

Math CAMMP
A Creative and Innovative Award Winner Twelve Years Later
Presented by Jack Piel and Ken Burrows
UNC Charlotte

Back in 1994 in Boston, the Creative and Innovative Award ceremony was accompanied by a banquet and red wine. Enjoying both, Jack and I tried to cogently convey the excitement we had about our then three-year old program. In those days, finalists made their presentations and waited for the outcome. We ultimately won, were very proud, and have advertised the honor in our promotional materials ever since. Twelve years ago, we described Math CAMMP (an acronym for Comprehensively Applied Manipulative Mathematics Program), a great outreach asset, which enrolled 25 teachers and 80 campers and paid for itself. All too often, in my experience, programs we proudly flourish one year are gone the next, flown with the funding, or the initial enthusiasm, or changing realities. We swear on our grant proposals that, yes, these programs are reproducible even after the funding has gone, but they all too rarely are. In 1994 we boasted 25 teachers and 80 campers. In 2006 we were inundated by 43 teachers and 113 campers.

Math CAMMP began in 1992 as an idea by which undergraduate and graduate students learning about innovative instructional tactics could actually practice these tactics with elementary children. The plan was not only to provide support for new teachers in training but also to link that training to children in the local community who needed help but might not be able to afford it.

Working in partnership with the Office of Summer Programs, in order to initiate Math CAMMP and to attract enough interest in the community, we offered a money back guarantee to those parents whose children attended every day from 9:00 am till noon of an all-week-long math camp experience. Expecting only a few children to enroll, we were hugely and pleasantly surprised when 45 campers representing grades 1-8 not only signed up but never missed a session!

The Office of Summer Programs was then, as it is now, to all intents and purposes, a self-supporting operation. Today, summer enrichment camps have become part and parcel of our summer program, but back then we were frequently asked to account for ourselves by answering the question, “What on earth are you doing offering children’s camps when you should be doing summer school?” But, you see, we **were** doing summer school! Participants in the grad/undergrad math methods course were summer students; all we did was unleash a horde of kids on them and call it camp. Summer school paid for the faculty whose salary then, as they insist it is now, was relatively paltry, and we figured that if we got the program off the ground, CAMMP would pay its own direct costs. The first year money-back gamble seemed to backfire when every kid turned up every day and we had to refund everyone. But we also ended

up with 45 happy campers and a waiting list of 80 students that first year; we have had a backlog ever since.

Excited about our early success with this approach, where both veteran and prospective teachers acquired practical experience with mathematics teaching, we implemented the Math CAMMP model in Charlotte locations other than campus. Instead of returning tuition to the parents of CAMMPers, a sliding scale of fees, based on need, was developed. To date 4597 students have attended the wider CAMMP program, and approximately 1500 have attended the “mother program” on campus. Apparently there is a high demand for academic as well as recreational summer camps. In fact, an indication that demand has outstripped supply is UNC Charlotte’s Math CAMMP enrollment; the camp is held in late June, and enrollment in it has closed by early February. “CAMMP” is now a limited corporation; but the “mother CAMMP” remains part of the UNC Charlotte *Camps on Campus* program.

Math CAMMP is a three credit undergraduate/graduate course where teachers learn how to teach mathematics using manipulative materials connected to symbolic algorithms including computer applications. CAMMP is based upon the theory that you know what you invent. Our class motto, “you never learn anything completely new in the abstract, you only make adjustments to what you’ve learned in the past”, provides the foundation for all the experiences our teacher candidates plan for students’ week at CAMMP. In short, teachers learn how to develop a mathematics laboratory where students see mathematics as real-world problem solving. Candidate enrollment in this elective course has ranged from a low of 21 to a high, in 2006, of 43 graduate and undergraduates. This course is now one of the most popular summer offerings in the College of Education and regularly reaches its enrollment maximum.

Since 1992 the basic CAMMP curriculum has remained rather stable with the exception of a new Robotics Connection. Students learn to design, build, and program robots as a way of extending their problem solving skills. This new component has expanded CAMMP from a half-day to a full-day experience. This new robotics connection has created such a demand among area parents for Campus Math CAMMP that it has not been possible to include all children whose parents are interested in enrolling them during the summer.

