryout and evaluation.

The design report was completed on March 24 and sent to the OSEP for review. The report described the theoretical basis for the design of the simulation materials, the results of field site interviews and employer surveys, instructional design issues and the general design for the five levels of the simulation materials, hardware and software design considerations and recommendations, and evaluation issues to be addressed in the formative and summative evaluations.

Drs. McCombs and Lamos of DRI met with Dr. Johnson and Hauser at the OSEP on April 24, 1986. Meeting topics included a review of the general design for the simulation materials and a discussion of the recommended microcomputer technology for delivery of the simulation materials. With respect to the recommended choice of microcomputer technology (i.e., Apple's Macintosh or IBM), the OSEP indicated, based on recent national surveys of the technology based in the schools, that the Apple IIe computer was predominant and thus would have to be the technology of choice. It was agreed that in order not to compromise the agreed upon design, we could assume an Apple IIe computer with 128K of memory and two disk drives. It was also agreed that some add-ons to this basic system would be acceptable (e.g., to provide the necessary audio interface capabilities). In addition, because some modifications to the design might be required, that immediate testing out of various possibilities would begin to determine the extent of design revisions that might be necessary.

On April 28, meetings were held with project consultants Drs. Steve Hazel and Susan Harter to review the OSEP meeting recommendations, discuss

hardware and software options to be tested, and plan the development of various types of evaluation measures (i.e., self-worth, job-related confidence and competence). The second meeting of the project's Review Board was held in Denver at the University of Denver on April 29. The general purpose of the meeting was to discuss their comments and suggestions regarding the general design of the simulation materials, which members had reviewed prior to the meeting. There was also some discussion at the meeting of hardware and software issues and the expression of some concern that the product developed for Apple technology may not meet the needs of secondary level special education 3 years from now, as members believed more advanced technology was likely to be available. Members were also generally of the opinion that special education programs were more likely to purchase a stand-alone package such as the Macintosh rather than purchase the add-ons for Apple II computers that they did not have dedicated access to at the secondary level.

During May of 1986 detailed design specifications were completed for the two simulation strands (Accepting Criticism, Asking for Help) that are being developed under this contract. The detailed specifications included scenarios, diagnostic questions, discussions, and remediation sequences for the three on-line simulation levels; role playing cue cards and performance checklists for Level 4; off-line support materials for employers, students, and teachers for Level 5; and off-line support materials for teachers for the first four simulation levels. Following telephone conversations with the contract monitor, it was decided that a representative sample of the detailed design for each level and simulation strand would be included in the Development Specifications Report to be submitted in early June. In addition, the report included the results of our

evaluation of several hardware and software options for executing the design on the Apple II family of computers.

The Development Specifications Report detailing the design of representative samples of materials for each of the five levels of the social skills simulation program was completed and submitted to the contract monitor on June 9, 1986. During the month of June, the Formative Evaluation Plan report was also completed and submitted to the contract monitor on June 30.

During this time, work also continued on evaluating various software development packages to support the design, including various digitized speech programs and graphics packages. It was determined during this process that available digitized speech packages for the Apple II family of computers did not meet the specifications of the materials design. Consequently, the decision was made that a more desirable approach was to develop an interface for the Apple II that will provide a computer-controlled audio capability. A relatively inexpensive cassette deck (cost around $150) produced by Akai was located which would allow random access to audio tape sequences, thus supporting the degree of interactivity required. Through the interface to be developed by DRI, the computer will be able to search forward or backward to find and play selected segments of the tape. The interface will also tell the computer when the tape sequence is finished, and each segment of the tape would be indexed so that the computer would know which segment to locate and play.

Via an ongoing publisher communication process, we identified three publishers of vocational materials for handicapped learners who were interested in working with us during our development process, with the long-term aim of potentially marketing the products developed as a single package. These

publishers were Harvest Educational Labs, DLM Teaching Resources, Hartley Publications, and Educational Activities Inc. Each of these publishers expressed a great deal of interest in the concept, the basic design, and the technology decisions made thus far. Each offered to provide technical advice and feedback on our evolving design, and expressed interest in reviewing our finished product for possible addition to their product lines.

All storyboards for initial formative evaluation tryouts with field site teachers and students were completed in July of 1986. In addition, plans were made to begin audio production on a small sample of scripts in September in order to finalize production procedures as well as produce a demonstration program that can be shown to the set of publishers who have expressed interest in the product. During this time period work had also progressed on the development of random access audio interface capabilities and it was expected that a prototype would be completed and tested by the middle of September. Work had also progressed on the detailing of all off-line support materials for students and teachers.

During August of 1986 work continued on the development of detailed storyboards for the first set of simulation materials to be evaluated in the initial formative evaluations at our selected field sites during the Fall and Winter of 1986. A professional artist was added to the staff for the purpose of taking initial rough drawings of all graphics and converting these to final artwork that would become the computer graphics. The audio production specialist had located professional narrators for the audio portions of the materials, and the first taping session was scheduled for the week of September 15.

Mr. Al Harris of Educational Activities, Inc., visited the project staff in Denver on August 29, at which time he was briefed on the product being

developed, the rationale for the approach chosen, and was shown a demonstration of samples of the simulation materials and the computer-controlled audio capability. He indicated that he was extremely interested in the product. We also continued to pursue our contacts at Harvest Educational Labs, DLM Teaching Resources, and Hartley Publications. A demonstration program was being put together for these publishers. In addition, during this time period work continued on the development of the computer-controlled random access audio interface. A prototype had been completed, and testing of the device was in progress.

The project's Review Board met with project staff on September 9. The main purpose of this meeting was to go over their comments on scripts they had been sent to review. Project consultant, Dr. Steve Hazel, also attended this meeting and stayed through September 10 to work further on other project activities. Review board members had several helpful comments on the scripts and basicially felt they were appropriate to the populations of interest, were presented at the right difficulty and reading levels, and taught needed skills. Some time at this meeting was devoted to discussing the potential marketability of the materials, with agreement reached that the final product should be helpful not only to the populations for which it is specifically intended in this project, but also to a wide range of young adults and adolescents.

By October of 1986 taping of the first six prototype scripts had been completed and work was in progress on completing the development of the computer-based lessons that interfaced with these tapes. Additional interfaces were being built to support the tryouts of these lessons with students in the participating field sites. A tryout schedule for the six prototype lessons was established with the participating Adams County and Jefferson County high

schools. Work continued on the development of off-line student and teacher materials, as well as on the development of competence measures to be used later in the formative evaluation.

The development of the computer-based portion of the first prototype lesson was completed the week of November 24. This development was somewhat slower than anticipated due to a number of extra programming requirements (e.g., memory limitations, timing of graphic/audio segments). New software routines were systematized, however, which would aid in the subsequent development of the remaining prototype lessons.

The project's Review Board met on December 2, at which time they were presented with a demonstration of a completed prototype lesson. Comments on this lesson were solicited, along with implementation suggestions. In general, the Board was extremely positive about the lesson and had no negative comments or suggested revisions. It was suggested that the lesson might be implemented such that groups of students could actively participate via programmed breaks combined with off-line exercises at logical points in the lesson. The Board also made a number of suggestions regarding the form and content of off-line teacher materials that could accompany the completed social skills curriculum.

