USING STUDY CARDS CREATOR SOFTWARE IN TEACHING YEARS 1 AND 2 COLLEGIATE MATHEMATICS

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Many students taking courses such as college algebra, precalculus, calculus, introductory statistics, or mathematics courses for pre-service teachers benefit from frequent skills practice and feedback on their developing understanding of mathematics concepts. The use of StudyCards™ software enables such a practice and feedback environment to be readily accessible to both faculty and students. StudyCards™ Creator is used to create stacks of electronic flash cards that contain text and images and that can be viewed on the TI-73, TI-83 Plus, TI-89, TI-92 Plus, or Voyage 200. After a stack is transferred from the PC to the calculator using either StudyCards™ Creator or TI-Connect with a TI-GRAPH LINK™ cable, the StudyCards™ Viewer calculator software application allows the cards to be viewed on the calculator. StudyCards™ Viewer also tracks the answers supplied by the stack user and displays results for individual cards or the entire stack. This paper provides an overview of stack types, illustrates how to create stacks that incorporate text and images, explains how to transfer stacks from the computer to a calculator and between calculators, and shows how to use the calculator to view the finished product.

TYPES OF STACKS

StudyCards™ Creator software offers four types of stacks. With the Self-Check option a question is entered on the front and the answer on the back. This option allows the user to indicate whether or not the answer is known by pressing the YES or NO keys. The Self-Check with Levels option permits varying levels of questions and requires the user to attain 80% correctness before the App proceeds to the next level. Additional options include Multiple Choice or Multiple Choice with Levels. With the Multiple Choice options the author specifies the number of answers that will be provided (1-9) and the number corresponding to the correct answer. The user selects their answer and the App determines whether or not the answer is correct.

CREATING STACKS

The stack-creation process begins by opening the StudyCards™ Creator software and choosing the type of stack to be created (Figure 1). No matter which choice is made, the following information must be supplied: (a) Stack name; (b) Stack title; (c) Number of levels (if appropriate); (d) Created by; (e) Date; (f) Version number; and (g) Scores for correct, incorrect, and skipped cards (leaving as 0 produces no scores).

The example in Figure 2 utilizes the Self-Check option for determining the derivative of trigonometric functions.
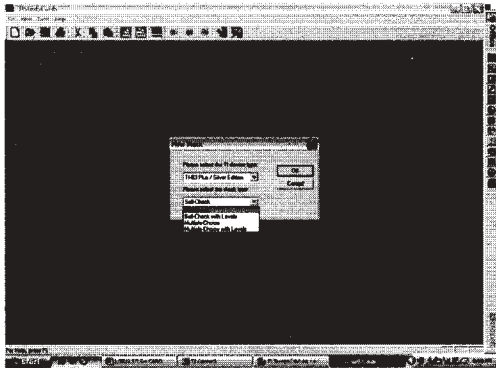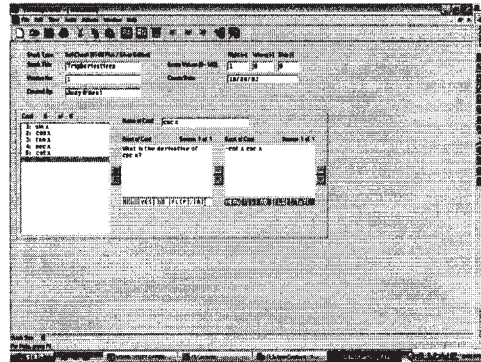

Figure 1

Figure 2

After the first card is created, generate additional cards in the stack by selecting the NEW CARD button. Using the screen capture option of TI-Connect (Figure 3), it is possible to copy a calculator screen and paste it onto a card (Figure 4). Pictures that are bitmap images or PIC files from the calculator may be inserted on a card. Save a stack by selecting FILE, SAVE or FILE, SAVE AS.
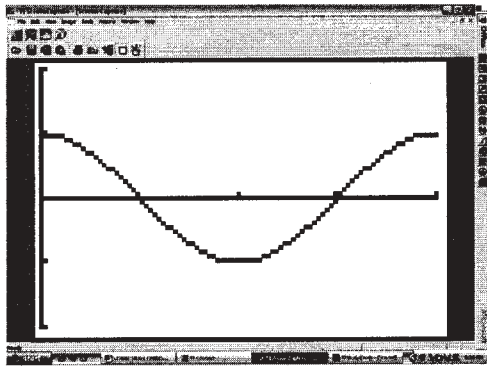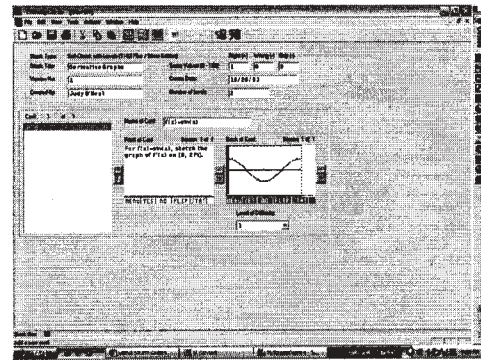

