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ABSTRACT

Focus Alternative High School (FAHS), Oak Park, Michigan, is a Detroit suburban school designed to meet the needs of approximately 50 students who have not demonstrated success in the traditional high school setting. At FAHS and in its afterschool Project Graduation program, PLATO (registered) Pathways has been implemented to address the individual academic needs of each learner, enable teachers to establish learning programs that present a variety of computer-based modules corresponding to their core subject areas, provide a motivational way to learn core subject material, and provide individual assessment and tracking. An evaluation was conducted to determine how the PLATO Pathways program was used within the Focus and Project Graduation programs, identify PLATO Learning's strengths and weaknesses relative to the goals of the school, and suggest possible areas of improvement. A significant positive relationship was identified between the number of PLATO modules mastered and the grade point average of student enrolled in the third making period. Students reported that computer lessons made them feel more confident about school. Students generally agreed that the PLATO courseware was easy to use and understand, and helped them learn. Teachers agreed that the PLATO objectives corresponded with their own course objectives, and all faculty agreed that system bugs and error had a negative influence on PLATO courseway effectiveness. Suggestions are outlined for maximizing the effectiveness of future PLATO courseware. (Contains 10 tables.) (SLD)

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PLATO®
Evaluation Series

Focus Alternative High School

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Executive Summary

Focus Alternative High School (FAHS) in Oak Park, Michigan is a Detroit suburb school designed to meet the academic needs of approximately 50 students who have not demonstrated success within the traditional high school setting. Truancy, chronic tardiness, failing grades, severe discipline problems and expulsions constitute many of reasons why Oak Park high school students are placed into the FAHS program. The school is designed to foster success in the areas of attendance, punctuality, discipline, and passing grades in all core subject areas. Students are placed into the program throughout the year, and they remain a minimum of one semester, with most students spending the remaining school year in the program. In addition to the Focus program, the school also facilitates an after school enrichment program called "Project Graduation." This program enrolls at-risk high school students outside the Focus program, and it is designed to help these students meet the minimum requirements to graduate from high school. In both the Focus and the Project Graduation programs, PLATO® Pathways has been implemented to address the individual academic needs of each learner, enable teachers to establish learning programs which present a variety of computer-based modules corresponding to their core subject areas, provide a motivational way to learn core subject material, and provide individual assessment and tracking.

The purpose of this evaluation was to describe the manner in which the PLATO® Pathways program was used within the Focus and Project Graduation programs at FAHS, identify PLATO Learning's strengths and weaknesses relative to the goals of the Focus and Project Graduation programs, and suggest possible areas of improvement regarding future PLATO® implementation and use. In addition, the cause and effects of chronic technical problems at the site were studied.

Some of the more important results of this evaluation include:

- A significant positive relationship was identified between the number of PLATO® modules mastered and the GPA of students enrolled during the 3rd marking period
- Students reported that the computer lessons made them feel more confident about doing well in school
- Students generally agreed that PLATO® courseware was easy to use, easy to understand, offered many opportunities to interact, allowed them to work at their own pace, and they tried hard to learn from their assigned the PLATO modules
- Teachers agreed that the PLATO® course objectives corresponded with their own course objectives
- All faculty indicated that system bugs and errors had a negative influence on PLATO courseware effectiveness in their course

Ten tables are included in the evaluation which detail module selections for each course, module mastery performance for each subject area, correlation tables for PLATO® performance and GPA as well as behavior indicators, teacher and student attitude survey and open-ended responses, and PLATO Learning customer support summaries for the technical problems encountered at FAHS.

Suggestions are outlined for maximizing the effectiveness of future PLATO courseware use at FAHS, including strategies for helping the students connect what they experience in the computer lab to what they are learning in the classroom, and vice versa. They include:

- Articulate to the students in some way the prerequisite skills needed to succeed with their assigned modules
- Employ strategies which enable students to relate what they are about to learn in their assigned PLATO modules to their own personal previous experiences
- Describe the specific objectives to the learners BEFORE experiencing PLATO
- Generate a class (or content area) "Big Picture" and articulate how the direct instruction experiences of PLATO fit into it (how the PLATO skills support the course goals)
- Clearly identify and communicate student rewards and incentives for trying hard and doing well in the PLATO environment
- Explain specific procedures to the students for obtaining support for things they don't understand while using PLATO (teacher, peer, aid help)

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Introduction

One May weekday morning in a small waiting area outside the administrative offices at Focus Alternative High School in Oak Park, Michigan, the school's five faculty members met with the principal, Dr. Jabari Prempeh, to discuss typical matters of the day before classes began. Over doughnuts and coffee, Dr. Prempeh casually updated the teachers on those students who were still suspended, and he answered questions about the police report status of a couple incidents which occurred earlier in the week. Following a brief discussion over these student-related concerns, the conversation turned technical as the teachers shared their latest struggles with the school's antiquated and temperamental copy machine. This week, the copier was only accepting colored paper without jamming. Absent from this group was Mr. David Allen, the school's computer lab technician. He was in the computer lab, getting all 26 networked Windows '95 computers operational before the first period. The sound of a hand-held school bell rang in the hallway, signaling the end of the teachers' meeting and the start of the students' school day.

