

## 1998 “Survey” of College Students About Their High School Math Education

### Part I

#### Learning the Effects Of Calculators from Students’ Experiences

Note: The comments are *transcribed* exactly as written and it needs to be pointed out that students were given a *very brief time* to express themselves.

#### A. Calculators Have Become A Crutch!

- *I feel helpless without calculator* in math. [Ro, 98]
- *Always used calculator – know nothing.* [Sheldon, 96]
- I agree with this because when we were little we were taught complicated math problems. *But then later on we were introduced to calculators. We then forgot all* our knowledge on what we learned before due to calculators. [David, 98]
- I agree that calculators are used too much in math classes. *I can barely do multiplication & division now because I always use my calculator.* However, I’m really bad at math, and calculators are the only way for me to survive in a difficult math class. [Joseph, 98]
- I agree because *I can’t hardly do even simple math* without thinking I have to rely on my calculator. My mother was taught math in Korea and she always complains about this problem.... So, I agree! [Son, 96]
- I was a student in high school that *“learned” calculus with a calculator.* When taking the next sequence of calculus my first quarter in college, I wasn’t prepared. I couldn’t remember the fundamentals, and had to relearn them... [Treudef, --]
- When I enrolled in Calculus during my Junior year at xxx (big name University), *I was stunned at how unprepared I was,* exams had to be done *without calculators* (quite a new concept to me) and weekly quizzes proved my inability to understand general concepts that I should ‘ve learned in high school. [Karin, 95]
- Working with H.S. students as a tutor, I’ve been amazed at *how much calculators are allowed in math classes.* Students even have a difficult time doing simple arithmetic. [Cheng, 95]
- ... In 11<sup>th</sup> grade we had 2 exchange students from Japan who were excellent in math and *didn’t even use calculators. We had to use them to subtract 10 from a problems.* [Barsom, 93]
- Math has always been my worst subject. I agree with the statements in the passage because they totally apply to me. Teachers rush us and don’t take the time to go in depth with the subject. *Many of them themselves rely on calculators and barely know how to do problems the “old-fashioned” way themselves...* [Ambriz, 98]
- I totally agree because all of my math courses beginners to advanced *I was always rushed. I simply memorized* how to do a problem because there was so much material covered. *I never really learned much this way.* I indeed do catch myself using a calculator for simple equations today due to this! [Smith, 92]
- I know that I am not very good at math or science. I agree because I was that student *who used the calculator for everything.* I believe the U.S. has a long way to go to catch up with some of the other countries in that area of education. [Janksley, 95]
- I agree because even from my experience there are some problems *I am able to do on a calculator but not from scratch. I believe if this method of no calculators was taught, then students would understand more about math and not about how to punch buttons to get the right answer.* [Dunlap, 94]

