

Designing a Classroom Management Learning Environment: Case Exploration and Performance Support Tools

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Abstract: This paper discusses new features in hypermedia case studies that are designed to improve the transfer of knowledge and skills to actual job situations for teachers. The case studies embed problem solving activities into authentic case situations and provide opportunities to build multiple perspectives. Prompts are inserted into the program to support reflection and to provide expert models for evaluating decisions. Performance support tools are included to facilitate learning and performance within the hypermedia environment and for later use in actual job situations. The research design is described for determining the use and effectiveness of these new design features as well as the actual impact on children when the tools are implemented by teachers.

1 The Problem

Teacher education involves the development of knowledge and skills and their application to actual classroom settings. The weakest link in preservice teacher education is the translation of knowledge and skills taught in methods classes to performance skills in the classroom (Rule & Salzberg, 1988). Reform efforts in teacher education have recently focused on expanding opportunities for preservice teachers to gain experience in classrooms via increased field placement and involvement in multimedia simulations based on authentic classroom scenarios.

Hypermedia case studies are simulations that provide complete information, expert modeling, and challenges to be solved by the user which mirror those to be faced in teaching roles. Hypermedia case studies go beyond traditional simulation models by allowing learners to take control and responsibility for their own learning through nonlinear access to information, problem generation, and problem solution. Hypermedia cases are active learning environments in which users explore case scenarios through video and audio, gather contextual information, access foundational information, listen to commentaries by experts, define contextualized problems, and revise solutions based on prompts and scaffolds.

Empirical data has recently emerged on the effectiveness of learning through hypermedia cases has been documented. Despite differences in class rank, prior experience with computers, prior teaching experiences, or different learning styles, learning outcomes have been significant and equivalent across users (Fitzgerald & Semrau, 1998; Fitzgerald, Semrau, & Deasy, 1997; Kraus, Reed, & Fitzgerald, 1997). Findings demonstrate that users with differing learning styles utilize hypermedia case environments in different ways, yet overall engagement time and outcomes are equivalent. Based on analyses of user records and on-line products, two concerns must be addressed in improving learning from hypermedia case studies: 1) engaging users in reflecting on their solutions, and 2) supporting users in transferring knowledge and skills to actual job situations (Fitzgerald & Semrau, 1998).

2 Instructional Design of Program

Instruction and Management in Behavioral Disorders is the third title in an interactive training series for use in teacher education programs. Three of the programs utilize a hypermedia case study format, and the other two programs provide skill training in classroom observation.

The program is based on case study scenarios in which the user takes the role of a teacher in planning for three different youngsters with significant behavioral and emotional problems in classrooms. Figure 1 displays the main menu screen for the case study program *Martelle*. Each program has the same overall structure and learning activities.

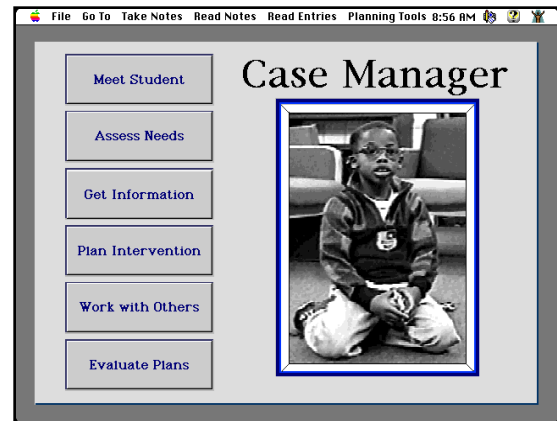


Figure 1. Main Menu Screen of Program

The computer program contains computerized background information on the youngster and school policies, a resource information base related to behavior interventions, a series of problem solving activities based on job responsibilities, scaffolds for the user related to the activities, and 35 template tools for creating plans for the youngsters. Material on an accompanying Level III videodisc includes videos to observe the youngsters in authentic settings, audio interviews with adults with information about the children, mini-presentations on specialized curriculum, and commentary by experts in the field. The resources and template tools are designed as stand-alone applications for users to have following successful completion of the case study activities. Thus, a direct bridge is provided to support the application of knowledge and skills to real-world use.

Cognitive Flexibility Theory and Multiple Perspectives

The overall design for the hypermedia case studies is based on *Cognitive Flexibility Theory*, one of the constructivist theories which emphasizes the real-world complexity and ill-structuredness of knowledge. Ill-structured problems are complex and require cognitive flexibility for understanding and decision making (Spiro, Coulson, Feltoovich, and Anderson, 1988). A person demonstrates cognitive flexibility when able to selectively use knowledge to adaptively fit the needs of an ill-structured situation. The computer-mediated activities provided through these materials strive to stimulate cognitive flexibility to enable the learner to construct his or her own knowledge based on analyses of complex and irregular situations, to view situations from multiple perspectives, and subsequently utilize that knowledge in problem solving activities. See Fitzgerald, Wilson, and Semrau (1997) for a detailed explanation of hypermedia design based on principles of cognitive flexibility theory.