Dr. Prempeh and his staff have difficult job assignments. They are charged with the task of trying to lead extremely at-risk high school students toward success. They operate Focus Alternative High School (FAHS), which is part of the Oak Park, Michigan school district. Oak Park is a suburb of Detroit, and the approximately 50 students attending the school have not demonstrated success within Oak Park's traditional high school setting. Truancy, chronic tardiness, failing grades, severe discipline problems and expulsions constitute many of reasons why Oak Park high school students are placed into the FAHS program (referred to in this report as the "Focus" program). The success that the school tries to foster is simple: attendance (90%), punctuality (90%), minimal discipline problems (90% code of conduct compliance), and passing grades in all core subject areas (2.0 GPA minimum). Students are placed into the program throughout the year, and they remain a minimum of one semester, with most students spending the remaining school year in the program. In addition to the Focus program, the school also facilitates an after school enrichment program called "Project Graduation." This program enrolls at-risk high school students outside the Focus program, and it is designed to help these students meet the minimum requirements to graduate from high school.

In both the Focus and the Project Graduation programs, PLATO Pathways has been implemented to meet the following important needs:

- Address the individual academic needs of each learner, since each comes into the program with a wide range of previous experiences and academic accomplishments
- Enable teachers to establish learning programs which present a variety of computer-based modules corresponding to their core subject areas
- Provide a motivational way to learn core subject material
- Provide individual assessment and tracking

The purpose of this evaluation report is to describe the manner in which the PLATO Pathways program has been used within the Focus and Project Graduation programs at FAHS, to identify PLATO's strengths and weaknesses relative to the goals of the Focus and Project Graduation programs, and to suggest possible areas of improvement for future PLATO implementation and use.

Description of PLATO Learning's Role in the Focus and Project Graduation

The Focus program consists of approximately 50 high school students attending the small FAHS campus for the entire school day. Throughout the day, these students attend classes in math, science, social studies, English (writing), and physical education. Except for physical education, the teachers bring their students to the computer lab at least twice per week to use the PLATO Pathways system or one of the Microsoft Office applications (including Encarta) installed on the networked computers. The PLATO modules assigned to the students at the beginning of each marking period are used as stand-alone instructional units. Each teacher develops her or his own Pathways curriculum with the help of Mr. Allen before the start of the new semester. Students begin the courseware sequence by taking a FASTTRACK placement test. These results identify the individual math and language arts modules needed to be mastered for each student from those identified by the teacher. All Focus students are assigned all selected science and social studies modules. Table 1 includes a list of module assignment by subject area for a sample student enrolled in the Focus program. At the beginning of each module, each student is allowed to place out the module by initially passing the mastery test. As indicated, the assigned PLATO modules are experienced by each student individually at his or her own pace for each subject area. The modules are not closely linked to activities experienced in the classroom for each subject.

The Project Graduation program employs a design similar to the Focus program in its use of the PLATO Pathways system. The approximately 50 students enrolled in this enrichment program visit the Focus campus at the end of their regular school day. Each student gets support from a Project Graduation facilitator to help them with their assigned schoolwork, and when necessary these students log onto PLATO and experience their assigned modules. As with the Focus program, the Project Graduation facilitators identified a set of core curriculum modules, and each student uses the FASTRACK placement test to develop their personal curriculum profile.

Evaluation Method

Initial telephone conversations with Dr. Prempeh indicated two principle areas of concern regarding the expectations of an outside evaluation:

- How did the use of PLATO contribute to student success this year?
- What (if any) is the relationship between persistent PLATO technical problems and some of the concerns and reservations articulated by the students and faculty about the PLATO Pathways system?

Following some initial telephone conversations, a site visit was made by the principal evaluator to FAHS. Face-to-face interviews were conducted with Dr. Prempeh and Mr. Allen. Learner and instructor surveys were distributed, and brief informal interviews with some of the students and instructors were conducted. In addition, Pathways data were collected from the networked computer system. All the data which could possibly be extracted using the exported data files are summarized in Tables 2-5 and Table 7. It must be noted that , although module mastery data appeared intact within the comprehensive data file, time data for the Focus files were missing or unreliably reported for some students (one student reportedly spent over 400,000 hours logged on during one semester).

Once the computer and survey data were tabulated, follow-up telephone conversations were used to clarify specific issues.

Results

The results section is divided into two main parts. The first part includes "PLATO® Pathways Use-Focus Students" and "PLATO® Pathways Use-Project Graduation Students" and reports as much information as could be retrieved from the computer system regarding module mastery and time-on-task. These data are analyzed for both the 3rd marking period (November 24, 1997 – January 23, 1998) and 4th marking period (January 26, 1998 – March 13, 1998) for students in the Focus program, while only 4th marking period data were analyzed for the Project Graduation students. In addition to the PLATO® Pathways module performance summaries, correlations between PLATO performance and GPA as well as behavior (absences, tardies, warnings, suspensions, and write-ups) for the Focus students were calculated.

The second part of the results section is titled "Student, Faculty, and Administrator Attitudes." These data summarize the survey item responses as well as the personal interviews.

PLATO® Pathways Use: Focus Students

The data in Table 2 indicate that during the 3rd marking period, 47 Focus students averaged 41.72 English modules, representing 35.34% of the total modules attempted. These students mastered an average of 3.68 science modules (8.73% of all science modules attempted), 3.91 social studies modules (8.15% of all social studies modules attempted), and 39.53 Math modules (33.02% of all math modules attempted). These students averaged about 89 total modules mastered, representing about 22% of all modules attempted during this time period.

