ABSTRACT
                Designed to assist physical education teachers
realize the benefits of microcomputer usage, this paper presents the
case study of a hypothetical middle school teacher who utilizes Apple
computers for record-keeping, planning, teaching, and coaching. The
case study shows how the computers save time, assist in
individualizing instruction, help motivate and interest students, and
allow the teacher to communicate with others in her field. In
addition, several computer programs and their applications are
discussed: (1) Appleworks; (2) Teacher Utilities, Volume 1; (3)
Sports Data Services Volleyball Statistics; (4) Petwork (a
hypothetical communications network); (5) Project REACT Athletic
Scheduling; (6) Attendance Taker; (7) The Factory; (8) Project REACT
Bowling; (9) Physical Education Record Keeper; (10) Body Fat
Calculator; and (11) Comptech Systems Design Volleyball. A list of
references is appended which provides sources for the computer
software mentioned in the document. (JB)

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Computers in the Gym:

Friends and Assistants

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Computers in the Gym:

Friends and Assistants

Microcomputers ai   ·· ever growing presence in
today's schools.   More a ⅃ more schools are setting up
computer laps, developing computer literacy curricula,
and hiring ⸱⁻ appointing computer coordinators.
Science and math programs--and to some degree, programs
in language arts and social studies--are finding ways
of effectively integrating computers into the learning
experiences of students.   Many teachers regularly use
computers at home or in the school to keep records and
prepare written materials.

The influx of computers, however, has not yet had
much effect on physical educators or physical education
programs.   Perhaps it is because physical education
programs normally take place in locations far removed
from where schools usually house their new computers.
Perhaps it is because physical educators just do not
see the need for or usefulness of computers in their
programs.

Assuming that more computers are going to find
their way into the schools, the first of the above
problems may eventually be solved.   The solution to the
second problem, though, requires that physical

educators begin to realize that computers can be of

great use to them and their programs--as time saving

friends and as helpful assistants. To help physical

educators come to this realization, the story of a

middle school teacher is presented below. The teacher

and the middle school are hypothetical, but the

computers and computer software that she uses are not.

They are available RIGHT NOW!

Sandy Green and a Day of Computers

Sandy Green is a physical ecucation teacher at

Farlow Middle School (grades 5-8). She has an Apple

IIC computer at home, and access to three Apple IIE

computers housed in a converted equipment room adjacent

to the gymnasium at Farlow. Let's see how Sandy used

those computers as friends and assistants during the 24

hours from 7:00 pm Wednesday evening to 7:00 pm

Thursday.

Wednesday Evening at Home

Sandy's first computer activity on Wednesday

evening was the preparation of a ditto master for a

soccer task sheet for her first and second period fifth

grade classes. She used the Appleworks word processing

program (Lissner, 1983) on her Apple IIC. What a time

saver! No more taking forever trying (unsuccessfully)

to type a perfect ditto, then creating a mess making

corrections with a needle and a razor blade. Not even

worrying about mistakes, Sandy quickly typed the task

sheet on her computer, watching the letters and words

show up on her monitor screen. In a minute, she then

corrected all of her errors, producing a perfect "copy"

on the screen. Inserting a blank ditto master into her

printer, she gave a simple command to her computer and

a perfect task sheet ditto master was created in about

20 seconds.

Next, Sandy "loaded" her Teacher Utilities, Volume

1 program (MECC, 1981) into the computer and chose the

"Test Generator" option. A few weeks ago she had

entered about 50 multiple choice volleyball test

questions into a test file created by the same Teacher

Utilities program. Now the message on the monitor

screen asked her how many questions she wanted on her

test. Sandy typed in "20" for the answer, and inserted

the first of two blank ditto masters in her printer.

In a minute she had the test ditto masters, with 20

multiple choice volleyball test questions chosen by the

computer at random from her file of test questions. In

another few seconds she had an answer sheet, also

printed by the computer. "What a breeze;" she thought,

"I can get a different 20 question test any time I want. And I can add or delete questions in my test file whenever I want to."

Sandy then used the <u>Teacher Utilities</u> program for one more purpose: she made up a crossword puzzle as a take home reward for her eighth grade fitness classes which had been doing so well. All she had to do was enter (type in) the answers and their clues on the computer, and in a few minutes the computer kicked out a complete crossword puzzle ditto master. Sandy also could have made a word search puzzle for the class, but she had done that last time.