Performance Support Tools

The nature of preparing workers to perform and/or understand work tasks is changing dramatically. Given the vast amount of information available to workers, it is increasingly important to provide people efficient and effective ways of receiving new information. Through performance support tools and resource databases, workers can have constant access to crucial information and guidance while they are performing tasks. This information may be accessed in different ways, depending on the needs of the worker, creating a cycle of continuous improvement and training (Laffey; 1995; Barker, 1997). Based on the axiom "right time, right place, right form," this program incorporates two new features for hypermedia design— access to on-line resource information and performance support tools for present and future use.

3 Illustration of Key Interactive Features

Problem Solving Activities

Prior to creating plans for the child, the user explores the case study for information, observes the child, gets input from others, assesses the child's setting, and goes through a behavioral consultation interview to define problems.

In this Plan Intervention component of the program, users develop instructional and management plans for the identified problems. Plans are entered into a template form and saved for later retrieval.

Click on each category and enter your plan.		Management: Behavior	
Fair Pair Behavior to Increase: Positive interaction with peers at lunch.	Planned Intervention: Use Mike's name when addressing him. Gain eye contact and ask questions regarding school activities to which Mike can provide short answers.		
Fair Pair Behavior to Decrease: Isolative behavior at lunch, including sitting away from peers, no eye contact, and lack of conversation unless spoken to first.	Planned Intervention: Engage a peer counselor to go to lunch with Mike in the cafeteria and sit in an area with others. If Mike insists on sitting in an isolated area, have peer counselor participate in a cost/payoff interview.		
Setting Changes/Supports: Contact counselor to select a peer counselor to work with Mike during lunch for one month. Gain support of a group of peers to save places at lunch table for Mike and the peer counselor.			
Instructional Supports: Social skills class: work on eye contact when spoken to and starting a conversation.			

Figure 2. Management Planning Template

Reflective Prompts

Prior to reflection and revision of previously completed plans, the user listens to experts discuss intervention programs from multiple perspectives to encourage the user to broaden plans to settings beyond the classroom.

In this Evaluate Plans component of the program, users can view previous plans at the top of the screen and enter personal reflections into a notepad at the bottom of the screen. These entries are attached to the original plans during this revision step.

Figure 3. Notepad for Entering Reflections

A series of four prompts are provided for management plans and four prompts are provided for instructional plans. An example prompt is: *Have you involved this child in self-management?* Users must evaluate whether their plans meet these criteria by responding "yes" or "no."

If the user enters "no," the notepad at the bottom of the screen opens up and requests the user make adjustments. These adjustments are added to the original plans and personal reflections for documentation.

Figure 4. Notepad for Entering Adjustments

Performance Support Tools

The resource information base provided in the program contains information on intervention procedures covering a wide variety of techniques offered in 15 categories, ranging from self-monitoring plans to classroom rules to conflict resolution. Each category provides procedural information, examples of plans, tips for implementation, and references.

Users can search for information using the Find tool or by navigating the structured database. The Resources are linked to 35 template Tools on the pull-down menu bar.



Figure 5. Sample of Resource Information Page

Each intervention category offers 1-5 templates for preparing instructional and management intervention materials. The templates are designed for generic use and adaptable for children of different ages and ability levels. Templates for younger children allow the user to select graphics from a graphic library and create very simple forms.

Each of the templates is illustrated in the resource information base to provide models. The 35 template Tools are linked to the Resources on the pull-down menu bar.

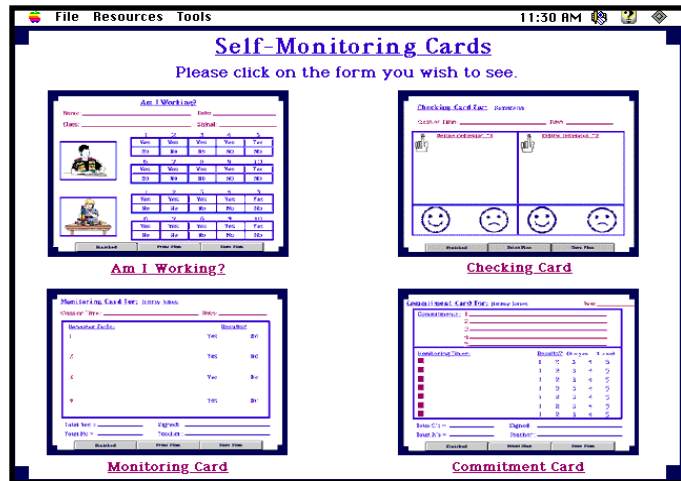


Figure 6. Self-Monitoring Template Choices

To create materials, users simply click on "hot" words or entry lines and input their plans. The template allows the teacher (or capable student) to create personalized intervention materials to support the child in successful behavioral change.