Figure 3

Figure 4

SENDING A STACK TO THE CALCULATOR

From the Actions menu choose Send to Device (Figure 5). The current file or others you select are then transferred to the calculator (Figure 6). Stacks are stored as application variables (AppVars).
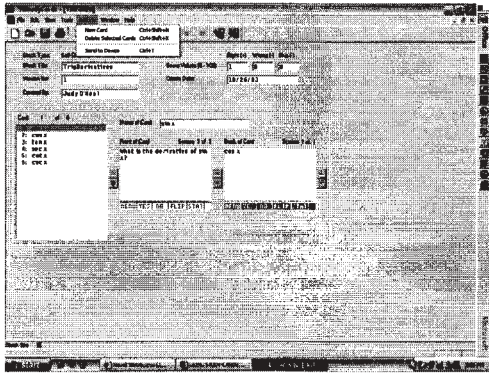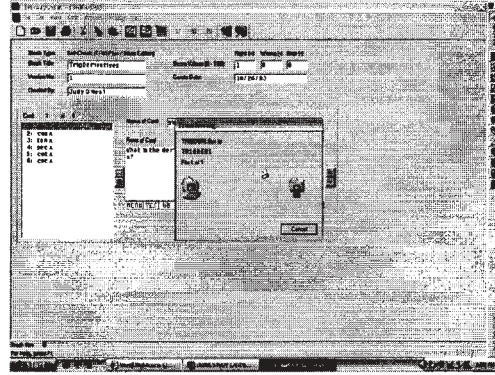
238

Figure 5

Figure 6

TRANSFERRING A STACK BETWEEN SAME TYPE CALCULATORS

The procedure for transferring StudyCards™ stacks between calculators is identical to sending and receiving programs, lists, and Apps. Choose 2nd LINK and then D: AppVars (Figure 7). Select the AVAR to be transferred, cursor over to TRANSMIT, and press ENTER (Figure 8).
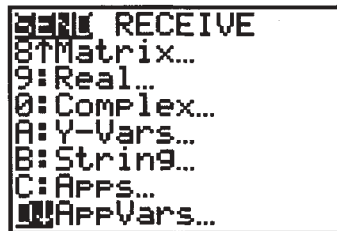

Figure 7

Figure 8

VIEWING A STACK

After selecting the StudyCrd option from the calculator APPS menu (Figure 9), the StudyCards™ viewer is activated (Figure 10). The first time the StudyCrd app is activated on the calculator produces the MAIN MENU screen shown in Figure 11.
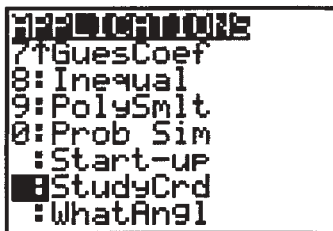

Figure 9

Figure 10

Figure 11

If the APP has run previously, the MAIN MENU screen shown in Figure 12 appears. Options for viewing the stack are available by selecting the SETTINGS option (Figure 13). When settings are selected, scroll down to FINISHED (Figure 14) and press ENTER.

239

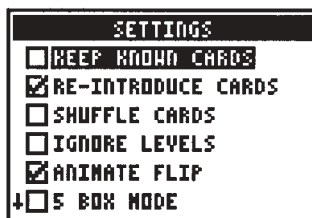|		
MAIN MENU 1: USE LAST STACK 2: CHOOSE NEW STACK 3: SETTINGS 4: QUIT	**SETTINGS** ☐ KEEP KNOWN CARDS ☑ RE-INTRODUCE CARDS ☐ SHUFFLE CARDS ☐ IGNORE LEVELS ☑ ANIMATE FLIP ↓☐ 5 BOX MODE	**SETTINGS** ↑☐ SHUFFLE CARDS ☐ IGNORE LEVELS ☑ ANIMATE FLIP ☐ 5 BOX MODE DEFAULTS **FINISHED**
Figure 12	Figure 13	Figure 14

Clarification on the last two options may be helpful. The 5 BOX MODE option repeatedly introduces a card until the right answer is given five times in a row. KEEP KNOWN CARDS, RE-INTRODUCE CARDS, and IGNORE LEVELS are not available when 5 BOX MODE is chosen. The DEFAULTS setting chooses KEEP KNOWN CARDS and ANIMATE FLIP.

