

CHARLOTTE STEM ACADEMY

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Margaret “Carr” Hughes is a stay-at-home mom who is dissatisfied with the summer educational “camp” offerings for her elementary-school age children in the Charlotte, NC area. Hughes joined forces with another mom to create their own program in the STEM (science, technology, engineering, mathematics) subjects. They research possible locations for the program, and decide that Queens University of Charlotte (QU), a centrally located campus just outside of downtown Charlotte would provide the ideal locale.

Hughes contacts several Queens employees, and all are enthusiastic about the program, but the quoted price for classroom rentals presents serious budgetary problems, particularly for a start-up program. At this point, Hughes’ partner decides to bow out, and the program is in danger of never getting off the ground. A few days later, Hughes gets a message from one of her contacts at Queens, stating that the university has had second thoughts and is willing to negotiate the facilities rental price, and also wants to discuss the possibility of collaborating with Hughes on the program. Hughes now has to consider whether to move forward as a sole proprietor, to partner with Queens University, or turn the entire program over to Queens, and possibly become an employee of the university.

INTRODUCTION

Margaret “Carr” Hughes was apprehensive as she walked toward an administrative building on the campus of Queens University of Charlotte, about to engage in a meeting with several members of the faculty and staff, a meeting that just one week ago she thought would not occur. Hughes had spent months researching and developing a summer educational program for primary school children in STEM (science, technology, engineering, and mathematics) classes, and wanted the program to be housed at Queens. Her goal was to provide a fun but rigorous summer learning program in the Charlotte area specializing in STEM topics. Hughes had two boys who were fascinated by science, but the available summer programs tended to focus much more on art and music. Hughes had shared her vision with a number of Queens employees, who were all enthusiastic about the program, but she was ultimately quoted a classroom rental price that

was out of her budget. At this point, Hughes feared that the program would have to be scrapped, but just days later received a call from a Queens administrator explaining that the university was having second thoughts. Queens was now willing to discuss a more favorable rental price for a pilot program, and showed an interest in collaborating with Hughes, rather than simply being a provider of rental space. Hughes was excited about these new possibilities, and hoped that this meeting would put the STEM program back on track.

BACKGROUND

Hughes primary motivation for creating the STEM program was her own children, but Hughes had a long-standing interest in education, particularly in the sciences, as a result of her own education and personal experiences. Hughes received her Bachelor of Arts in Foreign Affairs from The University of Virginia in 1994 and obtained her Master of Arts in Higher Education with a focus in Organization and Administration from the University of Arizona four years later. In 1999 Hughes accepted a full-time position as a corporate immigration paralegal and served as a senior paralegal for nearly ten years, during which she “supervised, trained, and mentored a team of five full-time paralegals and multiple interns.” Hughes moved to her current position of director of business development and marketing in 2009, a position in which she was able to do most of her work from home. Reflecting on her time as an immigration paralegal, Hughes recalls that, “as a corporate immigration paralegal, I was in charge of managing all of Wachovia Bank’s U.S. immigration matters.” Essentially, Hughes witnessed the amount of employees for which Wachovia “imported in order to obtain the most successful and scientifically apt additions to their corporation.” Hughes realized the reason for Wachovia’s hiring practices was that Americans were not receiving the same standard of knowledge and practicum necessary to perform the scientific and financial tasks that Wachovia required. Unless American students chose math and science as their strict focus in a college setting, they would not acquire more than cursory knowledge in those fields.

In 2009, Hughes began studying the normal work-week for an elementary school child. Hughes found that her kids were “bored” in school, and felt unchallenged in their academics. She discovered that within a typical 30-hour week in the classroom, twenty of those hours were devoted to English and Language. Hughes was astonished by this ratio, and realized that the root of what she called, “no talent” in mathematics and sciences was a result of the lack of attention given to these subjects. This STEM studies neglect related to the need for the Charlotte-Mecklenburg school system to teach students the “basics” (i.e. reading and writing) that they were not taught in their own homes. Many children in the Charlotte-Mecklenburg area were considered to be living in poverty, and the school system had created a curriculum that sacrificed classroom time to teaching

children the lessons that they would have learned at home. Combining these factors with the system-wide budget cuts which have occurred over the past few years, and any traces of “STEM-centric disciplines” were difficult to find. Through further research, Hughes discovered that the National Science Foundation (NSF) completed a report in May 2010, which stated: “regrettably, far too many of our students are neither discovered nor developed, particularly those who have not had access to educational resources, who have not been inspired to pursue STEM, or who have faced numerous other barriers to achievement.” Hughes located another statement regarding these studies, in which Dr. Michelle Asha Cooper, President of the Institute for Higher Education Policy, suggested that: “it is imperative that students develop a conceptual understanding in mathematics and science during the grade school years [K-12], so that they will be better prepared as they enter more advanced high school and collegiate-level coursework.” (STEM proposal)