By December 1986 three of the six prototype lessons for the com uter-based portion of the job-related social skills program had been developed. The first of these was subjected to a tryout with students at the selected field sites during the first week in December. Students in the three handicapping conditions from three of the participating high schools were involved in this tryout of the first prototype Level 1 lesson. Results of this tryout generally indicated that students liked the lesson, found it interesting, and indicated that it was at the appropriate level of difficulty.

Responses had been received from a number of potential publishers. Mr. Bruce Brown with Media Materials in Baltimore set up a visit to see a demonstration of the developed prototype materials on January 15. During this meeting, he expressed considerable interest in publishing both the simulation materials and the interface device. All staff members were favorably impressed with Media Materials' marketing strategies and publication philosophies such that continued contact is being maintained.

Two additional prototype lessons for the computer-based portion of the simulation materials were subjected to student tryouts at the Adams County and Jefferson County field sites the weeks of January 19 and 26, respectively. These were Level 2 prototype lessons from the Accepting Criticism and Asking for Help strands. As with the Level 1 prototype which was subjected to tryout in December, these tryouts indicated that students liked the lessons, found them interesting, and felt the materials were generally at the right level of difficulty.

Work continued during January and February on the development of the remaining three prototype lessons and on five additional Level 1 and Level 2 lessons. A refinement was made to the audio/computer interface device such that it was now possible to use both sides of the audio tape. This refinement reduced the amount of search time for individualized branching and generally improved the efficiency of the technology.

The project's Review Board met on March 3, at which time the major agenda item was to solicit comments on the Level 2 and Level 3 prototypes. Dr. Steve Hazel from KU-IRLD also attended this meeting and worked with project staff on further delineating the off-line materials. Review Board comments on the prototype lessons were generally very positive, with a few minor suggestions.

With respect to publisher contacts, three persons affiliated with the Hartley Publications visited the project on March 6 and spent the day viewing demonstrations and discussing publishing possibilities. Following their visit, the project staff reviewed all publisher contacts made to date and determined that Media Materials represented the best match in terms of publishing philosophy and marketing strategies. A formal agreement with Media Materials was then initiated.

Additional tryouts were held the week of March 9 on the Level 3 prototype at the Jefferson County field sites. A revision to Level 2 based on prior tryout data was completed and tryouts of this revised version were scheduled for the latter part of March. Production of remaining Level 1 and Level 3 lessons was also in progress.

Also during March of 1987, meetings were held with Dr. Susan Harter to reach final agreements on the types of competence measures to be used in the final evaluation of the simulation materials. The format and structure of these measures were finalized and the types of items that still needed to be written were defined. Dr. Harter's available measures were being used, along with some additional measures that could more directly assess increases in students' perceptions of social competence.

During April 1987 work continued on the development of both on-and off-line materials for the job-related social skills simulation program. Storyboards and scripts were completed for 23 of the 28 on-line lessons, and coding was in progress on these lessons. Work also continued on further refining the off-line materials for teachers and students. In particular, the Level 4 role

playing materials, their formats, and teacher support information were refined. These materials were then sent to Media Materials for review and input.

The University's contracts personnel were engaged in finalizing contractual agreements with Media Materials for the simulation project products. Additional tryouts of several on-line lessons with mixed ethnic characters were planned to ensure that the content was appropriate. High school students from the Clayton Foundation field site were used for these tryouts. Student reactions indicated that the content was appropriate and only minor revisions were suggested.

The initial version of all competency measures to be used in the final evaluation of the simulation program were completed during April as well. The measures were: global self-worth, domain-specific competence, job-specific competence in the accepting criticism and asking for help areas, domain-specific important measures, and domain-specific anxiety measures.

By May of 1987 considerable progress had been made in finalizing agreements with Media Materials. They had set up a production and publishing schedule for the materials, such that approximately half of the total program could be offered in their fall 1987 catalog.

Key project personnel, Drs. McCombs and Lamos and Ms. Brannan, attended the Council for Exceptional Children Invitational Research Symposium on Special Education Technology in Washington, D.C. on May 31-June 2. During the symposium, a presentation on the project was given with Macro Systems, and a demonstration of the simulation program was provided. Those attending the demonstration expressed considerable interest in the materials and technology.

The project's Review Board met on June 23, during which time members had an opportunity to further review newly completed on-line lessons as well as drafts of off-line materials that have been prepared for the teacher guide and student notebook. Comments were solicited on the "readiness" of these products for commercial publication later this fall. The Review Board also participated in discussions about the format and content of Level 5 materials. Project consultant, Dr. Steve Hazel from KU-IRLD, participated in this meeting and spent another day with project staff going over issues related to our pending contractual agreements with the selected publisher, Media Materials.

With respect to progress with the finalization of publisher agreements, Mr. Bruce Brown, President of Media Materials, visited the project on July 9 to discuss a variety of issues related to the agreements and to materials packaging. Final agreements were reached and documents were prepared for signature. It was agreed that the simulation program would be announced in their fall catalog, with materials to be available in November of 1987 (Phase I) and March of 1988 (Phase II). The phased schedule was planned to allow input from field tryouts conducted by project staff and from site demonstration projects to be coordinated by Media Materials.

It was at this time that the OSEP was asked to approve a budget modification to redistribute remaining project monies among budget line items. Unanticipated development costs associated with the requirement to use Apple II computers, the lack of adequate existing audio techniques for this family of computers, and reductions in original costs for outside consulting services necessitated this budget reallocation. It was anticipated at that time that the reallocation of remaining funds to staff salaries for development activities would be sufficient to allow completion of all project activities.

Final drafts of all off-line materials were completed and sent to Media Materials for review in August. Comments from the publisher on these drafts were received, indicating that these drafts were very favorably received. On that basis, the publisher proceeded with developing versions for publication. Work continued on completing the on-line lessons that are part of the Phase I product that was to be delivered to the publisher by the end of September. In addition, modifications to the audio interface were made to enable it to operate with a different cassette deck which the publisher has selected in place of the original Akai deck which was no longer being manufactured. The publisher was planning to demonstrate the simulation program (hardware and software components) at the Closing the Gap conference being held in Minneapolis beginning on October 20. By this time the Teacher's Manual had been completed and a draft was being prepared for publisher review and comment.

In September of 1987 the Phase I pilot lessons were completed and delivered Media Materials, along with a finished copy of all off-line materials that accompanied these seven lessons. Work was continuing on the remaining Phase I lessons, six of which were delivered to Media Materials on October 30 and two of which were delivered by November 15. Final agreements had by now been obtained for both the hardware and software portions of the simulation program. These agreements were signed by appropriate representatives of the University of Denver, Media Materials, and in the case of the software, U.S. Department of Education. Work was also in progress on modifying the formative evaluation plan to reflect a field test of the Phase I materials in the second semester of this year's academic year. The plan also specified a summative evaluation of the entire simulation program in the fall semester of 1988.