- I Strongly agree because now *for math I need a calculator for everything*, just simply to add or subtract. I think that teachers need explain everything more thoroughly. [Alvarez, 98]
- The same method of teaching was in use in the school I attended. *My life line to mathematics due to this, is a calculator.* [Hargrave, 94]
- *My younger friends can't pass addition*, they forget. [Rargel, 96]
- I'm especially bad at math and *heavily depend on a calculator* if there were better, stronger programs I might be better. [Gatchalian, 98]
- I completely agree with the overuse of calculators... I personally *have used calculators so much that I have forgotten many math functions* ... [Hornor, --]
- I believe teachers should find a better way to teach. *For me if I don't use a calculator I feel so insecure.* [Alvarez, 98]
- I agree with calculators but my math skills are terrible from high school. [Betts, 94]
- *In my current math class, we use the calculators for almost everything*... [Mills, 95]
- This survey is so true. This is describing what I have went through since grammar school. Also many of my other peers. *Calculators do all of the work for us we don't have to think anymore.* [Browning, 96]
- *It is true I do use my calculator for everything and when I can't use it I feel lost.* [Lewis, 98]
- I've seen this firsthand & agree... I used to be forced to do math without calculators, but have seen the calculators being used more & more. Even on standardized exams, calculators are now required! They test calculator proficiency. *I was shocked.* [Wong, 95]
- I agree with this because there have been many times when our class has not been able to finish learning a chapter because we were rushed for time. *We just learned how to plug numbers into the calculator* to avoid actually learning the material. [McDow , 97]
- I agree with the statement because I have noticed how calculator use is much greater than when I was in grade school & kids should know how to do calculations manually. [Devlin, 97]
- *Should ban calculators until Higher classes.* All that is ever taught in 1<sup>st</sup> semester is review. [Clerk, 97]
- I was actually disgusted myself *to see the mass dependence on the calculator.* I did all of my simple mathematical operations by hand, and only used my calculator for graphing and advanced purposes. I receive a newsletter from the US Dept of Education every month, which often make proud claim to the rise in math aptitude. So long as we as American *rely on calculator* and focus on grades in a math class, math will never really be a solid part of the American mind, as entertainment awareness is. [Magbigghi, 98]
- Teachers no longer take the time to teach, *calculators used all the time.* [Brooks, 95]
- City schools are too slow so they use these devices. [Bell, 97]
- Daniel Phillips is correct. My generation (I am 20 going on 21) has had a lack of learning. I completely agree with him on that. *The teachers I had preferred the easy way out, a.k.a. calculator.* [Zack, 95]
- I agree with what the student had to say. I am *interviewing for a career job* at this very moment and many companies ask that I take math test. At the bottom of *all the test* I have taken there is statement that says *no calculators.* I am able to handle the math because I learned the old fashion way. I believe without a strong understanding of math many of our youth will remain lost in a society that is changing with technology. [Johnson, 93]

#### B. Calculators Are Overused!

- The use of calculators and computers has put many students in the what I would call "SECOND PHASE OF ILLITERACY" Meaning, *most students don't really understand the basic concept behind the real problem solving techniques.* Since they obtain the ready made

results from the calculators and computers. It would be better understand the *manual operations first* and then go to the calculators and computers at more advanced level or stage of the study. [John K. ---]

- I truly believe in Daniel Phillip’s statement. These days *everyone is using a calculator as a crutch*. This cannot be. Teachers need to put love and passion back into teaching. [Ruiz, 96]
- ... I think I realized how poorly the system teaches math when I was talking to my sister recently who is a sophomore. She was taking a math competency test and couldn’t do a lot of it because *she couldn’t remember how to handle fraction and decimals without a calculator*. The reason is that when she was learning about fractions and decimals they were allowed to use calculators. [--, 94]
- Students should *not be allowed to use calculators in the math classes*, learn the “old fashioned way” or the long way, and then they would understand how they got the answer rather than just see the answer. [--, 94]
- Agree *calculators used too much*, but don’t think the facts are taught at all well enough. [Conway, 96]
- ... I agree that *technology in the classroom is a problem* and that lesson plans are often rushed for silly (external) reasons. [Garner, 95]
- ... I strongly agree with Mr. Phillips assertion that today’s high school students are *becoming overly relied on calculators* to the point where basic mathematical skills are being surely degraded. [Liu, 94]
- I think it’s OK to use calculators, but students need to be *taught the “old-fashion way” first*. [Aris, 96]
- ... *Calculators have become a crutch* for students and has taken away desire to learn math since they can do the work for us. [Boda, 96]
- ... *there is a strong dependence on calculators*. [Nerstrud, 96]
- I think *calculators should be used less in high school* and more in college [Hendricks, 97]
- I agree with the statement about calculator used,... [Dong, 89]
- The use of calculators for addition is perfectly acceptable in a calculus class; *it is their use at basic levels in elementary school that is problematic*. The ability to actually do math problems is both the best tool and measure for the understanding of mathematics. *There is nothing “rote” about homework exercises*. The “acquisition of facts” so derided is central to all learning, particularly mathematical learning. [Kraus, 97]
- ... I agree with calculator section... [Sherman, 95]
- Calculators are important in society, and everyone should know how to use them, but we *have become overly calculator-dependent*. [Thomas, 98]
- I do agree with the calculator part though. [Chu, 97]
- *People need to be taught how to do math before using the calculator...* [Hsieh, 95]
- ... Calculators and computers have limited usefulness in the learning process. They should only be used for mindless arithmetic involving lots of digits and for lookup tables. Besides that *they are a big distraction...* [Po, 95]
- *Without calculators, people are at a lost in solving the problems*. Teachers should teach out how to solve it without calculators then show how to use them later for shortcut purposes only. [Joven, 97]
- I do agree with the statement because I’ve noticed that people are *now almost completely dependent on calculators* and devices of the sort... [Sun, 98]
- ... *Calculators were definitely used more than what was necessary...* [Smith, 95]
- I agree from my experience, technological equipment like calculators are *a must* in math classes. Teachers basically teach everything using the “*calculator method*.” ... [Shing, 98]
- *Calculators are a tool, not a teaching method...*[Pellel, 96]