Now it was time to plan Thursday's classes. Using the <u>Appleworks</u> spreadsheet program (Lissner, 1983), Sandy quickly checked each class's progress in meeting the objectives of the particular unit in which it was involved. As she reviewed the information for each class, a portion of the monitor screen looked something like this:

File: 7th gr: M-W 3rd   REVIEW/ADD/CHANGE   Escape: Main Menu

=====A=========B=======C=======D=======E=======F=======G======H==

	Serve 7/10	Set 5/10	Bump 5/10	Pass 8/10	Writ. Test 75%	Team Work 4/5	Grd. Avg.
1 VOLLEYBALL OBJECTIVES AND MINIMUM STANDARDS							
4 NAME							
6 Bob A.	5 X	6	4 X	8		4	.79
7 Sue B.	6 X	5	5	9		5	.86
8 Vicki C.	7	5	3 X	7 X		2 X	.70
9 Tom D.	7	4 X	5	8		4	.80
10 Dave E.	6 X	5	5	7 X		4	.79

After each student's name was a current record of how

the student was doing on each objective for the unit.

An "X" after a score indicated that the student had not

yet met an objective; a blank in a particular column

meant that the objective had not been assessed as yet.

For the five students in the 7th grade 3rd period class

illustrated above, Sandy could quickly see that

(a) Bob, Sue, and Dave still needed to work on the

serve; (b) only Tom was short of the standard on the

set; (c) Bob and Vicki had the bump to work on;

(d) Vicki and Dave could use more time with the pass;

and (e) Vicki was having trouble working with her team.

These students did not take the written test yet; Sandy

just made the ditto master a few minutes ago! In any

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case, quick scans of records like the above helped
Sandy plan groups and learning experiences for each
class. Before starting to use the computer, she did
not have the energy or the time to incorporate such
individualization into her instruction. Now she could
really implement some of the theoretical ideas she
learned in her undergraduate and graduate classes.

The spreadsheet illustrated above has also helped
Sandy do something else that she had always disliked
before--grading. The last column of the class record
keeps a running total of each student's current grade
average. The computer automatically updates this total
every time that Sandy enters or changes a score on one
of the objectives listed. Sandy could see on the
record above, for example, that Sue would end up with
an 86% grade average for the volleyball unit if she did
not further improve her performance on the objectives
already recorded, and if she performed at her current
level on the written test. Sandy loves having this
kind of information at her fingertips each time she has
to make out grades for the 435 students she teaches.
It saves her hours of figuring, and eliminates
headaches resulting from hurried and inaccurate
calculations.

After planning Thursday's classes, Sandy still had
one more thing to do on her computer. She was the
eighth grade girls' volleyball coach and had to pick a
travelling team for Friday's match. Sandy liked to be
fair and base her selections on past performance; so
she loaded her Sports Data Services Volleyball
Statistics program (Benson, 1983) into her computer,
requested "Cumulative Individual Records," and in a
minute had a printout listing all of her players and
their game stats for the season to date. Picking her
top players from that information was a snap. She used
to have to sort through the individual charts for all
the games and try to remember (with the help of some
quick totals she kept on scratch paper) who was doing
well in what areas of play. She never had time to
prepare accurate season totals until after the season
was over--when the athletic director was bugging her
for final records. Now it was just a matter of having
her manager enter statistics into the computer after
each game, and the computer kept running season totals,
accessible whenever Sandy needed them.

Thursday Morning before Class

Sandy's first computer related activity at school
on Thursday morning was to check the PETWORK bulletin

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board for messages and announcements. "PETWORK" stands

for "P. E. Teachers Network," and the bulletin board is

an electronic computer-based subscription information

service operated by a retired physical education

teacher in the county[1]. Using a modem connecting one

of the physical education computers to the regular

telephone lines, Sandy dialed in to PETWORK and waited

a few seconds for the call to be automatically answered

and for the PETWORK MENU to appear on her monitor

screen. She selected "Announcements," and the

following appeared:

****

GREETINGS FROM PETWORK AT 7:13 A.M. ON THURSDAY, 11/14

Today's Announcements

1. Section IV volleball coaches meeting will be held
    next Tuesday, November 19, at 7:00 P.M. at The Pied
    Piper Restaurant.