In December 1987 remaining Phase I lessons for the SUCCESS curriculum were completed and delivered to Media Materials. Work continued on the development of Phase II lessons, which were in various stages of programming, scripting, and storyboarding. During this time, plans were coordinated with the Jefferson County field site in Golden for a formative evaluation of Phase I materials beginning in late January 1988 and continuing through May 1988. It was at this time that a request for additional money to complete the project was submitted to the OSEP. Problems experienced with unanticipated changes in programming staff which led to increased numbers of programming hours was a primary factor in the need for additional funds. Furthermore, the imminent closing of the Social Systems Division of DRI had decreased normal administration support available to project staff. It was estimated that by the end of January 1988, there would be nothing left of the original budget allocation for the project.

Work continued on the Phase II lessons in January 1988, with a projected completion date of March 1988. Work was also proceeding on the off-line materials to accompany these lessons. In addition, plans were finalized for the field test of Phase I materials with Golden High School students in February. This evaluation was begun on February 3, 1988 with the training of four teachers and three administrators. These individuals participated in a half-day training session in which they were introduced to the background and philosophy of the curriculum, received a demonstration and practice with the on-line and off-line Phase I materials, and were briefed on the purpose and procedures of the evaluation.

As of the end of March, 12 learning disabled, nine mildly retarded, and nine emotionally disturbed students were participating in combinations of

individual and group administrations of the Phase I materials. Specifically, seven of the learning disabled students participated in the group mode and five participated in an individualized mode; all nine mildly retarded students participated in an individualized mode; and the nine emotionally disturbed students participated in a group mode. Students in the group mode had completed nine of the 15 on-line lessons (i.e., the three introductory lessons, two Level 1 lessons each in Accepting Criticism and Asking for Help, and two Level 2 lessons in Accepting Criticism). Students participating in the individual mode had completed fewer of these lessons, with the mildly retarded students completing the fewest number of lessons.

During the December 1987 through March 1988 time span, University of Denver personnel were engaged in a series of information-gathering and negotiation sessions with Department of Education staff concerning the financial condition of this project. It was finally decided to terminate the project as of March 31, 1988. The project staff agreed to complete and deliver all on-line and off-line curriculum materials to the publisher and to the OSEP by that time, and the OSEP agreed to cover a cost overrun incurred up until that time. All curriculum materials were completed and delivered as agreed. This final report constitutes the final deliverable under this project.

III. DESCRIPTION OF PRODUCTS DEVELOPED

Out of our review of the literature, available social skills training products, interview and observation data, Review Board input and technology alternatives grew the design concept for the SUCCESS program. This program provides a unique blend of computer-based and print materials that lead the student through five progressive stages or levels of skill development, each of which helps prepare the student for behaving appropriately in social interaction situations with supervisors and co-workers. Both the computer-based and print materials are evenly divided between two major skill areas--Accepting Criticism and Asking for Help. The combination of on- and off-line materials in the SUCCESS program comprises a complete curriculum, designed to be presented in a 12 to 15 week school semester.

The computer-based simulations that comprise the first three levels of skill development combine the realism of audiotaped voices with the animated characterizations of supervisors, workers, and co-workers interacting in job-related social situations. The combination of audio and graphic components in the simulations makes them particularly suited for students with reading difficulties. The fourth level of skill development involves structured role-playing activities that give students the opportunity to apply newly acquired skills in realistic job situations, while also learning perspective-taking by taking on the roles of supervisors and co-workers. Skill development in the fifth level consists of opportunities for students to apply their skills in the actual job context, return to the classroom setting, and learn further techniques for forming support systems with their fellow workers and supervisors.

The computer-based portion of the SUCCESS Program consists of three introductory lessons and 24 "simulation" lessons. These lessons have been designed in a sequence that begins with an introduction to basic social skills and then provides decision-making practice for the student in increasingly complex simulated job-related social situations. As students proceed through the lesson sequence, they move from the role of an observer to that of a participant in the simulated social situations.

In addition to the computer-based lessons, the SUCCESS Program incorporates a variety of print materials, including tip sheets, lesson guides, and worksheets, to be used in conjunction with the computer-based lessons. They also include role-playing materials which form the fourth level of skill development within the program. The print materials have also been developed with the problem reader in mind.

The following sections describe the on-line and off-line components of the SUCCESS Program in detail.

On-line (Computer-Based) Products

Introductory Lesson Materials

The introductory lessons of the SUCCESS program are intended to introduce students to what good job-related social skills are and why they are important. Job-related social skill components are discussed within the context of asking for help and accepting criticism, and the **NOTICE, THINK, SAY,** and **DO** problem-solving model for job-related social behavior is introduced and explained. As the students proceed through the three introductory lessons, they are exposed to the basic skill components associated with successful job-related social

behavior, and are provided frequent opportunities to practice what they've learned by responding to questions. Introductory Lesson #1 teaches the skill components of **NOTICE** and **THINK**; Introductory Lesson #2 teaches the **SAY** skill components; and Introductory Lesson #3 teaches the **DO** skill components. The following is a description of each of the three introductory lessons.

Title: Introductory Lesson #1: The **NOTICE** and **THINK** Skills

Social Skill Components: NOTICE and **THINK**

Instructional Strategy. Tutorial presentation. John, the narrator and "mentor" character who is used throughout SUCCESS is introduced. He begins by talking about what good job-related social skills are and why they are important. He then introduces the **NOTICE, THINK, SAY** and **DO** model and how it relates to accepting criticism and asking for help situations. The focus then shifts to a detailed treatment of the **NOTICE** and **THINK** skills.

After the description and explanation of each skill component, the student is presented with a series of positive and negative examples of the skill component being applied in a social situation. These examples are followed by questions which allow the student to assess his or her own understanding of each skill component. Informative feedback is provided for both correct and incorrect answers to the questions.

Instructional Content. For the **NOTICE** component, a student is instructed to notice certain things about others, including facial expression, what they are doing, tone of voice, and body language. The student is also told to notice his or her own feelings, thoughts, tone of voice, and body langauge. For the **THINK** component, the student is told to think about what they noticed in

others, what they have noticed about themselves, their goals, how the situation can be handled, and the consequences of different courses of action.

Title: Introductory Lesson #2: The SAY Skills

Social Skill Component: SAY

Instructional Strategy. The instructional strategy for this lesson is basically the same as for Introductory Lesson #1. However, special emphasis is given to helping the student to discriminate between good talking and listening behaviors and those which are inappropriate. This is accomplished by an extensive series of short simulated job-related social interactions between a supervisor character and a worker character. Each example is followed by a question. Informative feedback is provided for both correct and incorrect student answers.

Instructional Content. This lesson explains the SAY skill component. The student is told that the SAY skills encompass good listening and good talking skills. Good listening skills involve paying attention, repeating back what you have heard, and asking questions to get more information. The student is also told that good talking skills involve avoidance of the "you" message that implies blame or criticism, use of the "I" message to convey acceptance of responsibility, speaking assertively to let others know what you want, and talking politely to show respect for the other person.

Title: Introductory Lesson #3: The DO Skills

Social Skill Component: DO

Instructional Strategy. This is a tutorial lesson. The instructional strategy for this lesson is the same as for Introductory Lessons #1 and #2. This lesson focuses on how the student should appear and sound when engaging in a job-

related social interaction. The animated graphics of characters allow the student to identify appropriate facial expressions and body language while the audio component of the lesson allows the student to discriminate between the appropriate and inappropriate use of speaking skills.