The data in Table 3 indicate that during the 4th marking period, 36 Focus students averaged 30.64 English modules, representing 25.97% of the total modules attempted. These students mastered an average of 2.61 science modules (6.11% of all science modules attempted), 4.56 social studies modules (11.64% of all social studies modules attempted), and 23.36 Math modules (20.69% of all math modules attempted). These students averaged about 61 total modules mastered, representing about 16% of all modules attempted during this time period. No reliable time data were available for the Focus students during the 3rd and 4th marking periods.

Clearly, the Focus students were more successful using the PLATO Pathways system to facilitate English and Math skills. The number of modules mastered (and equally low percentage mastered) for science and social studies indicate that fewer modules for these subjects were assigned than Math and English modules, and very few were mastered. Table 1 includes a list of those social studies and science modules assigned to a "typical" Focus student.

The correlation data presented in Table 4 indicate that significant relationships exist between number of English modules mastered and 3rd marking period GPA (r=.405, p<.01), number of math modules mastered and 3rd marking period GPA (r=.692, p<.01), and number of social studies modules mastered and 3rd marking period GPA (r=.491, p<.01). And most importantly, a significant relationship exists between total number of modules mastered and 3rd marking period GPA (r=.648, p<.01). Although it can't be determined whether a higher GPA caused higher module mastery, or higher module mastery caused a higher GPA, this relationship strongly suggests that more module mastery is better, period.

Incidentally , the correlation data in Table 4 also indicate that a significant negative relationship exists between number of English modules mastered and number of behavior warnings given (r=-.339, p<.05). This means that students earning more behavior warnings mastered fewer English modules. Again, no cause-effect relationship can be identified from this data, but it does suggest that student behavior played a part in module mastery, and vice versa.

Table 5 includes correlation data between module mastery, GPA and behavior. These data indicate a significant relationship between GPA and number of science modules mastered (r=-.388, p<.05) as well as social studies modules mastered (r=-.376, p<.05). These levels of correlation were not as pronounced as those identified between 3rd marking period GPA and module mastery, and no significant relationship between overall 4th marking period GPA and total number of modules mastered. This discrepancy between marking periods may be due to that fact that only 36 students were enrolled during the 4th marking period (as opposed to 50

during the 3rd marking period), and 11 of these students were not enrolled during the 3rd marking period. Only 25 students were the same across both time periods.

In addition to the PLATO performance and GPA correlation relationships identified, a negative relationship was identified between number of science modules mastered and absences (r=-.399, $p<.05$). This relationship suggests that consistent attendance was important for science module success.

PLATO Pathways Use: Project Graduation Students

The data in Table 7 include 4th marking period summaries of module mastery and time for those students enrolled in Project Graduation. These data indicate that 15 students mastered an average of 1.73 math modules (out of an average 4.60 attempted), 26 students averaged .96 science modules (out of an average 5.92 attempted), and 48 students averaged 10.00 writing modules mastered (out of 13.56 attempted). A total of fifty-seven Project Graduation students averaged 9.32 modules mastered out of an average 15.33 module attempts. This constitutes 61% total module mastery, with most of this figure attributed to the high percentage of writing modules mastered (74%). The data in Table 7 also indicates that the total amount of time spent using the PLATO system during the 4th marking period was 265.67 minutes (SD=224.21). Although this figure seems rather low, the high standard deviation indicates that many students spent a considerably longer amount of time using PLATO, while many students spent almost no time on the system (normal for a program with a transitory population). These data clearly indicate that during the 4th marking period, the Project Graduation students used the PLATO Pathways system primarily as a writing enrichment tool. Table 6 includes a list of modules assigned to a "typical" Project Graduation student.

Student, Faculty, and Administrator Attitudes

In general, the students responded quite favorably to the survey items asking for their opinions about using the PLATO Pathways system. The scale item data in Table 8 indicate that most of the students generally agreed that PLATO was easy to use, easy to understand, offered many opportunities to interact, and allowed them to work at their own pace. Students also indicated that they tried hard to learn from the PLATO modules. Perhaps the most important favorable response was to the item "The computer lessons make me feel more confident about doing well in school." Most students agreed or strongly agreed with this statement, which suggests that the students feel that their experiences with PLATO help them in school. Students also reported that the PLATO modules offered "Some Help" in the general school subject areas of math, social studies, reading, writing, and science. The only two items which elicited strong negative responses dealt with the student's self-esteem and confidence relative to computer use. Students disagreed that the computer made them nervous and that they felt bad when the computer told them they gave the wrong answer.

Table 8 also includes a summary of the students' written responses to questions asking them to identify what they liked best and least about the PLATO modules, and what they would change about them if they could. Although many students did not respond to these items, a number of reoccurring statements shed additional light on their general attitudes. Among the notable responses to what students liked best about PLATO include "work at my own pace," "helps me learn what I really need to learn," and "no written assignments." As far as what they liked least, six students reported that technical problems were a concern, as was their inability to retake tests for a better grade. And regarding what they would change if they could, many students reported that they would include more games, make the lessons more fun, and they would fix the technical problems plaguing PLATO's implementation and use in their lab.