From the template screen, plans can be stored to disk and printed. The user records maintain a cumulative file of entries, time stamp each entry, and log the user's name and time spent in the Resources and Tools.

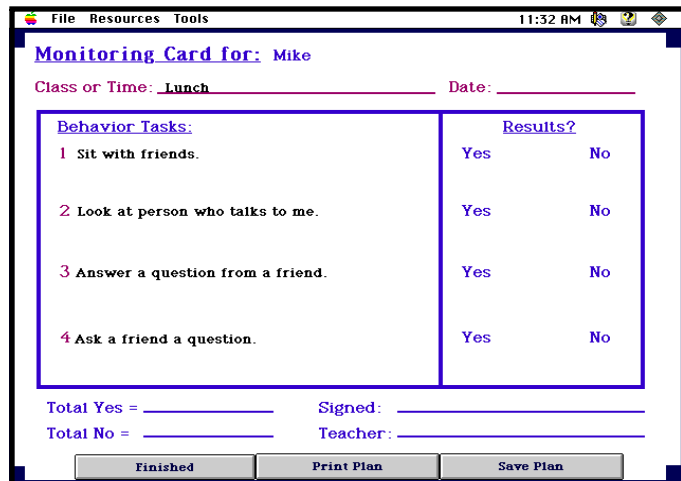


Figure 7. Sample of Completed Monitoring Card

Audit Trails and User Records

The program time stamps the options in the sequence selected by the user. By computing the differences, it is possible to determine the how long the user engages in each section of the program. This information allows the researchers to evaluate the use of an on-line resource component in a performance support tool.

The program also saves to disk all content the user enters into a template which provides a record for the user.

Open Tools	12:29:50 PM
Open Resources	12:31:19 PM
Self-Monitoring	12:30:26 PM
Open Tools	12:40:02 PM
Monitoring Card for:	Mike
Class or Time:	Lunch
Date:	October 5
Behavior 1:	Sit with friends.
Behavior 2:	Look at person who talks to me.
Behavior 3:	Answer a question from a friend.
Behavior 4:	Ask a friend a question.
Tara Teacher 9/21/97 End Tools Session	12:45:40 PM

Figure 8. Audit Trail and User Records

4 Research Design

The program is being implemented in three sites during the 1997/98 year to determine its effectiveness as a personal productivity program for teachers. In each site, information on users will be gathered for use as independent variables to enable comparisons of usage and effectiveness across users with different levels of prior computer experience, prior teaching experience, computer anxiety, and ease of access to computer work stations. Audit trail records will be compiled to determine the engagement time of users within each work session and across time, the frequency and duration of accessing resource information within the process of preparing intervention plans through the templates, and user pathways through the materials. The effectiveness of the program will be measured by holistic scoring of the quality of intervention plans created for children within each type of procedure and across time, as well as measuring change in knowledge via a pre-and posttest. A user satisfaction questionnaire will be administered to compile feedback and assist in determining how different users value the various features and tools within the program. Impact on children will be determined by looking at change in children's behavior correlated with implementation of plans by teachers.

Sample Group	Preservice Teachers	Practicing Teachers	Preservice Teachers
Implementation Variables	Resources and Tools	Resources and Tools	Resources and Tools and Case Studies
Comparisons			
• Engagement Time	X	X	X
• Utilization Patterns	X	X	X
• Knowledge Change	X	X	X
• Quality of Plans	X	X	X
• Case Study Utilization			X
• Quality of Plans for Case Students			X
• User Pathways in Hypermedia Case Studies			X
Individual User Case Studies of Implementation and Behavior Change Impact on Children		X	
Satisfaction Feedback	X	X	X

5 Summary and Implications

The design of this hypermedia program based on cognitive flexibility theory builds knowledge and skills that go beyond performance within the hypermedia learning environment. Instead of relying on feedback delivered through the program or instructor discussion of the case studies, a series of reflective prompts are placed within the program activities. These prompts support metacognitive reflection and provide expert models to learn to evaluate one's own decisions.

Increasingly, software in the work environment is becoming task-focused to support learning and performance through electronic performance support tools, including on-line references for instant access to information, tools to carry out specific tasks, and help functions to enable the user to carry out a task at the moment of need. Instead of learning to do a task within a piece of software and later using a different software program for a job task, this hypermedia program is designed for integration into actual job settings, supplying the resources as well as the tools.

In that professional practice involves judgment and wise action in complex, unique, and oftentimes uncertain situations, learning to pose and solve problems is central to the role of educators. While research outcomes with the other hypermedia case studies included in this series have been extremely positive, no studies to date have looked at transfer of knowledge and skills to actual job situations and impact on children, the ultimate measure of value. It is hoped that the combination of features of the program—the case study format, a design based on cognitive flexibility theory, embedded prompts and tools, and ongoing access to resources will help bridge the gap between preservice teacher education and performance of teachers in the classroom.

6 References

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