As with any major research institution, the question arises, why have a children’s summer camp on campus? After all faculty promotion and standing are determined by teaching, scholarship, and service. Math CAMMP has provided the vehicle for faculty to connect teaching, scholarship, and service to the community in a way that promotion and merit raises are not jeopardized. The visibility of math camp on an otherwise child-sterile environment has helped to illustrate how the college is in the business of developing innovative and cutting edge instructional systems. Math CAMMP has opened a view of education that many children would never have seen, had they not enrolled. Many of these children have seen a college campus for the first time and have even enrolled and graduated from UNC Charlotte. The administration including

the Chancellor are enthusiastic about bringing young mathematicians to campus for this very reason.

But Math CAMMP has provided more than simply service opportunities for children and families who visit our college campus. It has also provided research opportunities for both faculty and students involved with the camp. To date 15 publications in educational journals and conference proceedings have been presented. Since these publications lead directly to teaching strategies of faculty responsible for both graduate and undergraduate education, there is an unmistakable connection between scholarship and teaching. Mathematics attitude, dispositions, and misconceptions are but a few examples of topics that, over the years have become additions to the content of the Math CAMMP curriculum as a result of research efforts.

CAMMP is a two week experience. The first week, 9:00 am till 4:00 pm daily – is dedicated to training the teachers who will provide the instruction to the summer CAMMPers. During this time teachers learn about concrete, representational, transitional, and symbolic procedures. In addition, they learn about software connections and develop a week-long integrated problem-solving mathematics module to be used with their students who will arrive the following week and who are assigned to them during the training week. The teachers also conduct a diagnostic/prescriptive project with at least two of their assigned students who have had trouble in the past. This comprehensive project is then reported to parents who now have many different ways to help their child at home once they leave camp.

The second week is devoted to teaching the modules and assessing the strengths and weaknesses of each student enrolled. Each student's day consists of mathematics problem solving, field trips around campus, snacks, and play activities. Each CAMMPer is assessed at the beginning of and at the end of the camp week, and an overall week's report is given to each CAMMPer's parents. To make CAMMP run smoothly three-full time faculty are required: One to supervise the daily mathematics instruction; another to be available in the computer lab to assist with troublesome software issues; and a third to supervise and maintain the daily schedule. Since CAMMPers are always on the move from one CAMMP activity to another, a dedicated clock watcher is necessary.

Math CAMMP is a true partnership thriving because of the productive tensions rising from the pedagogical, research, and service interests of the academic faculty, and the challenges of managing a complicated little enterprise so that everyone wins. In the division of labor, the academic faculty are the brains, the Office of Summer Programs is the legs – budgeting, recruiting, registering, and generally managing all practical aspects of the camp. Although you wouldn't know it from the way we harangue each other during the planning stages, each of us respects what the other brings to the program.

That partnership has, until recently, extended to nearby elementary schools on whose campuses Math CAMMP was based, and from which children were driven in

rotations to the university computer labs. For years children, used to hopping in and out of 15-passenger vans to travel jubilantly back and forth from campus, referred to CAMMP as “van camp.” One tradition has remained for all the years of CAMMP: Jack and I drive!

CAMMP takes place the first week teachers are out of school: typically mid to late June. The CAMMP day or half-day begins at 9:00 a.m. and ends at noon. During that period, children are subjected to a dizzying rotation of instruction, with manipulatives, computers, and math-flavored recreation. Long ago, although we had some limited camp options in the afternoon, we allowed registration for half days, the idea being that parents would pick up their children punctually and allow us to get on with our life and work. That notion was, of course, madness, condemning us to supervise random children until parents showed up whenever the mood took them. Now we recognize CAMMP for what it is: a camp generator. Now, registrants take CAMMP in the morning and one of several options in the afternoon: art, ecology math, puppets, robotics, young writers, etc. All tasks outside those of working directly with children during the instructional components are conducted by Summer Programs whose small staff and body of young counselors manage the whole *Camps on Campus* 8-week enterprise that, over the years, has grown around Math CAMMP. Summer programs staff receive children at drop-off, deliver them to the camp locations, pick them up for breaks and feeding, bandage kids or deliver them to the health center, drive them, and herd them. And, on Friday, triumphant Friday, they get everyone into the theater where children, camp leaders, counselors, parents and all assemble to strut their stuff and crown the week with applause and laughter.