Instructional Content. The student is told that the DO skills include (1) maintaining a positive facial expression, (2) using a positive tone of voice, (3) using positive body language, and (4) doing what you said you would do. Maintaining a positive facial expression involves such things as making eye contact with the other person, having a calm or serious facial expression, smiling, etc. Using your voice positively involves not talking too loudly, speaking clearly, and speaking calmly. Using positive body language involves standing or sitting straight, using positive gestures, and not acting nervous. The student is told that doing what you said you would do is important to show that you really care about performing your job well.

The Level 1 Lessons

General Description. Level 1 lessons in the SUCCESS program have been designed to help students begin to acquire the basic skills necessary for appropriate job-related social behavior in a nonthreatening setting. Through the Level 1 lessons the students are exposed to a variety of social problem-solving situations and are given the opportunity to make choices about how the worker in the situation should behave.

Instructional Strategy. Each of the Level 1 computer lessons begins with the narrator describing a job-related situation, including the setting, characters, and a problem that must be resolved in some way. The students watch the worker and co-worker or supervisor act out the situation to a critical point at which the

worker must decide how to proceed. At that point the student is asked to choose from two possible courses of action for the worker in the situation. If the student makes the correct choice, a positive resolution of the social situation is played out by the characters in the lesson. If the student's choice is inappropriate, a negative resolution of the situation is shown. In the case where the student makes the correct choice, he/she is also shown the consequences of the incorrect choice. Likewise, when the incorrect choice is made, first the negative and then the positive situation outcomes are shown. This is followed by instruction that focuses on the positive outcome and the behaviors that contributed to it. The narrator's explanation of what happened in the situation is structured around the the **NOTICE, THINK, SAY** and **DO** model. The student is told what the main character noticed, thought, said, and did that resulted in a positive outcome. He/she is also told what the worker did incorrectly that resulted in the negative outcome. After the situation outcomes are presented and discussed, the student is given eight questions about what happened in the lesson. Correct and incorrect student responses to the questions are followed by informative feedback.

Instructional Content. The specific instructional content varies from one lesson to the next. The lesson guide that accompanies each lesson provides specific information about basic skill components and specific skills addressed in each lesson. An important feature of the Level 1 lessons is that they provide the student with a clear contrast between appropriate and inappppropriate skill use for solving the problem posed in each lesson. The Level 1 lessons also provide the student with the ability to closely examine the consequences of applying each of the general **NOTICE, THINK, SAY** and **DO** skills.

Level 1 Lesson Materials. Following is a list of the Level 1 lessons. The lesson guides that accompany each Level 1 lesson provide more detailed

information about the lessons, including a detailed synopsis of the lesson, information about lesson running time, skill components addressed, additional group and individual activities, and suggested answers for the student lesson worksheet.

Level 1 - Accepting Criticism Lessons

Title: Slow Sam

Setting: Fast food restaurant

Situation: Sam has been criticized for working too slowly.

Characters: Sam and his supervisor

Title: Sam and the Sandwich

Setting: Fast food restaurant

Situation: Sam serves his own customer a sandwich that had been prepared for his co-worker's customer.

Characters: Sam and his co-worker

Title: Chatty Sara

Setting: A donut shop

Situation: Sara's co-worker has criticized her for talking too much.

Characters: Sara and her co-worker

Title: Sara is Late Again

Setting: A donut shop

Situation: Sara is late for work for the third time. She's got to control her own negative emotions so she can deal with her supervisor's criticism in a positive way.

Characters: Sara and her supervisor

Level 1 - Asking for Help Lessons

Title: Maria Asks the Dishwasher for Help

Setting: A restaurant

Situation: The restaurant is very busy and Maria, the bus person has just run out of clean glasses to reset the tables.

Characters: Maria and her co-worker

Title: Maria Sets the Tables

Setting: A restaurant

Situation: Maria doesn't know how to set the tables for a special event

Characters: Maria and her supervisor

Title: Jackson Finds Out What To Do Next

Setting: A landscape crew

Situation: Jackson completes one task and has to find out what his supervisor wants him to to do next.

Characters: Jackson and his supervisor

Title: Jackson Learns from Matt

Setting: A landscape crew

Situation: Jackson is having a difficult time laying sod even though his co-worker has shown him how to do it.

Characters: Jackson and his co-worker

The Level 2 Lessons

General Description. The Level 2 SUCCESS lessons have been designed to expose the student to a variety of ways for a worker to respond to a problem situation on the job. The possible solutions range from very negative to very positive. The intent is for the student to gain a better appreciation of the fact that any given problem can have more than one solution, but that not all of those solutions are good ones.

Instructional Strategy. Like the Level 1 lessons, the Level 2 lessons begin with the narrator describing a job-related social situation involving a worker and a supervisor or a co-worker. At a key decision point in the interaction between the main characters, the student is presented with four possible ways the worker could resolve the situation. The student is then shown what could happen as the worker chooses each of the four options, and the narrator provides informative feedback about what happened. After each option is played out, the student is asked a question about what the worker did correctly or incorrectly in the situation. The narrator provides instructional feedback to both correct and incorrect student answers to the questions, referring to relevant parts of the NOTICE, THINK, SAY and DO Model. After all four options have been viewed, the narrator reviews the skill steps the worker used to handle the situation in the most positive way.

Instructional Content. The specific instructional content varies from one lesson to the next. The lesson guide that accompanies each lesson rovides specific information about basic skill components and specific skills addressed in each lesson. The important feature of the Level 2 lessons is that the student can explore in detail a range of correct and incorrect ways for the worker to handle a single job-related social situation.

Level 2 Lesson Materials. Following is a list of the Level 2 lessons and a brief description of their content. A more complete description of each lesson, including a detailed synopsis, information about lesson running time, skill components addressed, additional group and individual activities, and suggested answers for the student lesson worksheet is provided as part of the lesson guide that is included with each Level 2 lesson package.

Level 2 - Accepting Criticism Lessons

Title: Careless Sara

Setting: Donut shop

Situation: Sara is careless and splashes her supervisor with hot oil.

Characters: Sara and her supervisor

Title: Billy's New Supervisor

Setting: An office building

Situation: Billy has a new supervisor with different work rules.

Characters: Billy and his supervisor

Title: Sam Makes a Bad Decision

Setting: Fast food restaurant

Situation: Many of the customers have to wait a long time for their food because one of the cooks did not come to work. Sam decides to give away free french fries to keep them happy.

Characters: Sam and his co-worker

Title: Sue Wastes Time

Setting: Department store

Situation: Sue and Emily are supposed to hang up two racks of new clothing before the store opens. Sue spends most of her time putting together new outfits for herself instead of working.

Characters: Sue and her co-worker

Level 2 - Asking for Help Lessons

Title: Maria and the Oyster Forks

Setting: A restaurant

Situation: Maria's co-worker asks her to put some special forks on the table for his customers. Maria doesn't know where they are kept.

Characters: Maria, her co-worker, and her supervisor

Title: Jackson and the Mower

Setting: Landscaping crew

Situation: Jackson takes the grass catcher off the mower and doesn't know how to put it back on.