Faculty survey item responses are included in Table 9. Each item reports responses from four or five faculty. Those items reporting five responses include the opinions of the computer lab technician, Mr. David Allen. Although he wasn't an assigned teacher, he spent a considerable amount of time working with the students and the PLATO system in general and was qualified to respond to some of the items. The data in Table 9 indicate that at least three faculty respondents agreed with statements suggesting that the PLATO course objectives corresponded with their own course objectives, that the PLATO content was generally up-to-date and free of error, the quality and style of instruction was consistent, the tests/applications/drills/ lessons/tutorials were aligned with the objectives, the tutorials allowed the students to interact with the material, colors and graphics were used appropriately, the screens were consistently readable, they could structure individual assignments easily, they found working with the computers to be productive, they were adequately trained to use the PLATO system, PLATO played a useful role in their teaching, and they enjoyed working with the PLATO system. In addition, two faculty members indicated strong agreement and the other three indicated agreement to the item "I would like more training on how to use PLATO to my students' best advantage in my teaching."

A number of survey statements were disagreed with by at least two respondents. These items indicate that the faculty generally didn't feel the PLATO course content included what

their students really needed to learn about the topics presented (and there wasn't adequate depth in exercises and tests), the PLATO course content didn't correspond well with their course final exams, students didn't understand some of the explanations, faculty were not able to spend one-on-one time with students while the class worked with PLATO, and the students seemed trapped by the computer system. All faculty respondents indicated that the PLATO system was not free of bugs and errors.

When asked what was best about teaching with PLATO, the language arts teacher responded that the students seemed very responsive to the computer-based instruction, and the extra practice over difficult concepts was valuable. The science teacher reported that the PLATO science curriculum included many of the important objectives needed for the different science courses taught. She also stated that "At first, PLATO was a nice break from the everyday doldrums of lecture." The math teacher stated that the best thing about PLATO was that it "...allows me to work with individual students while others (were) actively engaged in learning and receiving immediate feedback."

When asked to comment on what they liked least about using PLATO, all faculty members mentioned the bugs and system freezes. In addition, the science teacher felt that the science material became too difficult too quickly for her students. Her impression was supported by the low number of science modules mastered.

When asked to suggest ways to improve the PLATO lessons, the math teacher stated that she would like to see the math terminology updated. The Science teacher indicated that she would like to see more drill and practice in the tutorials so that the "...habitual key-bangers don't have so many screens of material that they're not reading prior to the mastery test." She also indicated that more earth science material would be helpful. When asked how the PLATO system could be improved, the math teacher mentioned that she would like to have the ability to make detailed reports for classes instead of just module reports. She also would like the ability to generate comprehensive paper-based mastery tests with spaces for the students' work to be shown. The science teacher indicated that she would like her students to spend less time within the programmed PLATO modules ("The students were just getting too tired of it."), and more time interacting between the PLATO modules and other software programs. Finally, a number of faculty members indicated that additional technical training would be helpful so that they could potentially solve some of the software problems encountered.

Dr. Prempeh, the Focus Alternative High School principal, was less than enthusiastic about the role PLATO played within the Focus and Project Graduation programs this year. Because the PLATO Pathways assessment and reporting protocols were either inaccurate or impossible to customize to his specifications, it was difficult for him to determine and communicate the possible effectiveness of the PLATO system. The difficulties with accurate assessment and reporting combined with the frequently-reported technical problems encountered by the teachers and students contributed to Dr. Prempeh's generally high level of frustration with PLATO. He stated that "...we have demanded that our teachers cut and splice PLATO into their curriculum, and then they have to turn around and deal with numerous technical problems without support."

Dr. Prempeh and Mr. Allen had contacted PLATO Learning, Inc. many times throughout the year regarding the technical problems encountered. Poor response time, limited technical solutions and evasive answers to questions about Pathways assessment and reporting left Dr. Prempeh feeling as though he, and his faculty and students, were not valued customers.

Discussion and Recommendations

Putting the technical concerns aside for a moment, the PLATO Pathways system appears to have the potential to significantly support the Focus Alternative High School faculty and administration in their efforts to help the Focus and Project Graduation students meet their academic and behavioral goals. Students enrolled in these programs enter into classes with a wide range of abilities and experiences. Teachers must have help in structuring individualized instruction so that all students acquire minimum competencies within the different subject areas. The PLATO Pathways system is well suited to carry out this function. The Focus and Project Graduation teachers did seem generally pleased with the way the PLATO curriculum could be customized, and there were no complaints about the way the PLATO system kept track of the students and their individual progress through their individually-designed coursework. And although many technical problems arose throughout the marking periods, the number of modules attempted by the students indicated that they were, in fact, accessing the material. The technical problems certainly represented bumps in the road (sometimes rather severe), but learner access was possible a good deal of the time. And the fact that a significant relationship existed between the number of modules mastered and GPA indicated that the PLATO material could play a supporting role in academic success.

