North Country Partnership Initiative:

Education Sector

November 25, 2003
Introduction:

Clarkson University’s vision for community affairs places emphasis on the formation of enduring partnerships that are mutually beneficial to both Clarkson and the North Country. Ideally, the partnerships formed will allow both groups to benefit from the specialized skills of professors, students, and local professionals. Clarkson’s Honors Program has embraced this vision through its contemporary problem solving course, the North Country Partnership Initiative (HP200). Over the course of the semester, students have evaluated the current state of partnerships between Clarkson and the community, and explored the needs and wants of the community. As part of this process, benchmark information about existing partnerships other institutions have developed with their surrounding communities has been compiled. Finally recommended partnerships for Clarkson to consider have been proposed and their implementation discussed.

This paper focuses on partnerships between Clarkson and other local educational institutions. Included is information on Clarkson’s currently existing educational partnerships. Research was conducted to determine community needs and suggestions, which later served as a basis from which the final recommendations were drawn. Also included are several options for potential educational partnerships, thoroughly evaluated according to feasibility and alliance with the project’s goal of mutual benefits. Finally we recommend two optimal partnerships and provide proposed methods for implementation.
Current State of Clarkson and Community Partnerships:

At present, Clarkson is involved in several educational partnerships with the North Country. The specific details of each of these partnerships are discussed below:

- Pipeline Programs and Academic Success (PPAS)
- SPEED: First Robotics
- The Business/Educational Partnership Program
- Project Lead the Way
- Project Challenge
- Horizons
- Educational Leadership Academy of Northern New York (ELANNY)
- Young Scholars
- American Chemical Society Outreach
- National Science Foundation Outreach
- Math and Computer Science Department Education Outreach
- Associated Colleges Job Fair

Pipeline Programs and Academic Success (PPAS)

Recently changed from PEP (Pipeline of Educational Programs, Est. 1989), PPAS is an overarching organization of many programs focused on education opportunities for women and minorities, though some programs are available for all students. The PPAS office utilizes the Science, Mathematics, Engineering, and Technology (SMET) pipeline concept. The SMET program helps attract and retain underrepresented groups of students (Women, African-
Americans, Hispanics, and American Indians) at crucial points in their educational careers. Programs are available to students from their 7th grade year up to doctorate degree level.

Presently, PPAS is a highly organized and vibrant educational program encountered on campus. The PPAS program has been successful and growing since 1989 because of the structure of the pipeline approach. By offering successive programs, PPAS keeps student participation levels high, which seems to be a failing point for many other programs. It also assures that students are not encouraged and then forgotten; there is always a “next step” in the pipeline if they choose to participate.

Another benefit of utilizing various programs is the diversification in funding sources. PPAS has received over $10.8 million since 1989 from a variety of governmental, corporate and private sponsors. This breadth of funding has been critical in the programs success as Clarkson and various sponsors have been more inclined to support the financially stable program.

**SPEED: First Robotics**

FIRST Robotics, part of the SPEED program, works to form partnerships between college and high school students. Currently Clarkson’s team has partnerships with Massena and Salmon River high schools. Clarkson students mentor the high school teams in preparation for national competitions. Some issues that have arisen in the past have been travel and conflicting personalities between opinionated students that are skilled in technology but not experienced at working in a team.

**The Business/Educational Partnership Program**
Educational partnerships exist through a course offered to graduate students in the Clarkson School of Business that is under the Community Affairs domain. The Business/Educational Partnership Program forms a three-way partnership between Massena High School, graduate business students at Clarkson, and one of the following corporate partners: Alcoa, GM, St. Lawrence Gas, NY Power Authority, and St. Lawrence Sea Development Company. Clarkson students act as group leaders, project managers, and liaisons between students at Massena High School enrolled in the class and corporations involved. Students at the high school are part of a two-hour innovative class that covers subjects such as math, language arts, and management. Corporations relay possible problems to Clarkson graduate students, who in turn manipulate and adapt the projects to an accelerated high school level. Clarkson students also take on a team-oriented teaching role as they guide students through the project. Financial support is provided by the company partners with initial funding formerly mediated by BOCES. A current obstacle of the program is the recent end to BOCES aid and involvement.