Characters: Jackson and his supervisor

Title: Amy and the Special Order

Setting: A department store

Situation: Amy is having difficulty answering a customer's question.

Characters: Amy, her customer, and her supervisor

Title: Jose Doesn't Know What To Do

Setting: Auto repair shop

Situation: Jose needs specific instructions about how to perform a task.

Characters: Jose and his co-worker

The Level 3 Lessons

General Description. The Level 3 lessons take students one step closer to actually performing in simulated job-related social situations by requiring them to assume the role of the main character in the lesson. This main character is required to respond to a complex social situation by choosing appropriate things to **NOTICE, THINK, SAY** and **DO.**

Instructional Strategy. Each lesson begins with the narrator describing the setting, the characters, and the social situation involving, once again, an interaction between either a worker and a supervisor or a co-worker. After the context of the social situation has been shown via animated graphics and the audio tape, the narrator presents the student with a list of choices for things to **NOTICE** about the situation. The student is not allowed to proceed until the correct choice is made. Each incorrect choice is followed by informative feedback about why that choice was not the best. After the student succeeds in choosing the correct thing to **NOTICE**, he/she is shown a list of choices for things to **THINK.** Again, the student is not allowed to proceed until the correct choice is made.

Immediately following the **NOTICE** and **THINK** choices, the student is presented with options about what to **SAY** in the given situation. After making a selection, the student is then presented with options for things to **DO** in the given situation. Based on the combination of the student's **SAY** and **DO** choices, a variety of outcomes will unfold for the student.

In the SAY and DO phase of the lesson it is possible for the student to SAY the right thing but DO the wrong thing, or vice versa. This has a decided impact on the outcome of the situation, and reinforces the important relationship between the SAY and DO skills. If the student makes an incorrect choice for SAY and/or DO, the narrator first shows the outcome of those incorrect choices, explains what went wrong, and then shows the outcome for the correct choices. If the student makes both an appropriate SAY and DO choice, the narrator shows the appropriate outcome, congratulates the student, and explains what went right in the situation. The narrator then continues with a review of the skills that were used to handle the situation appropriately.

Level 3 incorporates an important element of "reality training" as well. One Accepting Criticism and one Asking for Help Level 3 lesson puts the student in the position of experiencing a negative outcome, regardless of the choices made. The narrator then explains that sometimes the student won't be able to achieve a positive outcome in a social situation because of factors outside his/her control.

Instructional Content. The specific instructional content varies from one lesson to the next. The lesson guide that accompanies each lesson provides specific information about basic skill components and specific skills addressed in each lesson. An important feature of the Level 3 lessons is that they provide the student with "real-life" practice in social situations, and insight into the interrelationships among the NOTICE, THINK, SAY and DO skill components with regard to determining situation outcomes.

Level 3 Lesson Materials. Following is a list of the Level 3 lessons. The lesson guide that accompanies each lesson provides specific information about

lesson objectives, lesson running time, skill components covered, a detailed synopsis of the lesson content, additional group and individual activities, and suggested answers for the student lesson worksheet.

Level 3 - Accepting Criticism Lessons

Title: Sam Leaves Early

Setting: Fast food restaurant

Situation: Sam leaves work early to keep an appointment. He told his supervisor about it weeks ago but his supervisor has forgotten.

Characters: Sam and his supervisor

Title: Sara's Long Break

Setting: Donut shop

Situation: Sara goes shopping on her break and is late getting back. Her co-worker is very unhappy about this.

Characters: Sara, her co-worker, and her super-visor

Title: Sue's Embarrassing Problem

Setting: Department store

Situation: Sue neglects to bathe and wear clean clothing to work. Her co-worker notices this and talks to her about it.

Characters: Sue and her co-worker

Title: Billy's Messy Closet

Setting: Cleaning crew

Situation: Billy's storage closet at work is a mess and his supervisor criticizes him for it.

Characters: Billy and his supervisor

Please note: In this situation the student experiences a negative outcome regardless of the choices made.

Lesson 3 - Asking for Help Lessons

Title: Maria Can't Finish On Time

Setting: A restaurant

Situation: Maria knows she won't be able to get all the tables set in time for the dinner customers unless someone helps her.

Characters: Maria, her co-worker, and her supervisor

Title: Jackson Waters the Lawn

Setting: A landscaping crew

Situation: Jackson needs help in figuring out how to turn on a sprinkler system.

Characters: Jackson and his supervisor

Title: Jose's Confusing Instructions

Setting: Auto repair shop

Situation: Jose has a two conflicting sets of instructions for doing a task.

Characters: Jose and his supervisor

Please note: In this situation the student experiences a negative outcome regardless of the choices made.

Title: Amy Makes a Suggestion

Setting: A department store

Situation: Amy thinks there is a better way to do her work but isn't sure if she should make a change in the work procedure.

Characters: Amy and her supervisor

Off-line (Printed) Materials

In addition to the on-line lessons already described, the SUCCESS Program incorporates a significant amount of off-line, or printed materials. These include the Level 4 role-playing material, the Level 5 on the job support material, a variety of worksheets, tip sheets and lesson guides, and the Teacher's Manual. Each of these printed products will be described below.

The Level 4 Role-Playing Material

General Description. Level 4 of the SUCCESS Program consists of 28 role-playing situations, 14 for Accepting Criticism and 14 for Asking for Help. Each of the 28 situations involves a specific job-related social interaction problem. Level 4 departs in format from the previous levels in that there are no computer-based lessons. In addition to the role-playing material, evaluation checklists are provided for teacher use in assessing student performance in the role-playing exercises. Level 4 is intended to bring students one step closer to actual, unprompted performance in difficult social situations. As such, it is an important part of helping students transfer and generalize their newly acquired social skills knowledge to novel situations and settings.

Instructional Strategy. Role-playing is the primary strategy employed at Level 4. Through participation in the role-playing exercises and observation of other students doing role-plays, the student has a valuable opportunity to consider a problem from several points of view. By encouraging the students to play

through a situation and then switch roles and play it again, the teacher can provide useful training in impromptu problem solving and perspective taking. The role-playing activities also can serve as the basis for later group discussion.

Instructional Content. The actual content of each role-playing situation is different, and depending on individual student interpretation of roles and situations, the skill usage in any given situation can vary from one exercise to the next. The evaluation checklists that accompany each role-playing situation provide guidance to the teacher about basic social skills that will contribute to a positive outcome for the role-play situation, but they are by no means intended to limit the student's solutions to the situations.

Level 4 Role-Playing Material. The role-playing material consists of 28 separate situations. Each situation has a worker card that describes the situation from the worker's point of view, a supervisor or co-worker card that describes the situation from that character's point of view, and a teacher evaluation checklist. Additionally, the teacher receives a set of general instructions for choosing students for the role-playing exercises, setting the stage, involving the rest of the class, evaluating student performance, and remediating students who have difficulty.

The Level 5 On-the-Job Support Material

General Description. At Level 5 of the SUCCESS Program, it is assumed that students are employed in part-time jobs, typically as part of a work-study experience. Thus, materials at this level are intended to provide the student with additional sources of support in their transition from the classroom context to the world of work. These sources of support are in the form of (1) encouraging an increasing independence and personal responsibility in using newly acquired skills

and (2) helping students tap into the sources of support that are available in the work environment. Level 5 is the final stage in the SUCCESS program's evolution from knowledge acquisition to skill development, to real-world transfer and generalization of job-related social skills.