2. Cathy Simpson at the Medwick School in Clarendon
    will be implementing her new seventh grade aerobics
    program all next week. All interested physical
    educators are invited to observe. Call the Medwick
    School at 355-8400 to make arrangements.

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[1]PETWORK does not really exist at present. There are,
however, similar computer based communications
networks.

Sandy pressed her return key to get back to the PETWORK

MENU, and this time she selected "Messages." After she

was asked for and she entered her assigned message

code, the following came up on her screen:

****

PETWORK MESSAGES FOR SANDY GREEN:

11/13....8:17 P.M.
Sandy, please let me know if you have any nominations
for county all stars.   -Barb Jansen

11/13....9:43 P.M.
Thanks for the information on Project Adventure. I am
going to try to get our district to set up a ropes
course.   -Bob Franklin

11,14....7:00 P.M.
Sandy, good luck on Friday's match'   -"Killer"

****

Sandy pressed her return key once more, selected "Send

Messages," and entered Barb Jansen's message code.   On

the computer keyboard, she then typed, "Barb, I will

get you my all star nominations tomorrow morning."

After entering her own name as the message sender,

Sandy signed off from PETWORK.

It was then time for one more task before the kids

started to show up. Sandy used the Project REACT

Athletic Scheduling program (Schuessler, 1983) to

prepare a single elimination tournament for the fifth

grade soccer intramural program. Responding to

questions on her monitor screen. Sandy entered the
eight team names, indicated which teams were the top
seeds, and selected the seeding option she wanted. In
a minute, the printer attached to the computer produced
the complete tournament bracket chart, w .h pairings
according to the seedings Sandy entered. Sandy posted
the chart on her intramural bulletin board and waited
for her first period class.

Thursday Morning Classes

Sandy taught six classes on Thursdays. The first
two were fifth grade soccer classes; the third morning
class was a sixth grade bowling class. Her afternoon
schedule consisted of two eighth grade fitness classes
and a seventh grade volleyball class. The computers
were a part of every class.

Both of the fifth grade classes went about the
same. As each student entered the gymnasium, he or she
went over to the computer room (converted equipment
room) and entered a personal code word on the computer
that had been wheeled to the doorway. Each entry
prompted this response on the monitor screen: "Welcome
to class, [student's name], have a good day." The
Attendance Taker program (Hurwitz, 1985) handled this

check in process, and it saved a few precious minutes
in each of Sandy's classes.

As soon as the locker rooms were clear, Sandy went
over to the computer in the doorway of the computer
room and entered a "Report" command. In seconds, she
had a printout of the roster for the day's class and a
list of the absentees. As usual, she made a quick
count of the students in attendance and checked it
against the number of names on the roster. After the
first week or so of using the computer to take
attendance, the students had learned not to try to
check each other in, but Sandy still double checked out
of habit.

During the fifth grade classes, most of the
students spent their time working on the soccer task
sheets which Sandy had prepared the night before and
run off before school. Two students in the first
class, and one in the second, however, spent part of
the period in the computer room. They each worked for
a while on a computer program called The Factory (Kosel
& Fish, 1983), which was designed to (a) help develop
inductive thinking skills, (b) improve visual
discrimination and spatial perception, and (c) increase
understanding of the concepts of sequence, logic, and

efficiency. These objectives were important to Sandy.
Many of the tasks and learning experiences she planned
for her students required them to use higher level
cognitive processes, and Sandy often provided some
remedial activities for those students who had
difficulty. The Factory was one of these activities,
and the students in all grade levels enjoyed it and
learned from it.

A number of students in each of the fifth grade
classes also had Sandy check their performances on one
or more of the soccer objectives. As soon as each of
these students had attempted a skill test, Sandy
entered the results in the class Appleworks spreadsheet
file which she had reviewed the night before. Using a
procedure like this, Sandy always had up to date
records of each student in each class.

A the conclusion of each fifth grade class, Sandy
reminded the students   eck the intramural bulletin
board for the soccer tournament pairings which she had
posted before school.