The students' generally favorable responses to the survey items may imply that they were less frustrated with the implementation problems than the faculty. Granted, teachers wanting to integrate technology into their instructional environments should not have to face the number of problems encountered in the Focus computer lab this year, but some of the problems were due in part from the Focus teachers' own design. For example, some of the concerns with the PLATO modules surrounded the fact that students often seemed to work within a module simply for the sake of mastery, so they could move on to another topic. Tests were taken, and screens were scrolled through so that tests could be taken again with the hopes of passing. Meanwhile the content was regarded as superfluous and boring, and modules were often abandoned before mastery was achieved. After awhile within this type of arrangement or context, many students were observed giving up and wishing there were more games available. One reason why this type of situation might have arisen was because the teachers didn't use the PLATO modules effectively for what they truly represent: direct instruction. PLATO modules are discrete units of instruction. They do not exist within an overall meaningful context, and they are inherently not structured as purposeful learning experiences in themselves. In a high school setting, they are best used as part of an overall course experience. It is the teachers' responsibility to put the modules in their place and provide the students with the context for necessitating the skills facilitated by the students' assigned PLATO modules. If students are cognizant of the fact that they must master a particular module because it will enable them to succeed within the meaning contexts established in the classroom, then PLATO becomes a useful tool rather than a quickly-tiring "game" to be played out.

One reason why the PLATO modules were perceived as nothing more than individual, discrete learning experiences may be the lack of a clear relationship between the skills facilitated with each module and the overall goals and objectives for the individual courses. If the teachers could clearly identify which modules taught specific content-area skills, they could schedule the use of the direct instruction modules at appropriate, albeit more rigid, times. Another possibility

would be to prepare diagrams or pictures representing where in a specific course topic the modules "fit." Some additional means of orienting the students to the use of PLATO within particular lessons or units of study could include:

- Articulate to the students in some way the prerequisite skills needed to succeed with their assigned modules
- Employ strategies which enable students to relate what they are about to learn in their assigned PLATO modules to their own personal previous experiences
- Describe the specific objectives to the learners BEFORE experiencing PLATO
- Generate a class (or content area) "Big Picture" and articulate how the direct instruction experiences of PLATO fit into it (how the PLATO skills support the course goals)
- Clearly identify and communicate student rewards and incentives for trying hard and doing well in the PLATO environment
- Explain specific procedures to the students for obtaining support for things they don't understand while using PLATO (teacher, peer, aid help)

As far as the technical problems are concerned, PLATO Learning and the Focus teachers and computer technician need to continue working out all the implementation bugs before the material is used in the future. Table 10 includes a summary of the problems encountered by FAHS and the manner in which they were addressed by PLATO Learning. Although the system appears to operate normally most of the time, its instability continues to cause periodic freezes and login problems. It was recommended by PLATO Learning that FAHS switch their networking software from the Novell client to the recommended Microsoft client software if possible. This, combined with upgrading to the Pathways 3.0 version as soon as possible, should maximize the system stability for the current FAHS computer lab configuration.

It was also mentioned by some of the Focus teachers as well as the administration that the PLATO Pathways report generation capabilities did not meet their needs during the 1997-98 school year. Once the reporting "bugs" are fixed (as they might already be), Dr. Prempeh and his faculty should determine precisely what types of reports are desirable for the upcoming school year (for example, correlating the relationship between PLATO time-on-task and overall course grades), and if possible a representative from PLATO Learing might provide some assistance if needed in offering strategies for customizing the Pathways reports and generating the necessary figures.

The faculty and administration at Focus Alternative High School are committed to meeting the needs of the students enrolled in both the Focus and Project Graduation programs. And the most important step they take toward helping to meet these needs is informing the students what their needs really are: attendance, punctuality, adhering to a code of conduct, and academic success. In this same way, the FAHS teachers and administration need to clearly inform PLATO Learning what their needs really are, and hopefully by working together they can begin to maximize the benefits of computer-based instructional support. PLATO Learning, Inc. has demonstrated its willingness to help FAHS get PLATO operating in a stable and reliable manner. It's up to the FAHS teachers and administration (and not PLATO Learning) to put PLATO courseware in its proper, effective place.

Table 1: Sample Focus Module Assignments (Pathways) by Subject Area

Class Activities: Algebra 1
RDS Working With Science
RDS The Scientific Method
RDS Graph It!
RDS Interpreting Graphs
RDS Going Metric Game
RDS Mother Nature's Vacation
Coordinate Plane
Probability - Pre-Algebra

Class Activities: Pre-Algebra 2
Variables
Linear Inequalities: 1 Variable
Simple Equations
Solving Equations
Points in a Plane
Coordinate Plane
Graphing Linear Equations

Class Activities: Biology 1 Semester 2
Chemical Control
Nervous System
RDS Digestion
RDS Response in Simple Animals
RDS Transport and Animal Size
RDS Open/Closed Circulatory Systems
RDS Asexual Reproduction
RDS Sexual Reproduction
RDS The Invertebrate Word Game
Health
Disease
Chemical Control
Nervous System
Health
Disease

Class Activities: English
Capital Letters and Punctuation
Capital Letters
Proper Nouns and Capitals
The Basics of Punctuation
Capital Letters and Punctuation With Course Assess
Capital Letters
Proper Nouns and Capitals
The Basics of Punctuation
FASTRACK Language Arts Curriculum and Reviews
Language Arts Curriculum
Language Arts Level A
What is a Plural?
Plurals With s and es
Capital Letters
Proper Nouns and Capitals