Instructional Strategy. The primary strategy in Level 5 involves group interaction, problem-solving, and sharing of actual job experiences. In addition to having students assume the primary responsibility for defining their specific job-related social situations that will be shared in the group, the group itself is encouraged to engage in generating alternative solutions. In this way, students participate in the "experience" of being responsible for solving their own problems as well as the "experience" of providing sources of support to each other. Students are also encouraged to share positive "success" experiences in accepting criticism or asking for help on the job and the strategies they used that contributed to the success of these experiences. The students can then construct their own "tip sheets" based on these shared experiences. These group activities are followed up by teacher-led structured discussions of techniques for building and effectively using social supports available on the job (e.g., other workers, supervisors, personnel counselors, etc.).

Instructional Content. The content at Level 5 will necessarily vary from session to session, depending on the nature of the group and individual experiences being shared. In general, however, the content will be in the areas of Accepting Criticism and Asking for Help, and forming support systems on the job. The NOTICE, THINK, SAY and DO model will continue to be the primary "organizer" for structuring student discussions of job experiences.

Level 5 Materials. Materials that support the Level 5 activities consist of the Diary Worksheets, Employer Evaluation Worksheets, Student Group Problem Solving Tip Sheets, and Personal Networking Worksheets that students use to record the job experiences to be shared in the group. In addition, the teacher receives a set of general and specific instructions for structuring the group sharing/problem solving and for leading the follow-up discussion of strategies for building and effectively using available on-the-job support systems. These later materials, described in the Level 5 teacher instruction sheets, discuss techniques such as networking, making friends, and identifying those on the job who are appropriate sources of support and models for emulation.

To assist in successful implemention the Level 5 activities, a variety of special teacher materials have been prepared for this level of the SUCCESS program. These teacher materials consist of:

- Level 5 - General Teacher Instructions
- Level 5 - Teacher Instructions for Sequencing Activities
- Level 5 - Teacher Example: Group Problem Solving Tip Sheet
- Level 5 - Teacher Example: Personal Networking Worksheet

Lesson Guides, Tip Sheets, and Worksheets

There are three types of printed material that accompany each one of the computer-based SUCCESS lessons: lesson guides, tip sheets and student worksheets. The lesson guide that accompanies each lesson provides specific information about lesson objectives, lesson running time, skill components covered, and a detailed synopsis of the lesson content. The tip sheet summarizes and generalizes the social skills and social context portrayed in each lesson. It can be used by the students as an aide to remembering how the worker handled

the situation portrayed in the lesson. The student worksheet asks the student a series of open-ended questions about the social situation portrayed in the lesson and how the main character in the lesson correctly responded to it.

In addition to the student worksheets that accompany each SUCCESS lesson, five other kinds of worksheets were developed. These are the Diary Worksheet, Personal Networking Worksheet, It Happened To Me--Asking for Help Worksheet, It Happened To Me--Accepting Criticism Worksheet, and the Employer Evaluation form. These worksheets are intended to assist the student in relating the SUCCESS curriculum material to real-life events and problems. The "Diary" and "It Happened To Me" worksheets consist of a series of open-ended questions that guide the student through a description of a real-life event that relates to the curriculum material. After describing the event, the students are then led through a process of analyzing what went right or wrong in the situation, using the SUCCESS model, and then proposing alternative, more positive ways of solving similar situations in the future. The Employer Evaluation form is used to solicit information from employers about a particular student's performance on the job, or, as a less-threatening alternative, how an "ideal" employee would perform on the job. The Personal Networking Worksheet guides the student through a process of identifying appropriate role models or mentors on the job and making effective social contacts with that person.

The Teacher Manual

A 56-page Teacher Manual was prepared as a guide to the philosophy, content, and use of the SUCCESS Program. It has been organized into nine major sections. Section I, "Getting to Know SUCCESS," provides an overview of what is contained in the SUCCESS Program. Section II, "Understanding SUCCESS,"

provides background information on the design, rationale, and use of the SUCCESS materials. Both Sections I and II are written using a question-answer format. The questions represent typical questions teachers have asked about the program and its materials. Section III, "Getting Started with SUCCESS," provides detailed procedural steps for the operation and use of the computer and audio equipment necessary to present the computer-based lessons. Sections IV through XI describe the format and use of each of the major levels of program material.

IV. EVALUATION PROCEDURES AND DATA

The evaluation originally planned for this project included both formative and summative phases. The formative evaluation was intended to address key design and implementation issues relevant to the implementation of the SUCCESS curriculum in school settings. The summative evaluation was intended to address the issue of the power of simulation to teach job-related social skills to mildly handicapped young people, and to test the overall instructional effectiveness of the SUCCESS program. Due to lack of adequate funds, the formative evaluation was severely truncated and the summative evaluation activities have been deferred indefinitely. The following is a description of the formative and summative evaluation activities that had been planned, and a summary of the formative evaluation procedures that were implemented but not completed.

Original Formative Evaluation Plan

The original plan for the formative evaluation of the project activities had three major components: (a) a description of the field sites and samples of handicapped students and their teachers, (b) a description of the evaluation procedures and instruments which were to be used to measure the appropriateness of the materials for the intended audiences, and (c) the procedures from the data gathering which would result in revisions and modifications. The target of the formative evaluation was on the instructional materials for the students and the teacher training materials which will accompany the student instructional materials. At the end of the formative evaluation process, and any revisions resulting from this process, there was to have been a final product which would be the focus of the summative evaluation.

The samples for the formative evaluation were intended to represent a wide range of handicapped learners from the natural laboratories used in this project. The population from which the samples were to be drawn consists of approximately 370 secondary students in a two large Denver area school districts who are identified as handicapped and who are enrolled in special education programs. Stratified random samples of these students were to be selected from each of the target populations (learning disabled, mildly retarded, emotionally disturbed). Teachers from these field sites were also to be included as evaluators in the formative stage. Commitments had been secured from the participating schools for their involvement in the development and evaluation process.

The original focus of the formative evaluation was on determining whether the simulation materials could adequately teach the identified social skills (e.g., whether they promote skill mastery, transfer, and generalization). However, on the advice of the project's Review Board, the focus of the formative evaluation was shifted to address issues surrounding the implementation of the SUCCESS curriculum in school settings. In particular, questions to be addressed included student reactions to the material, ease of use and flexibility for teachers, adequacy and completeness of curriculum materials, and further insights into how the SUCCESS Program could be integrated with other ongoing programs.

Original Summative Evaluation Plans

The major purpose of the summative evaluation was to determine whether computer-based simulation materials could be effective in (a) facilitating the transfer and generalization of targeted job-related social skills and (b) enhancing perceived competence of job-related social skills. The effectiveness of these materials was to be examined relative to a "typical" social skills training program and to no social skills training.