- *The problem is teachers don't teach , they rely on comp/calc to teach students.* [Durbin, 95]
- Smart people will always know what their calculators are doing. [Ihm, 95]
- At my high school, we implemented a “new” math. It was called **College Preparatory Math about four years ago. This year we eliminated it because it was a failure. The math stressed semi-practical applications of the math without stressing the fundamentals. There was a high reliance on calculators because they were seen to be practical.** Our school average math test scores went down. On the other hand, when people in the normal classes used calculator, they seemed more successful. Once the *fundamentals of arithmetic are taught “without” a calculator*, it seems beneficial to allow the usage of a calculator when learning the more difficult aspects of math (algebra, geometry, trig, calculus) [Bauer, 97]
- I agree that students are *being taught too much dependency on technology* when their knowledge would perhaps be greater, if they had to learn it independently without any aid. [Kril, 96]
- I do agree with the point that many students are *using calculators for every math problems, even the simple ones....* [Lee, 97]
- People will soon be depended on all technology with little knowledge.[Banasiak, 95]
- Very true; especially the argument made concerning calculator. [Kaes, 98]
- I think *calculators are used too much.* [Cosey, 92]
- This is definitely true **especially the use of calculators.** [Dudai, 98]
- *Whole-heartedly agree with calculator part.* [Barriger, 93]
- ... Also, I think *the calculator shouldn't be used at all* because it only makes people's brain duller and lazier. [--, 96]
- In a way, it's true that *one uses calculator even on basic addition & subtraction*, but it is also true that calculators allow more complicated problems.... I should say that *lower math (arithmetic) should not use calculator*, but for calculus, it is a good idea to use calculators.... [Lam, 96]
- Shouldn't count on technology. Use our brain!
- *Calculators should wait until later grades/high levels* when students are known to master simple procedures. [Zoshi, 95]
- Calculators may be an asset but a full understanding is needed, to know it at face value will not help increase our aptitude. [Lamgendorfer, 92]
- Students today *definitely need to do math without the support of calculators* esp. adding-subtracting. [Shoup, 94]
- Calculators are O.K. for more advanced math but *students should be able to do basic skills without one.* [Barnes, 94]
- ... I think the use of calculator is necessary in upper-level math such as Calculus to learn the use of graphing Calculator... But *should not be use for lower-level math* such as math in High School math (algebra or lower). So students can learn the basic math first. [Lee, 96]
- I will say government of Education Board should pay attention. [Sheir, 97]
- *Batteries die the mind doesn't.* [Sherman, 96]
- The society or *children of this generation relay on calculators too much.* [Onimole, 95]
- I think the use of technology is very important, but it is true that *it shouldn't be depended on for basic math facts.* [Krason, 95]
- Teachers should *use calculators after* they have taught the material. [Baldwin, 94][Governor-11]
- I think a person should learn a formula before using a calc. [Nance, 96]
- They need to *know basics 1<sup>st</sup> then cal.* [Shelton, 96]
- I kind of agree but if a calculator is available, why not use it? *Calculators should not be used until people know how to do it by hands*, and then use calculators.... [Wong, 98]