Class Activities: English Cont.
The Basics of Punctuation
Language Arts Level B
What is a Verb?
Two Kinds of Verbs
Language Arts Level C
Parts of Verbs
Some Strange Verbs
Verbs and Tenses
What is a Noun?
Two Kinds of Nouns
More Kinds of Nouns
Language Arts Level D
What is a Pronoun?
Personal Pronouns
Personal Pronouns With Ownership
Other Pronouns
Recognizing Adjectives
More About Adjectives
Identifying Adverbs
More About Adverbs
Language Arts Level E
Nouns, Pronouns, and Gender"
Pronouns and Number
Nouns & Pronouns Agree in Sent.
Subjects and Irregular Verbs
Starting a Sent. With THERE or HERE
What is a Sentence Fragment?
Language Arts Level G
Learning About Prepositions
Using Articles
FASTRACK Reading Curriculum and Reviews
Reading Curriculum
Reading Level A
Simple Verb Endings
Basic Contractions with Pronouns
Abbreviations
Easy Compound Words
Verbs Ending in E
Contractions of NOT
Verb Endings After Consonants
Prefixes: mis/pre/post
Nouns and Pronouns
Following Directions - Basic
Reading Level C
Using Words in Context
Figuring Out the Meaning of New Words
Clues to New Word Meanings
Words That Are Spelled Alike 2

- Characters and Events in a Story
- Descriptive Words
- Describing Reactions
- Reading Level E

Class Activities: English Cont.

- Pronouns
- Words That Sound Alike 2
- Cause and Effect Words
- Discovering Word Meanings
- Finding the Main Ideas
- Remembering Story Meanings
- Titles and Topic Sentences

Reading Level I

- Identifying the Main Idea 2
- Identifying the Main Idea When it is Implied
- The Title as the Main Idea 2
- Details That Support The Main Idea
- Chronological and Logical Order
- Comparison and Contrast

Grammar Series

- Parts of Speech - Part 1
  - What is a Verb?
  - Two Kinds of Verbs
  - Parts of Verbs
  - Some Strange Verbs
  - Verbs and Tenses
  - Verbs Review
  - What is a Noun?
  - Two Kinds of Nouns
  - More Kinds of Nouns
  - What is a Pronoun?
  - Personal Pronouns
  - Personal Pronouns With Ownership
  - Other Pronouns
  - Nouns, Pronouns, and Gender"
  - Pronouns and Number
- Parts of Speech - Part 2
  - Recognizing Adjectives
  - More About Adjectives
  - Identifying Adverbs
  - More About Adverbs
  - Learning About Prepositions
  - Using Articles
  - Prepositions and Articles Review
- How to Select and Get a Job
  - Finding a Job You Want
    - Your Job Search Process
- Making New Words - Part 1
  - Simple Verb Endings
  - Basic Contractions with Pronouns
  - Abbreviations
  - Easy Compound Words
  - Verbs Ending in E
  - Contractions of NOT
  - Verb Endings After Consonants
- Making New Words - Part 2
- Prepare for Job Success
- Understanding Relationships With Others
  - Important Others
  - Working Relationships
  - Problem Solving by Cooperative Change
- Winning on the Job
- Knowing Your Customers
  - Serving Your Customers
  - Finding Customer Solutions
- Reading Business Letters With Course Assessment
  - Business Letters Challenge
- Reading Graphical Data
  - Introduction to Line Graphs
  - Reading Line Graphs
- Reading Skills and Strategies
  - Identifying the Main Idea 2
  - Identifying the Main Idea When it is Implied
  - The Title as the Main Idea 2
  - Details That Support The Main Idea
  - Chronological and Logical Order
  - Comparison and Contrast
- Structure and Tone
  - Building and Using Sentences
    - Subjects and Irregular Verbs
    - Starting a Sentence With THERE or HERE
    - What is a Sentence Fragment?
  - Word Usage
    - What is a Plural?
    - Plurals With s and es

Class Activities: Social Studies

- Social Studies
  - Geography
    - Location
    - Physical Features
    - Population Distribution
    - Environment
    - Conservation and Preservation
    - Personal Space
  - Economics
    - Scarcity
    - Consumption
    - Circular Flow of Economic Activity
  - Behavioral Science
    - Norms
  - Political Science
    - Civil Rights
  - History
    - Colonization
    - The Founding of a Nation
    - Sectionalism
    - Geographic Expansion
    - Economic Expansion
    - Social Expansion
    - Quest for Equality
    - Quest for National Security
    - Changing Lifestyles

Table 2: Focus Module Mastery (3rd Marking Period)

Modules Mastered	N	Mean (SD)	Percent of Total Modules Attempted
English	47	41.72 (16.86)	35.34
Science Fundamentals	47	3.68 (4.66)	8.73
Social Studies	47	3.91 (3.26)	8.15
Math	47	39.53 (16.86)	33.02
Total	47	88.85 (32.79)	21.79

Note: Specific modules for each subject area (sampled from a "typical" student Pathway assignment for a single marking period) are indicated in Table 1.

Table 3: Focus Module Mastery (4th Marking Period)

Modules Mastered	N	Mean (SD)	Percent of Total Modules Attempted
English	36	30.64 (18.95)	25.97
Science Fundamentals	36	2.61 (4.11)	6.11
Social Studies	36	4.56 (3.46)	11.64
Math	36	23.36 (15.12)	20.69
Total	36	61.17 (34.47)	16.10

Note: Specific modules for each subject area (sampled from a "typical" student Pathway assignment for a single marking period) are indicated in Table 1.