The evaluation design directly addressed the generalization and transfer issue in the construction of assessment conditions within two experimental groups and two control groups:

- Experimental Group 1 (EG1). This group would receive computer-based simulation training and be tested for generalization and transfer after completion of each of the first three levels of training.
- Experimental Group 2 (EG2). This group would receive computer-based simulation training, but not be tested for generalization or transfer after the completion of each of the first three levels of training.
- Control Group 1 (CG1). This group would receive a "typical" noncomputer-based job-related social skills program (e.g., Marathon).
- Control Group 2 (CG2). This group would not receive any specialized training in job-related social skills, but would engage in a "discussion group."

The general design, including conditions, estimated sample ns, measures, and general points of data collection, is depicted in Figure 1. As can be seen in the figure, all groups were to be administered a pretest and a posttest that would include measures of perceived competence, skill mastery, and generalization and transfer. When any specific comparison between one experimental and one control group is considered, we planned to implement a quasi-experimental design typically termed a "nonequivalent control group design." This basic design possesses good internal validity, which we intended to enhance by instituting appropriate statistical controls.

We included two experimental groups because we were interested in assessing the generalization and transfer of acquired job-related social skills to novel role-play situations at the completion of each level of the program (i.e., via EG1 at the various posttest points), but wanted to guard against the charge that

Condition	Sample Size	September 1987	Fall Semester 1987			January 1988	Spring Semester 1988		June 1988	September
		Pretest (PC, MT, GTT)	End of Level 1	End of Level 2	End of Level 3	Posttest (PC, MT, GTT)	End of Level 4	Level 5	Posttest (PC, MT, GTT)	Follow-up Test (JS)
EG1	30	X	GTT	GTT	GTT	X	GTT	ES	X	X
EG2	60	X				X	GTT	ES	X	X
CG1	60	X				X		ES	X	X
CG2	60	X				X		ES	X	X

Note: MT = Mastery test over all objectives in first three levels
GTT = Generalization-transfer test (short role plays)
ES = Employer survey
PC = Harter perceived competence measures
JS = Measures of job success

Figure 1. Summative evaluation design and measurement scheme.

such testing could be considered part of the treatment (i.e., by comparing EG1 vs. EG2). Comparisons within EG1 would have allowed for determinations of the contribution of each simulation program level (and its associated strategies) to generalization and transfer.

The general hypotheses to be tested were that after completion of the program, the two experimental groups would have significantly higher perceived competence than either control group; the experimental groups would demonstrate significantly greater transfer of social skills than either control group; the two experimental groups would demonstrate significantly more generalization of social skills than control groups; and that there would be differences in results by type of handicapping condition. A number of other testable hypotheses were evident from the evaluation design and these were to be refined during the formative evaluation period.

The population we intended to generalize included handicapped students ages 16 to 21 who demonstrate learning disabilities, mild mental retardation, or behavior disorders, and who are enrolled in a special education program designed to prepare them for job placement after high school. Subjects were to come from eight high schools in the Denver metropolitan area that were not involved in the formative evaluation.

The specific battery of pretest and posttest measures was to include measures of perceived competence, such as Harter's (1986) Self-Perception Profile for Adolescents, mastery tests over all objectives in the first three simulation levels, and skill and role-play instruments to measure transfer and generalization. Instruments for Level 4 were to consist of the short role plays for measuring generalization and transfer. Level 5 measures and the follow-up

testing were to include an employer survey, rating scales, and interviews to assess job success. Also, we anticipated gathering additional contextual information from observational measures, anecdotal reports, and curriculum evaluation questionnaires.

The first step in the data analysis would have been to generate simple descriptive statistics for the variable set (for each group and for the total sample): means, medians, standard deviations, ranges, zero-order correlations, and reliabilities, where appropriate. Such descriptive statistics would have provided an initial understanding of the data and would have served as a check on the accuracy of the data. Next, simple cross-tabulations were to be generated. For example, multiway frequency tables of demographic characteristics by group membership would have helped determine whether the experimental and control groups were comparable. While not sophisticated, the cross-tabulations would have served two major purposes: they would have been useful for presentation in nontechnical summaries where readers are not likely to be familiar with complicated statistical procedures and, they would have provided initial information concerning what relationships to examine in higher order analyses. We expected to employ a multiple regression approach in the latter stages of data analysis.

Partial Formative Evaluation Conducted

This evaluation has been designed to provide information on classroom implementation issues regarding effective individualized and group administration practices, and to provide feedback on any logistical or content concerns that should be addressed in final revisions of the materials. The evaluation was begun on February 3, 1988 with the training of four teachers and three administrators.

These individuals participated in a half-day training session in which they were introduced to the background and philosophy of the curriculum, received a demonstration and practice with the on-line and off-line Phase I materials, and were briefed on the purpose and procedures of the evaluation. Specifically, the information being collected in the formative evaluation of the Phase I materials consisted of the following:

- Student Evaluations of the SUCCESS Material

  At the end of the tryout period (May 27, 1988), students were to be asked to fill out an evaluation form which asks them their reactions to (a) the clarity and completeness of directions they received from the computer; (b) how "real" the job-related situations seemed to them; (c) how "real" the people in the situations seemed to them; (d) what they learned from the lessons; (e) the difficulty level; (f) how interesting vs. boring the lessons were; (g) how interesting the characters were; (h) what they liked least and best about the computer lessons; and (i) how well they think other students would like these types of computer lessons.

- Teacher Comments on the SUCCESS Material

  At the end of the tryout period (May 27, 1988), teachers were to be asked to make comments on an evaluation form with respect to (a) the usefulness and completeness of the Teacher Manual; (b) how well the SUCCESS material fits in the normal classroom activities; (c) how well the content of the material fits in; (d) their assessment of student reactions to the computer-based lessons and role-playing material; (e) their evaluations of the completeness of the role-playing directions and level of difficulty for students; (f) the kinds of questions students had about the lessons; (g) difficulties they encountered starting up the computer-based lessons and operating the equipment; (h) the kinds of students for which the materials seemed most appropriate; and (i) their comments and suggestions for improving the program.

- SUCCESS Program Trouble Log

  Throughout the formative field test of Phase I materials, teachers were asked to record any problems or "troubles" encountered with the operation of the computer-based lessons. They were provided with forms on which to record the date, nature of the problem, and how the problem was resolved.

- Project Staff Observations and Monitoring

  Three observation and monitoring sessions at the Golden High School field test site were planned for project staff during the months of March, April, and May. These day-long sessions were intended to provide "third-party" data on student reactions to the SUCCESS material under group and individual conditions, and the logistics of teacher implementation of the program under these two conditions. These sessions would have also provided the project staff with opportunities to collect additional data to be used in cross-checking and verifying data provided by teachers and students, and to identify issues to be addressed at the debriefing session planned for project staff and teachers at the end of the Phase I field test (May 27, 1988).

- Teacher Evaluations of Student Performance on Role-Playing

  As part of the Level 4 Role-Playing Exercises, teachers were asked to fill out checklists for each exercise in which they evaluate whether students are demonstrating required social skills components relevant to each exercise. Procedures for scoring these checklists were also provided so that an overall assessment of skill level could be obtained.

At the midpoint of the Phase I formative evaluation (March 31, 1988), incomplete data in all of these categories were available. Data available for summarization primarily consists of teacher reports of trouble with the operation of the computer-based lessons and results of staff monitoring and observation in March.