- ... today's high school students don't really learn how to do the real problems *rather than depending on their calculator to help them* solve their problem. [Phuong, 93]
- I think the students should be encouraged to use their heads for calculations...*rather than calculators* simply because it trains one's mind to be calculative as well as logical. [Patel, 93]
- I think calculator, if used properly, can be a very valuable tool in learning math... [Chen, 97]
- ... I do not like how everything is based on whether or not you can plug numbers into a calculator. Just because you can plug into a calculator that does not mean you comprehend what you're doing. *I wish math was not so much calculator work and students were not so lazy.* [Robillard, 97]
- *The use of calculators should be stopped in order to make students work out simple mathematics problem from their heads.* [Mbui, 94]
- I definitely agree with teachers not making sure students know the info & *the reliance on calculators.* [Nichols, 98]
- *Calculator are depended upon too much in the classroom.* [Lewis, 94]
- *Anyone can punch in # on a calculator.* [Childress, 91]
- I fully agree that students should be taught to think for themselves *rather than rely only on technology.* I feel moderate use of technology is fine, but we need to learn how to regulate it. [Watts, 92]
- ... Also I think that *calculators for the most part should not be used*, especially on the SAT's. [Vezzosi, --]
- I think the use of calculators *should only be allowed after the student has mastered that certain operation.* [Byorick, 97]
- I think that this circumstances are true for the US education. *Students should use their brain than calculators.* [--, 95]
- This would be a great idea so we don't become too dependent upon the calculator. [Yong, 9]
- I do believe that *calculators do prevent from using their minds.* [Perez, 96]
- I think *HS math should decrease the use of calculators.* [Lin, 98]
- Students *can rely on calculators too much.* [Tsang, 98]
- I believe that use of calculators *greatly inhibits others from developing some very important cognitive skills.* [Campbell, 95]
- *Calculators are being used way to much.* [Maurer, 97]
- Calculators have by far taken over the basics that should be taught. [Hanon, 97]
- *Calculators do not teach the students the mental reasoning key to math!!* [Stepansky, 92]
- *We depend too much on calculators.* [Lin, 98]
- *Technology cannot replace teaching.* [Harrell, 91]
- I agree with him, *we rely too much on calculators.* [Morgan, 97]
- I agree because *people can't do a simple math problem without using calculator.* [Sneis, --]
- I agree because if it is learned in your head instead of your calculator you are better prepared to handle every day problems. [--, 96]
- ... Technology may play a small degree in this also because *who cares about the process of obtaining the answer when one can just have it*, therein lies the problem. Students don't appear to care—why—the answer is the answer. [Oliver, 95]
- to live in today's world we need both the "old ways" and new technology! [J.R.S., 95]
- I agree with some of it, such as the calculators, but there really is not a way to solve it. [--, 97]
- I do agree because today teachers just teach through the book + calculators and they need to go beyond that to help the
- Too much reliance on technology. [Yuan, 94]
- I think it's important to use technology (e.g. graphing calculators) as a SUPPLEMENT, NOT SUBSTITUTE, to rote mathematical skills. Without a conceptual framework and solid

understanding behind the display on the calculator, students really aren't learning anything. [Ellis, 95]

- I agree that students are *to calculators dependent and that is one of the main problems*. [Reese, 97]