Table 4: Focus 3rd Marking Period PLATO Modules Mastered (by Subject) and GPA/Behavior Correlations (*r*)

	GPA	Absences	Tardies	Warn-ings	Suspen-sions	Write-Ups
English	.405**	-.132	-.076	-.339*	.136	-.275
Math	.692**	-.431*	.029	.209	-.074	.213
Science	.244	-.175	.111	-.168	-.217	-.175
Social Studies	.491**	-.107	-.002	.154	.065	.029
Total (N)	.648** (47)	-.331* (44)	-.008 (44)	-.101 (44)	.017 (44)	-.057 (44)

* Correlation is significant at the 0.05 level
** Correlation is significant at the 0.01 level

Table 5: Focus 4th Marking Period PLATO Modules Mastered (by Subject) and GPA/Behavior Correlations (*r*)

	GPA	Absences	Tardies	Warn-ings	Suspen-sions	Write-Ups
English	.060	-.175	.161	.017	-.012	.011
Math	.092	-.218	.189	.017	-.128	.014
Science	.388*	-.399*	.247	.100	-.035	.059
Social Studies	.376*	-.282	.108	.007	.065	.008
Total (N)	.163	-.277 (32)	.217 (32)	.013 (31)	-.062 (31)	.021 (31)

* Correlation is significant at the 0.05 level
** Correlation is significant at the 0.01 level

Table 6: Sample Project Graduation Module Assignments (Pathways) for Second Semester 1998

Class Activities: PG Science

RDS DNA in Action
- RDS DNA is the Message
- RDS The Double Helix
- RDS DNA Replication
- RDS The Genetic Code
- RDS Mutations
- RDS From DNA to Proteins

RDS Principles of Heredity
- RDS The Process of Mitosis
- RDS The Process of Meiosis
- RDS Mendel's Law of Segregation
- RDS Dihybrid Crosses
- RDS The Hardy-Weinberg Law

Class Activities: Writing Series (Structure and Tone)

Structure and Tone
- Building and Using Sentences
  - What is a Sentence?
  - Parts of a Sentence
  - More About Sentences
  - Three Kinds of Sentences
  - A Subject and Its Verb Must Agree
  - Subjects and Irregular Verbs
  - Making Verbs and Unusual Nouns Agree
  - What is a Sentence Fragment
  - Run-on Sentences - Beginning
- Word Usage
  - What is a Plural?
  - Plurals With s and es
  - Unusual Plurals
  - What are Negative Words?
  - Confusing Verbs - Beginning
  - Synonyms and Antonyms
  - Homophones: Words That Sound Alike
  - How to Form Possessives
  - Using Possessives
  - Possessive Pronouns & Adjectives

Class Activities - Project Graduation Math

Absolute Value
Binomials
Integer Product and Quotient
Linear Equations: 1 Variable
Simple Equations
Solving Equations
Graphing
Word Problems I
Inequalities II

Table 7: Project Graduation Modules Mastered (4th Marking Period)

Modules	N	Means (SD) Modules Mastered	Modules Not Mastered	Total Attempted	Time (Minutes)
Math	15	1.73 (2.25)	2.87 (1.92)	4.60 (2.72)	
Rediscover Science	26	.96 (1.25)	4.96 (3.64)	5.92 (3.89)	
Writing	48	10.00 (9.61)	3.56 (4.45)	13.56 (11.83)	
Total	57	9.32 (10.15)	6.02 (6.12)	15.33 (13.74)	265.67 (224.21)

Note: Specific modules for each subject area (sampled from a "typical" Project Graduation student Pathway assignment for a single marking period) are indicated in Table 6.

Table 8: Learner Attitude Survey Responses (Focus & Project Graduation Combined)

Part I: Scale Items

SA (5) = strongly agree
A (4) = agree
N (3) = neither agree nor disagree
D (2) = disagree
SD (1) = strongly disagree

Question		SD	D	N	A	SA	N	M (SD)
1.	I am able to sign on to the computer without problems.	4	4	3	10	18	39	3.90 (1.38)
2.	Getting to my lesson is easy.	3	2	7	11	16	39	3.90 (1.23)
3.	The computer is easy to use.	4	0	6	18	11	39	3.82 (1.17)
4.	I can start and stop a lesson whenever I want.	6	3	6	13	10	38	3.47 (1.39)
5.	The computer lets me do something (like answer questions) often and not mainly just watch.	4	4	4	19	8	39	3.59 (1.23)
6.	I usually can understand what the computer teaches me, without help from my instructor.	2	3	5	13	15	38	3.95 (1.16)
7.	The computer gives me help when I need it.	7	1	5	17	9	39	3.51 (1.37)
8.	I can work at my own pace on the computer.	2	5	4	9	19	39	3.97 (1.27)
9.	I feel I'm studying what I need to on the computer.	6	2	4	16	10	38	3.58 (1.37)
10.	The lessons on the computer are designed for people like me.	6	3	10	11	9	39	3.36 (1.35)
11.	When I give a wrong answer on the computer, I feel bad about myself.	19	7	8	4	1	39	2.00 (1.17)
12.	I would like more time to study on the computer.	7	5	8	12	7	39	3.18 (1.37)
13.	The computer makes me nervous.	18	6	6	2	7	39	2.33 (1.54)
14.	Working on the computer makes me feel good about myself	5	2	16	11	3	37	3.14 (1.11)
15.	I recommend learning from the computer.	3	2	5	19	7	36	3.69 (1.12)
16.	The computer lessons I work with are interesting.	6	2	8	17	3	36	3.25 (1.23)
17.	I try hard to learn from the computer lessons.	2	1	12	6	15	36	3.86 (1.17)
18.	The computer lessons make me feel more confident about doing well in school.	3	1	8	16	8	36	3.69 (1.12)