Select CHOOSE NEW STACK, highlight the stack to be viewed, and press ENTER on the calculator (Figure 15). The title screen appears and indicates how many cards are in the stack, the author of the stack, creation date, and version number (Figure 16).
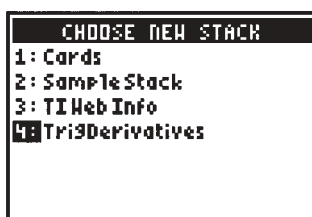
CHOOSE NEW STACK 1: Cards 2: SampleStack 3: TIWebInfo **4:** TriSDerivatives	**TriSDerivatives** **6 CARDS** Judy O'Neal 10/26/03 1 **PRESS ANY KEY...**
Figure 15	Figure 16

When first card appears, SOFT keys are displayed at the bottom of the screen (Figure 17). To activate these keys, press the calculator key directly below the SOFT key. Select FLIP (Trace) to view the answer to the question (Figure 18). Press YES (Window) or NO (Zoom) depending on whether or not you answered the question correctly. To check the status of your progress, select Menu (Y=) and 4: RESULTS (Figure 19).
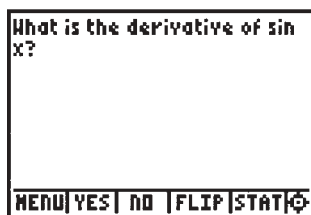
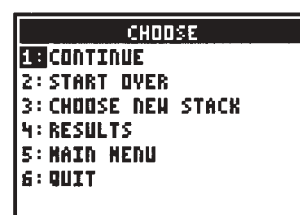|		
What is the derivative of sin x? **MENU│YES│ NO │FLIP│STAT│▷**	cos x **MENU│YES│ NO │FLIP│STAT│◁**	**CHOOSE** **1:** CONTINUE 2: START OVER 3: CHOOSE NEW STACK 4: RESULTS 5: MAIN MENU 6: QUIT
Figure 17	Figure 18	Figure 19

Use the up or down arrow keys to scroll through the entire stack and to determine the number of times you answered No, Yes, or Skipped (Figure 20). To return to the stack, select BACK (Y=) and then 1: CONTINUE (Figure 21). When incorrect answers are given, those cards are reintroduced in subsequent attempts and an option for repeating the review is offered (Figure 22).

n	Y	S	CARD NAME
0	0	0	csc x
0	0	0	cot x
0	1	0	sec x
0	1	0	tan x
0	1	0	cos x
0	1	0	sin x
BACK	SCORE:00004 OF 00006		

Figure 20

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          CHOOSE
1:CONTINUE
2: START OVER
3: CHOOSE NEW STACK
4: RESULTS
5: MAIN MENU
6: QUIT
```

Figure 21

```
     CARDS REMAINING:4
1:REPEAT
2: START OVER
3: CHOOSE NEW STACK
4: RESULTS
5: MAIN MENU
6: QUIT
```

Figure 22

CONCLUSION

Creating stacks of StudyCards™ is a relatively quick process that can be adapted for a variety of courses. From box plots illustrating the 5-number summary in a statistics course to formulas for geometric solids studied in geometry or utilized in calculus, the content possibilities for stack types are numerous. In addition to the traditional linking option, stacks can be downloaded from the instructor's web page or from within the more secure environment of Blackboard or WebCT. Options for utilizing StudyCards™ stacks include an in-class warm-up, review for gateway tests, and out-of-class projects or activities. StudyCards™ offers college mathematics faculty and students a cost-effective and engaging environment for skills development and practice.

REFERENCES

TI StudyCards™ App - http://education.ti.com/us/product/apps/83p/studycards.html
TI-Connect Software -
http://education.ti.com/us/product/accessory/connectivity/down/download.html