#### B. Wise Teachers Stay Away From Calculators!

- My high school, xxx H.S. in IL participated in the TIMSS as part of a consortium and did quite well, #1 in math and #2 in science. In many of my math tests, *we were not allowed to use calculators* on them *so we had to understand* the concepts. [Wong, 98]
- Depends on the school/teacher that you went to. In my High School all our teachers *hated calculators* and homework hardly counted. [Kramp, 95]
- In Algebra II when I was in High School, we *were not allowed* to use calculators and *I benefited from* that denial. [Nunn, 94]
- My high school teachers taught us the derivations before using the calculator functions. [Berdiago, 96]
- I believe that the teachers should go slow in teaching math. The students should have to learn the principles without a calculators. After they mastered the principles then use the calculators as a tool. *I learned math that way and that has really helped me* in my math abilities. [Falcetano, 96]
- I feel that my high school teachers prepared me quite well in the math area. We *did not use calculators too often*, but if we did, it was for something that the book requested a calculator. I do feel that the use of calculators should be minimized though. [Austin, 97].
- I had a good Calc teacher and we *were not allowed* to use calculators *so I got a good math background*, but many other schools aren't like mine. [Stoyanov, 97]
- In pr-algebra and algebra I, we were forbidden to use calculators *and I learned a great deal of math that way*, but as for advanced classes calculators are an asset. [Durlre, 96]
- ... *I have very strong mathematics skills* and the main reason is *I was never allowed* to use calculators even for hard and long calculations. [Sharma, 90]
- *I was taught well in H.S. calculators were hardly used at all*. [Bergres, 96]
- ... For my last comment I would like to say that while I was in school *we couldn't use calculators*. I've *had to learn and memorize add, sub, multiplication, and division*. Kids today also need to get rid of their calculators and learn and memorize just like I had to. [Reeves, 95]
- ... I didn't have a class where *calculators were given out or required* for a math class, and I'm *very thankful for that now*... [Ng, 93]
- Being able to compute basic math functions without the use of calculator is a very fundamental part of knowing and understanding of math. Without this basic ability the understanding of more complex math will be very difficult. Therefore it is in my opinion that *all student should acquire the basic skills at a young age*. [Yu, 92]
- I was never taught "how to use a calculator" or to "use it for everything." [Chris, 95]
- ... *Calculators never played a role in my math education*... [Smith, 95]
- ... However on the topic of calculators, *I was not allowed to use one until* I got to trig, and calculus beyond that for calc. We were required to use the calculator, and it is a shame not to take advantage of technology available *once you can do it the hard way*. [Katherine, 96]
- I *never used* calculators and *I do fine* in H.S. math. [Liu, 96]
- *In high school calculators are used too much. Teachers have the power to prohibit the use of calculators* in their math classes. I think more teachers should use their power and challenge students to use their brain a bit more. I.e., in Calc II & Calc III, *my professor didn't allow the use of calculators*, this was a *great mental exercise for me*. [Martenz, 97]

- I *never had the luxury of using calculators during my math class*, never did I have the use of high technology. [Case, 92]
- I *didn't use the calculator until* the third year in high school. [--, 98]
- I feel that the calculator is great and, *but only after being taught fully* the application the “old fashioned” way. I think that was the best method I’ve ever experienced... [Kegan, 96]
- Very often I forget how to do long division so **I’ve hidden my calculator** in my closet and *now do everything in my head*. [Ulmer, 98]
- I hate calculators & computers – promotes laziness. [Venu, 96]
- I agree for the most part with this students *should not be so dependent on calculators*, and I do feel that at times lessons were rushed just to fit them in. I was fortunate enough though to have quite a few good teachers as well. They stressed the fact that we couldn’t rely solely on calculators, but taught us how to use the technology that we lucky enough to have available to us. I do believe that we should be educated on how to take advantage of the technology though. [Roche, 97]
- I agree; but I was not taught that. My high school math teachers *only allowed the use of calculators if it was absolutely necessary*. [Borrell, 96]
- I agree, *I rely on my cal. All the time*. When I came to xxx & I entered Cal I & II, our teacher *would not allow cal.* to be used. I learned really fast how to do all the functions without a cal. I think **this has now helped me a lot in my math courses I’m in now**. [--, 97]