Part II: Help Scale

Learners were asked to rate how much they felt the PLATO system helped them in the following subject areas. 0 = No Help, 3 = Some Help, 5 = A Lot of Help

	0	1	2	3	4	5	N	Mean (SD)
Math	4	1	4	18	2	5	34	2.82 (1.40)
Social Studies	6	2	5	7	5	8	33	2.82 (1.79)
Reading	5	1	2	15	3	5	31	2.81 (1.56)
Writing	9	2	2	9	4	6	32	2.47 (1.88)
Science	7	3	0	8	7	9	34	2.94 (1.89)

Part III: Written Response Summaries

1. What do you like **best** about learning from the computer?

Positive reinforcement [1]
Math [3]
Work at own pace [3]
Just working on a computer [2]
Helps me learn what I really need to learn [2]
Teaches better than my teacher [1]
Easy [2]
Doing what I'm already good at [1]
No written assignments [3]
Reading [1]
English/writing modules [2]
Science [2]
Good examples [1]
Easy to understand the material [1]

2. What do you like **least** about learning from the computer?

Science [2]
Social Studies [2]
Math [3]
Writing [1]
Technical problems [6]
Not able to review things I didn't really get [1]
Not able to retake tests [2]
Bored after awhile [1]

- How would you change the computer lessons or the way you use them?

More games [6]
More interesting [1]
More fun [2]
More challenging [1]
Spend less time on the computer [1]
Spend more time on the computer [1]
Fix the technical problems [3]
Less math [1]
Less science [1]
Retake tests for a better grade [1]
More navigational control [1]

Table 9: Instructor Attitude Survey Responses (Focus & Project Graduation Combined)

Part I: Scale Items

SA (5) = strongly agree
A (4) = agree
N (3) = neither agree nor disagree
D (2) = disagree
SD (1) = strongly disagree

Question		SA	A	N	D	SD
1	The PLATO course content includes what my students need to learn about the topics taught.	1	1		2	
2	The PLATO course objectives correspond to those for my course.		3		1	
3	The PLATO course content corresponds to the content of the standard end-of-course test we use.		1	1	2	
4	Content seemed generally free of errors and inaccuracies.	1	2			
5	Content was generally up-to-date.		3		1	
6	Quality and style of instruction was consistent throughout the curriculum.		3		1	
7	Students generally understood the explanations.		1	1	2	
8	There was adequate depth in exercises and tests.		1		2	
9	Tests, application/drill lessons, and tutorials corresponded to the objectives in the Instructor Guides.	1	2		1	
10	Tutorials involved the students through frequent questions, answers and feedback, rather than just reading.		4		1	
11	Software was generally free of bugs and errors.			1	1	3
12	All courseware used consistent keystrokes and display style.		1	2	2	
13	Color was used appropriately.		4	1		
14	Graphics were used appropriately.		5			
15	Screens were consistently readable.		5			
16	I was able to use student progress reports to identify students needing my attention.		1	3	1	

	Question	SA	A	N	D	SD
17	I was able to spend time in one-on-one tutoring and counseling while students used PLATO.		2	1	2	
18	I was able to make appropriate individual student assignments on the system.		3	1	1	
19	My students rarely seemed confused or "trapped" by the system.		1	2	2	
20	My students respond well to the PLATO system.		2		3	
21	I find working with the computer is generally a productive, rather than frustrating, experience.		3		1	
22	I enjoy working with the PLATO computer system.		3	1	1	
23	The PLATO system plays a useful role in my teaching.		3	1		
24	I was adequately trained to operate the PLATO system.		3	1	1	
25	I would like more training on how to use PLATO to best advantage in my teaching.	2	3			

Table 10: PLATO Learning Customer Support Log Summary for the Focus Account

1. During the installation of PLATO Pathways, the client (FAHS) chose not to change the network software from Novell Client to the recommended Microsoft Client. Also, it was unclear whether the FAHS system conformed to the configuration settings as published in the Minimum Hardware Specifications document since Headquarters had little involvement with their set-up and installation. This and other problems with the version of Pathways installed running contributed to the database problems they experienced.

2. The client had no telephone in the lab; therefore, when PLATO Learning tried to help, instructions had to be faxed and the client had to call if additional support was needed. This lengthened response time and seemed to create frustration for the client.

3. The problem with WinKEY (the ability to switch between DOS and Windows) caused a problem with the P2K courseware and was disabled by a fix installed by Mark Billups.

4. The Fastrack issues (zero and negative grade gain) were resolved by installation of the Prep 2.4.1 and a special Fastrack fix issued after 2.4.1. This fixed the problem going forward but did not fix the data problems for existing learners.
The client did, however, need to have a summary of learner performance. Therefore, the data was exported to an Excel file and Barbara Thomas and Marie Ward performed hand calculations to determine the grade gain.

5. An upgrade to Pathways version 3.0 was recommended as soon as practical for the client. This will eliminate known database problems and will update to the Fastrack reports that were previously added as fixes.

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