Hughes discovered that the NSF’s full report and Dr. Cooper’s declaration agreed with her own perspective on the pertinence of STEM studies in an academic setting, in the sense that this nation cannot survive—let alone flourish—without ample, “collective commitment to excellence in education and the development of scientific talent” (STEM proposal). During this time, Hughes had a series of conversations with her neighbor and friend Julia Chitester, and discovered they shared the same academic concerns. The two women transformed their chats during neighborhood strolls into full-blown business meetings as they conjured possible solutions to implementing STEM studies into the lives of their own children and the kids within the Charlotte area. The result was to create and develop the Charlotte STEM Academy.

STEM CURRICULUM

During the next few weeks, Hughes and Chitester studied successful summer programs, and began to develop the curriculum for the “Charlotte STEM Academy.” Initially, the target age was basically elementary and middle school students from 7-13 years old. If the program was successful, expanding the curriculum for older students would be considered. The mission statement of the Academy was for students “to participate in innovative, engaging and challenging STEM (science, technology, engineering and math) classes.” Classes were designed to encompass the most intriguing and, simply put, fun elements of various STEM-centric disciplines. These classes were structured to be “multi-disciplinary...also integrating with language arts, visual art and design, social science, literature, and geography whenever possible” (STEM proposal). The proposed classes covered a vast number of interests from aerospace and mechanical engineering to architecture and film production. Hughes and Chitester always attempted to develop course modules that would maintain a

child's interest, such as NASCAR for the mechanical engineering, and a LEGO introductory robotics course and NASCAR (National Association of Stock Car Auto Racing) as a model for mechanical engineering. In May 2010, NASCAR opened its new Hall of Fame in Charlotte, just minutes from Queens University of Charlotte, the desired location for the STEM Academy.

THE LOCATION

Queens University of Charlotte is a private, liberal arts university of about 2700 students. The university had a somewhat unusual location, as it was located in an upscale residential neighborhood, but was just minutes away from Charlotte's two largest centers of commerce, the downtown business center (though Charlotte residents referred to it as "uptown") and the SouthPark area. Hughes and Chitester felt that Queens offered two distinct advantages to other locations they had considered. First, Queens had a solid academic reputation, they liked the university setting, and felt that parents would see Queens as a safe and credible location for their children's summer educational experience. Secondly, Queens was easily accessible to a large target market, as "according to 2009-2010 data from Charlotte-Mecklenburg Schools, 30,117 students attended public elementary schools within a 10-mile radius of Queens University. The majority of the students who attend public schools within a 10-mile radius of Queens University have very limited exposure to STEM disciplines in their traditional setting." (STEM proposal) Hughes knew several Queens employees, and found out that the university tended to offer very few day classes during the summer, as much of its traditional age population were home for the summer, while local students were typically participating in summer jobs or internships. This meant that the university should have unused facilities, and the presence of the STEM students would not be a disruption to other campus activities.

THE PROPOSAL

Hughes used her contacts at Queens to arrange meetings with university personnel to explain the program and hopefully gain an audience with the individual or individuals who would make the ultimate decision regarding Queens' level of interest. Identifying the decision-maker(s) proved to be a surprisingly difficult task, as the STEM Academy did not match up with any of the university's other programs. It was an academic program, but not on a collegiate level, it was a continuing education program but didn't deal with adults, and was a summer "camp," but not like the camps operated by the Queens athletic department. Hughes and Chitester met with several individuals, all of whom thought the program was a fine idea, but none had the authority to speak for the university.