#### D. Voices From Pre-NCTM Standard Era – Prior to 1990

- Technology is good, I like it but what happens when it fails and that all you know. Students need a solid foundation. We are behind in all math and science! [smith, 62]
- I agree with most of the statement. I think students should learn to do math without calculators first.... [Tajald, 69]
- Teachers I know, private school and college, do not grade homework and calculators are used to check work only. [Harrison, 71]
- Without the proper foundation, how can any society advance? New technology is a must to keep pace with the competition, but at what cost? If we do not understand how or why something works. We can not expand on our knowledge. [Leisher, 72]
- I don’t think calculators should be used until the student reaches calculus or trigonometry level courses. [Wallace, 82]
- Intorudce computers and calculators after basics are known. “*show your work*” to understand the concepts instead of just get and answer. [--, 82]
- My instructor used to call calculator crutches. [Song, 83]
- ... I do believe that calculators are used too much in the classroom environment. In basic math, algebra, and others considered fundamental, math can be enriching when learning to “think” things through. The calculator takes too much away from the thought process. [Jett, 85]
- We should stick with the old method and use calculators when needed. [Moore, 85]
- When I was in high school, calculators were allowed only in our pre-calculus class. [Foruline, 86]
- “even simple addition and subtraction.’ This statement is so true to students in high school” [Duong, 86]
- ... More time needs to be spend individually with students and having them learn how to “do” math without calculators, then integrate technology into their study. [--, 87]
- I agree with the fact we need it the old-fashioned way. [Moss, 87]
- I agree that we use machines (calculators) to do too much. We do not rely on ourselves to learn to do it without the aid of devices... [Fox, 87]

- My High-School, the teachers were concern with the quality of student work. And we are not allowed to use calculators. [Matthews, 87]
- The educational system is based on getting the answers correct and doing assignment as told. There is a lack of thinking on the part of students required. Calculators and computers now think for us.... [Oates, 87]
- That is exactly how we were taught, although the use of calculators when I was in school were not used until about the 9<sup>th</sup> grade. [Hansen, 88]
- ... When I graduated in 1988, no calculators were allowed at all. Perhaps this has changed in 10 years... [Shimshi, 88]
- ***The use of calculators should be strongly discouraged.*** It is important to be able to get the correct answer – we don't want a bridge to fail due to a “math error”; however, the fundamental concepts must be understand in order to utilize math in application. [Shultz, 88]
- I do believe the use of technology can take the brain work out of learning. [Creel, 89]
- We are a very technologically Advanced Country. But students should learn how to do math without the aide of technology, before they should be allowed to take advantage of tools out there. [Reimche, 89]
- I agree that calculators are over used. Students should learn more on their own. [Battaola, 89]
- I was tuaght the “old fashioned” way in high school in addition to how to use calculator. [--, 89]
- I thought this statement was right on mark. I agree we ***allow calculators in classroom too soon*** and in college & graduate school, math focus is on completing assignments. We need more attention to this area of our education. [Martin, 89]
- I think I agree with the comments and especially so about the use of calculators for simple problems. [Jonoane, 90]
- ... But, in my education, calculators were not used until around 10-11<sup>th</sup> grade. [Paranjpe, 90]
- I never used a calculator until H.S. I feel that teachers are changing and are now taking a more hands on approach. [--, 90]
- I'm also surprised to see how often high school students use calculators now, how often they are even required to use calculator. When I took the same math classes, calculators ***were prohibited.*** [Hendershot, 90]
- Calculators as well as computers should not be a replacement for learning. [Shomon, 90]
- ... I was ***not allowed*** to use a calculator until very late in high school however, ***if this has changed it is a bad idea.*** [Henry, 91]
- Technology cannot replace teaching. [Harrell, 91]
- I never used a calculator in high school. [King, 91]
- Students really do rely on the calculators too much thus they don't really learn what they are doing or understand why they are doing it.... [Robinson, 91]
- Calculators do not teach the students the mental reasoning key to math!! [Stepansky, 92]
- The use of technology at early levels of schooling has definitely become a hindrance to teaching of both the theory and application of mathematical analysis.... Students must first learn to apply the basics. [Corlerf, 92]
- I think that calculators are the biggest problem. [Pamdin, 92]
- Personally I have difficulty doing simple math without a calculator because of using it for everything.... [Hoeschen, 88]