Who comes to CAMMP? Pre-service and in-service teachers, as Jack has described, seeking new knowledge, skills, 3 hours of credit, and the chance to go take a graduate class in shorts and a visor, play hopscotch, and sing daft songs in the van. Elementary children (at the rate of 2.69 per teacher in 2006) in search of fun (and largely ignorant of the fact that their parents are trying to position them for an academic scholarship to Duke). From our contiguous counties mainly, but from farther afield, too. Most are day campers, but some, fifth grade and up, take advantage of the overnight option. The balance of girls and boys and demographics work out well, with no tinkering from us.

Regarding cost: two faculty are paid the “going rate”, which is at least \$4800 or, depending on the number of enrollments and availability of revenue, more, up to 1/10 of their 9-month salary (for a three-hour course), plus fringe benefits. Since they are teaching a summer school degree-related credit course, they are paid from summer school revenues. In 2006, tuition ranged from \$291 to \$1443 for a three-credit course, depending on undergrad/grad, residence/non-residence status. Most students were graduates. About 9% of our summer enrollees pay out-of-state fees. All other direct expenses are paid from CAMMP revenues: field coordinator of the a.m. and p.m. programs’ salary and benefits; counselors’ salary, upkeep, and training; afternoon camp leaders’ salary, benefits, and support; vans, travel costs, materials and supplies, space rental if necessary, copying, promotion, etc. Overnights, of course, receive full

supervision, board, and lodging. Day campers pay \$195 per week (with small adjustments for extended care); overnighers pay \$398. Receipts are pretty-well sufficient to cover direct costs, with excess carried over to those years when materials, supplies, software and hardware replacement, and equipment such as cameras need purchasing. The indirect costs of year-round camp staff and director; program assistants; registration, reception (the camp is full in February; that's when the communication starts, explaining to the hundreds of parents who call, recruiting the kids for other camps); confirmation, coordination with campus life: dining halls, housing, health center, departments adjacent to CAMMP locales, etc.' special programs: "kidnetics," library, swimming, "underground university", etc. Year by year, counting receipts from the camp program that has grown around Math CAMMP, we have begun to contribute more and more significantly to central office costs.

A camp day is hectic, exhausting, noisy, and a great deal of fun. Campers arrive any time after 7:00 a.m. and supervision, till CAMMP begins at 9:00 a.m., involves the whole summer staff and counselors playing out in the huge residence hall car-lot, from which automobiles are banished and which is given over to games, jump-rope, pavement artistry, hula-hoop, limbo, dodge ball, or just hunkering down and playing cards, reading, or visiting. By 8:45 a.m. teachers have assembled and are being briefed by the field coordinator so that by 9:00 a.m. they can help unload children from vans, many clutching lunch bags, overnighers replete with breakfast from the university dining halls. At this time, adjustments are made "up" or "down" from the original assignments to achieve an appropriate learning group level for each child. At noon, campers and counselors amble across the campus as if they own the place to lunch – never uneventful – after which campers go to afternoon programs. Kids get drowsy in the afternoon, so they are accompanied out for a break and snack by their counselors. By 4:15 p.m. campers are assembled, with their counselors, at various common points on campus where they are netted by vans trawling for campers to unload at the drop-off spot. This bit is not supposed to be fun, but most parents know they needn't hurry to pick up their treasures. The play ground teems, just as, in inclement weather, the residence hall basement resounds. And of course those same parents who always arrive late to pick up their children from anything and will be late to their weddings and probably their own funerals, keep us there till 7:00 p.m.

We don't need to publicize CAMMP much anymore, frankly, but the visibility for the campus is important. Our website and brochure publicize it even though, typically, camp is pretty-well full by the time they are out. Summer School tells teachers about what is available for them, and schools engaged in curricular review tell the teachers about math CAMMP. Our camp coordinator is a wiz at getting schools to add a link to our website. We hit all the local camp editions of newspapers and magazines with free announcements and releases. We have a very high, probably 50% recidivism rate, and goad past customers to prepare to enroll early with our newsletter, "The Echo" in November. About 20% of our kids come from the on-campus family. We piggyback CAMMP and *Camps on Campus* ads onto our Summer School ads, and we talk, and talk.

Math CAMMP and *Camps on Campus* are designed for kids to come to our campus, have fun, learn, and enjoy a productive summer experience. If a kid says, “If this is what college is really like, I’d love to go to UNC Charlotte,” who are we to disagree? Some commentators have suggested that inflicting math on kids in summer is cruel and unusual punishment. We know a bunch of young people who think Math CAMMP’s pretty cool, and can’t wait to come back.