One meeting that did not go as well was with Bill Nichols, the university's Vice President of Facilities and Campus Services, who explained the university's

facilities rental fees. Hughes and Chitester hoped to debut a pilot program in the summer of 2012, offering only three classes over a three-week period. The full curriculum, with 6-8 class offerings over six weeks, would be rolled out the following summer. The price per student would be \$300 per week, and revenues for the pilot session were projected on the basis of 16 students per class (optimistic) or 12 students per class (pessimistic). Costs were also projected, and would not change with either the optimistic or pessimistic student projection (see Table 1 for revenue and cost information). Nichols noted that the university's standard classroom rental fee was \$20 per hour, thus \$160 per class per day, \$7200 for the entire pilot program.

Hughes and Chitester had decided that the university's science building would be the logical home for the STEM program. The science building at Queens was old, and a new science building was under construction, scheduled to open in late 2012. One of Hughes' contacts at Queens asked around, and found that the science labs hadn't been rented in years, and were apparently some of the least desirable rental properties on campus, due to the age of the building and the specificity of the labs. Hughes mentioned this to Nichols, whose only reply was that the classroom rental fee was standard, and did not vary by room. The facilities rental expense put a serious strain on the budget, as the pilot would not break even under the pessimistic revenue scenario. If Queens had been willing to charge \$10 per hour, for example, pilot costs would have been reduced by \$3600. As Hughes suggested, "we were in this for the kids, not to make money, but we didn't want to lose money." The labor costs in the budget did not even include any compensation for the two partners, who were planning to apply any surplus revenue to additional marketing costs to publicize the following year's full rollout.

Shortly after the meeting with Nichols, Julia Chitester decided to withdraw from the venture, concluding that the STEM project was no longer viable. Carr Hughes was disappointed, and was ambivalent about trying to advance the project without her partner. The plan was for Hughes and Chitester to share the vision of the project, share the tasks involved and, ultimately, share the risk. Hughes decided to take a few days to contemplate the future of the project. During this time, she unexpectedly was contacted by a representative from the Office of Academic Affairs at Queens. The STEM proposal had been showed to the Provost (apparently the ultimate decision-maker), who wished to revisit the proposal, the university's rental fee structure and the university's potential involvement. Hughes was asked to make a presentation to a group of faculty and staff, who would then collectively make a recommendation to the Provost.

THE OPTIONS

In preparing for her presentation, Hughes decided that she needed to consider alternative strategies to move the STEM project forward. During the meeting with the Queens contingent, Hughes again described her vision for the program, and laid out three options for implementation. The first option was as previously discussed, with Hughes operating the STEM program (now as a sole proprietor) and Queens serving only as a renter of facilities. Hughes then noted that since the university requested this meeting, she considered that Queens may like to take a more active role in the program, so had to other alternatives in this regard. The next option was for Hughes and the university to become partners in the venture; the STEM program would have access to the university's resources, Hughes would have a partner to share the risks, and Queens would have an opportunity to share the profits if the program was successful. The final idea called for Hughes to turn the entire program (including any intellectual property regarding curriculum) over to the university, with Queens hiring Hughes to manage the program. If the university wanted to control the program but wasn't interested in hiring Hughes, she would be willing to negotiate the sale of the intellectual property. This would shift the risk completely to the university but, on the other hand, if the program turned out to be wildly successful, Hughes would receive nothing more than a salary in terms of compensation. A member of the Queens group expressed her surprise that Hughes would consider completely giving up something in which she had clearly invested substantial time and energy. Hughes acknowledged that would certainly be difficult, but that her first priority was that the STEM academy would become a reality.

When the meeting concluded, Hughes was told that the assembled group would remain, to discuss what they just heard, and make recommendations to the university Provost. Hughes felt that overall mood of the group was upbeat, and was hopeful that they shared her enthusiasm for the STEM project. She looked forward to hearing the decision of the Provost.

Table 1
Charlotte STEM Academy
Summer 2012 Pilot Program Financials

Revenues

A. Optimistic Projection:	
(3 classes x 16 students/class x \$300/student x 15 days)	\$43,200
B. Pessimistic Projection:	
12 students per class	\$32,400

Costs

A. Optimistic Projection:	
Wages (including taxes)	\$11,880
Facilities (\$20/hr x 8 hrs/day x 3 classrooms x 15 days)	7,200
Food (48 students x 15 days x \$6/day)	4,320
Classroom Supplies	3,000
Information Technology (primarily website programming)	3,000
Administrative and Insurance	3,000
Marketing	<u>1,000</u>
	\$33,400
B. Pessimistic Projection:	
Food costs would drop to \$3,240 (36 students), all other	
Costs would be unchanged.	\$32,320