Mid-Point Formative Evaluation Results

As described in the first section of this report, by the end of March, 12 learning disabled, nine mildly retarded, and nine emotionally disturbed students were participating in combinations of individual and group administrations of the Phase I materials. Within this group of students, seven of the learning disabled students participated in the group mode and five participated in an individualized mode; all nine mildly retarded students participated in an individualized mode; and the nine emotionally disturbed students participated in a group mode. Decisions regarding the group vs. individual mode were made on the basis of teachers' assessments of the type of learning problems students were experiencing and their abilities to handle the group vs. individual modes.

For students in the group mode, they had completed nine of the 15 on-line lessons (i.e., the three introductory lessons, two Level 1 lessons each in Accepting Criticism and Asking for Help, and two Level 2 lessons in Accepting Criticism). Students participating in the individual mode had completed fewer of these lessons, with the mildly retarded students completing the fewest number of lessons.

Data collected during the staff monitoring and observation session on March 15, 1988 consisted of the following:

- Student reactions under group and individual conditions;
- Logistics of teacher implementation of program under group and individual conditions;
- Review of teacher "Trouble Reports".

With respect to student reactions under the group condition, the nine emotionally disturbed students were observed during their group session. The teacher started the lesson for that day, stopping at points where a student

response was required. Students' attention varied during the presentation, with some being very attentive and others spending time "talking" with the student next to them. The teacher was very skillful in getting students on task and in relating the choices they needed to make during the lesson to choices they have to make regarding their classroom behavior. As the lesson progressed, students began to pay more attention and actively became involved in making the required choices and filling out their worksheets. Near the end of the class session, after students had completed the lesson, the teacher asked the project staff whether they would like to talk to individual students about their reactions so far to the SUCCESS program. At that point, five students volunteered to provide comments. In general, their comments indicated that they were enjoying the lessons and felt the information would help them on their jobs. Students varied in terms of whether they found the materials too easy vs. too difficult, but they generally agreed that the grade level for the materials was too low and that the information was something they should have had earlier in their schooling. In discussing these comments later with the teacher, he indicated that this was a "typical" reaction of these kinds of students in that they frequently state that activities are "too easy" and they should know the information already. He emphasized, however, that the conceptual and emotional problems present in this group of students were such that they needed the level of repetition and detail presented in the lessons.

During the rest of the morning, three mildly retarded and one learning disabled student were observed participating in a lesson in an individualized mode. The teacher working with these students was adept at helping students who had difficulty with parts of the lesson or seemed confused. She allowed students to go

at their own pace and ask questions as necessary. For all students observed in the individual mode, attention to the lesson was very high. When students were interviewed by project staff at the end of the class period, the learning disabled student commented that she had had lots of jobs and found the materials very relevant. She particularly liked the combination of the visual and audio media as it helped her better understand the material. She did feel, however, that the lessons could be "harder" and present more difficult situations to figure out. On the other hand, the mildly retarded students generally commented that the materials were at the right level of difficulty and that they found the audio paired with visual materials to be particularly helpful in remembering and thinking about the new concepts and skills being presented.

The two teachers who were working with the group and individualized modes, respectively, on the day of the monitoring session indicated that they were experiencing no difficulties with these two different presentation modes. They did feel, however, that it would be helpful to have a section of the Teacher's Manual that dealt specifically with how to use the program with students in the different handicapping conditions. In general, the teachers were very pleased and excited about the materials and their potential for helping students with not only job-related social skills, but also with developing more general social problem-solving skills that they could use in a variety of social situations. They had, on their own, come up with a number of strategies and supplemental materials that they felt were important in taking students beyond the job context in thinking about how to apply the general **NOTICE, THINK, SAY** and **DO** model.

Finally, with respect to comments on the teachers' "Trouble Log," the only problem reported was an occasional difficulty with reading digital signals on

the audio tape. This specific problem is due to a characteristic of the prototype interface which is being used in the field test. This particular problem has been addressed in the manufactured version being produced by the publisher.

V. RECOMMENDATIONS

Future Implementation of the SUCCESS Curriculum

On the basis of preliminary formative evaluation activities completed to date, a number of areas in which recommendations for future implementations have been identified. These areas include the following:

- Modifications to the Teacher Manual
- Modifications to Student Off-line Materials
- Group vs. Individualized Implementation Strategies

With respect to the Teacher Manual, we have learned that teachers need guidance with structuring activities for student involvement in the on-line materials. That is, students in the three handicapping conditions attend, process, and retrieve information in highly individual and distinctive ways. Although special education teachers are generally familiar with these individual learning styles, they are less familiar with the impact of computer-based technologies and simulation approaches, in particular, on these styles. We believe, therefore, that the Teacher Manual could be enhanced by a special section that specifically outlines suggestions for individualizing the computer-based lessons to accommodate the special learning needs of individual categories of learning difficulties.

Second, additional student off-line materials that teachers identified as helpful during the initial part of the Phase I formative evaluation were printed copies of all on-line questions in each lesson. We prepared a set of these questions which teachers then used in both the individual and group modes to assist students in attending to and remembering key concepts and skills. In the

group mode, teachers also found these questions to be helpful in stimulating group discussions. We thus recommend the inclusion of these questions in the set of off-line materials for each on-line lesson, with teacher guidelines for their use.

Finally, with respect to individualized and group implementations of the on-line materials, our preliminary formative evaluation findings suggest that teachers are very knowledgeable about the types of students and instructional conditions in their environments that are most conducive to each respective mode. Teachers' knowledge and experience with particular students and resources available in their school settings thus make them the best judge of how to implement a curriculum of this type. We would, therefore, recommend that future implementations emphasize teachers' expertise in making individual vs. group implementation decisions, guided by more in-depth individualization considerations as discussed above.

Additional Research and Evaluation Activities

An obvious need exists to complete formative evaluation and revision activities on the entire SUCCESS curriculum. Although our preliminary evaluation of Phase I materials has been positive with respect to implementation issues, additional issues are likely to surface once the entire curriculum has been implemented. For example, questions about how best to sequence and structure the Accepting Criticism and Asking for Help on-line lessons may emerge, as well as issues about how best to implement Level 4 and 5 off-line materials. All of these issues may further impact the types of revisions that are needed to enhance the effectiveness of student and teacher materials. Addressing these issues and completing final revisions of the curriculum is seen as a critical step before summative evaluation issues can be adequately addressed.

Once a final revised curriculum is available, the stage will be set to explore summative evaluation issues regarding the power of simulation as an instructional technology in enhancing the transfer and generalization of this social skills training program. Equally important however, is the opportunity with the SUCCESS curriculum to also evaluate instructional design and theory issues that are related to the effectiveness of this curriculum in promoting skill generalization and transfer. Specifically, the opportunity is present to separately evaluate the various on-line components (metacognitive, cognitive, affective) as well as the relative contribution of these components as compared with the off-line practice and transfer strategies (role playing, on-the-job support materials). The design presented in our summative evaluation plan (see Summative Evaluation Plan (Task 10) submitted to the OSEP on September 22, 1986) provides a means to address these issues and to assist us in a better understanding of those technological vs. instructional components of a job-related social skills intervention that are critical to learning handicapped students' transfer and generalization of social skills that can enhance their successful transition to the world of work.

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