The third period sixth grade bowling class began
with the usual computerized attendance check in.
Looking over the printout, Sandy noticed that Bobby
Swanson had returned after missing Tuesday's class on

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how to score in bowling. As the rest of the class then
started to work in groups on the four-step approach and
ball release (with plastic balls and pins), Bobby began
to work in the computer room on the "Scoring" portion
of the Project REACT Bowling program (Laden, 1983).
(Later in the day Sandy could check the record keeping
portion of the program to see how well Bobby had done.)

Three students in the bowling class also had Sandy
check their performances on a few of the class
objectives; and she effeciently entered their results
in the appropriate Appleworks spreadsheet file.

Planning Period

Sandy spent a portion of her after-lunch planning
period in the physical education computer room. During
the morning some new equipment for her program had been
delivered, and she wanted to update her inventory. She
also needed to check on the program needs for the next
order which would go out some time after the first of
the year. Sandy kept her inventory on an Appleworks
data base file (Lissner, 1983), a portion of which
looked like this on the monitor screen:

each printout were prescriptive messages directing the
student to include specific activities in his or her
workout, depending on the test results recorded on the
chart. One of the printouts looked like this:

```
NAME:   JAN SWENSON      8- SEX: YFEMALE    C- AGE:  14
                         D- WEIGHT:  98     E- HEIGHT:  5' 1"
                         F- HRT. RT:  68    G- B.P.:  125/75

TEST ITEM            UNITS  YOUR   MIN.  INFO.  NEED   YOUR
                           SCORE   STD.  SCORE  WORK?  GOAL

H- BODY FAT            %     16     2C    15            15
I- 12 MIN. RUN        LAPS   10     12    14     *      12
J- SIT UPS            #/MIN  35     30    44            38
K- PULL UPS            #      1      3     5     *       3
L- SIT AND REACH      INS.    8      5     9             9
M- SHUTTLE RUN        SECS.  15     18    13            14
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HERE IS WHAT YOU SHOULD DO TO REACH YOUR GOALS
ON THOSE TESTS IN WHICH YOU NEED WORK:
-------------------------------------------------------------
12 MIN. RUN
ENGAGE iN 15 MINUTES OF AEROBIC ACTIVITY EVERY OTHER DAY.
-------------------------------------------------------------
PULL UPS
DO EXERCISES AT STATION 4 AT THE BEGINNING AND END OF EACH CLASS.
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One or two students in each fitness class asked
Sandy to check them on at least one of the fitness
tests. Sandy recorded their new scores on the
computer, using the "Review/Change Individual Student
Records" portion of the Physical Education Record
Keeper program. She then printed out a new
personalized report for each student.

In one of the fitness classes, Sandy called over two students who had been absent on the day she had calculated body fat percentages as one of the fitness test items. Using a <u>Body Fat Calculator</u> program (Hurwitz, 1984) on one computer, Sandy entered the appropriate skinfold measurements for the students and got an immediate report of their estimated body fat percentages. She then entered these scores on the record keeping program which was active on one of the other computers, and gave each of these students a new personalized report. Sandy chuckled to herself as she remembered how difficult it had been to keep and report fitness records before she had begun to use computers.

Sandy's last period was a seventh grade volleyball class. After checking in on the computer, most students began working individually or in groups on volleyball tasks, drills, or scrimmages. One student, however, spent fifteen minutes in the computer room reviewing volleyball rules and rotation with the help of the <u>Comptech Systems Design Volleyball</u> program (Miles, 1983). Another student, who was unable to participate because of a badly sprained ankle, used the same program to learn a little extra information about the history of volleyball.

Thursday Evening at Home

It was just a few minutes before 7:00 pm when Sandy headed for her computer to work on Friday's classes. She had not been involved with any computer related activities since the seventh grade volleyball class; but as she turned on her Apple, she thought about the effects that computers were having on her professional life: She felt more in contact with other physical educators in other schools; she spent less time on record keeping and reporting and had more time for her students, her family, and herself; she was doing a much more effective job individualizing the learning experiences of her students; and she was convinced that her students were more motivated since she had started using computers in her classes.

Sandy also felt good about herself for mastering a new skill. She had originally been a little skeptical about learning how to use computers, and had thought that it would take her a long time to learn enough to start using them. But after a one-day workshop at the University, and an hour or two becoming familiar with each new software program she obtained, she had acquired enough mastery to begin using computers in her teaching and coaching. "I'm a pretty good teacher and

coach:" she thought, "but now let's see about those

Friday classes."

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