#### E. Advice: Children Should Learn Math Not Calculators!

- I am a mother that has returned to school to finish a degree in Electrical Engineering. ***My children in elementary school are learning math with the calculator*** and are not proficient with the basic facts. Math does not seem to be a top priority in their curriculum...



- It is frustrating to see my *7 years old nephews using the calculator to add. This is what they are being taught in 2<sup>nd</sup> grade*. They need to know and understand the basics, not the calculator. [Jacobson, --]
- My little sister is 13 years old, and *ever since 3<sup>rd</sup> or 4<sup>th</sup> grade she was using a calculators for math*. I tried to tell her that that was not right, but she did it anyway. *Now she's completely dependent on one*. [Young, 95]
- My brother is thirteen and *still has problems with his multiplication table, unless he has a calculator*. [Turner, 93]
- *Start teaching math not calculators*. [Hare, 92]
- I am an Elementary Ed major and the problems I see are: yes-programs but many other things need to be taken into consideration – home support, etc. I had a fine elementary math education – *Anyone who is allowed to use calculators in elementary school is being cheated*. [Robb, 91]
- Teaching math (all the basics) is crucial in the elementary school years. *Most elementary school kids learn to use a calculator before learning all the basics*; it's not their fault, but rather the parents and teachers who are to blame. Many parents believe the result is more important than the tedious details at getting to that result. [Bacsafra - 93]
- *Kids depend on calculators to much*. [Avery, 97]
- *No calculators in elementary school*, but for certain classes calculators are OK like for geometry & calculus. [--, 90]
- We should teach students how to solve things on their own at an early age, but as they grow older let them learn about technology because our society is so dependent on computers, calculators, etc. [Swisher, 94]
- I'm going into teaching. I'm aware of problems with technology and standards, and they must be stopped. A back to the basics approach, combined with the return to drill and practice methods of the past can help our children compete in the future. Technology, such as calculators, *must be supplements and not integral parts* of learning. [Galinski, 94]
- I agree with the statement that *students have been taught to use calculator too early in life*. I think students in the U.S. *should be taught more intensively on basic math...* Today's education system should teach students to “think” more rather than I rely on today's technology. [Chuang, 94]
- agree that we need to *start early and teach students how to do math without depending on calculators....* [Coley, 96]
- *Children need to learn basic math without aid of technology*. Technology should only come in once basic skills have been grasped. [Chang, 95]
- I think kids just shouldn't be given calculators. I think the excuse to allow kid to learn how to use them is lame. *How hard is it to use a calculator?* Kids should get the basics down first. [Chang, 96]
- ... there is nothing inherently wrong with technology either. It all depends on how much “ground rules” teachers give to children. *Technology should be a supplement not a substitute*. [Covaxrubias, --]
- ... however, technology is important, *but not at a very young age* or too early in school. [Gresham, 96]
- ... the use of a calculator at early age pushes children away from using their brain. The lack of logical exercise makes children uninterested subjects such as mathematics and physics. [Karca, 94]
- I believe that *the calculators have taken over, kids aren't allowed to use their minds*. [Jones, 97]
- I agree that *students are taught to use calculators very early in elementary school because students become dependent on calculators for everything*. [Johnson, 97]

- Kids should be able to solve probs both the old fashioned way and with a calculator. [McNelis, 96]
- Calculator should only be used for Calculus or above level. Whatever under calculus is simple enough and should be able to use hand & mind calculations. The mind should be trained at young, not get lazy at such young age. [Lin, 91]
- *Should use calculators only in High School.* [Piever, 97][Prairie-54]