Project Lead the Way

The focus of Project Lead the Way is to have Clarkson students teach middle school students about environmental problems that are relevant to the community. The program helps to develop problem-solving skills that are essential to the educational development of middle school students. In this program, Clarkson students must participate in a five week course over the summer. Clarkson students receive three credits and as well as payment for their services. Workshops are held for the teachers to introduce them to advancements in their respective fields of study. The middle school students gain interest and knowledge in science and technology.
The Clarkson students involved gain professional and teaching skills that are critical in the professional world.

The curriculum is continuously being advanced and improved upon. This program helps Clarkson to provide resources to the middle schools and helps improve the interaction between the schools. The program is in its fourth year and is funded through the General Electric Fund, and the National Science Foundation. Funding covers advancement of the curriculum, supplies and resources, and stipends for the students. So far the program is successful.

Project Challenge

Project Challenge is a winter program that brings local high school sophomores, juniors, and seniors to Clarkson to take one of eight enrichment courses. The courses are taught on five Saturdays from 9:00 am – 12:00 pm. Participants come from as far away as Plattsburg and Alexandria Bay, and they are contacted through fliers and guidance counselors. Many of the participants of Project Challenge end up applying early decision and become Clarkson students. The main issues associated with the program are transportation and weather. Clarkson does not provide transportation, but it is sometimes provided by the schools or BOCES. In addition, there is at most one snow day, and it can be difficult to call a snow day when a winter storm is only affecting one region of New York. Despite these issues, the program is currently successful, well established, and locally well-known.
Horizons

This summer program is a two-week math/science/computer integrated course that is open to approximately two hundred gifted seventh and eighth grade girls. Participants in the program are given a research topic that they investigate, learning to collect and interpret data. The girls also do hands-on experiments that complement the research and teach them scientific theories science. At the end of the program, participants take part in a poster session to display their results. Not only is this program an excellent recruitment tool, but it also gets girls interested in science and helps them to build valuable program solving skills.

Educational Leadership Academy of Northern New York (ELANNY)

The Educational Leadership Academy of Northern New York (ELANNY) is a new organization that organizes and runs training programs for educational administrators. The program is run from Clarkson’s Shipley Center but is partnered with Clarkson’s Business School and St Lawrence University’s Educational Administration School. The program is running rather smoothly. Although as it has grown, some of the activities and programs it has been involved in are being taken over by other offices such as Educational Outreach. Currently, networking and marketing is done mostly by word-of-mouth, and the program could use assistance in marketing, advertising, and communications.

Young Scholars

Young Scholars is an eight day summer program that brings between thirty to thirty-five high school juniors and seniors to Clarkson to work on a multidisciplinary problem. The project-based program teaches participants teamwork and exposes them to the interactions between
different disciplines. Although this program is open to all areas, most participants come from the Northeast. PSAT test score searches are conducted, and the eligible students are either contacted directly or through their guidance counselors. Nearly 80% of participants later become Clarkson students, and receive a $4000 scholarship. The Young Scholars program was formerly known as the High School of Excellence program, but was reorganized and renamed when Chad Tessier took over as director in 2002. The program is currently very successful.

American Chemical Society Outreach

The Northern New York Chapter of the American Chemical Society sponsors two major projects at Clarkson. The first is an ongoing project called the World First Mars Link Mission. Through this program, Clarkson has contacts with NASA, St. Mary’s Elementary School in Canton, Norwood Norfolk Central School, and two schools in Malaysia. Simulations take place at Clarkson.

The American Chemical Society also sponsors the Chemical Sensation Project. Through this program, Clarkson has contacts with Canton High School, Edwards Knox High School, and three schools in Japan. This program is a multi-sensory approach to teaching high school and college chemistry that includes music, sketches, and hands-on experiments.

National Science Foundation Outreach

The Math and Computer Science (MCS) department is involved in several National Science Foundation (NSF)-funded outreach programs. Graduate and undergraduate students go to middle schools in several local school districts, where they work with students and teachers,
using computational and engineering skills to solve real-world problems. This brings an interdisciplinary computational science flavor to the project.

The Research Experience for Teachers (RET) proposal is also funded by a NSF grant. The RET program brings local junior and senior high school teachers to Clarkson for five weeks of research. The aim of this program is to aid the teachers in the development of computational curricular supplements and demonstrations. The program also serves to motivate the teachers, and increase their awareness of current scientific and computational research.

**Math and Computer Science Department Educational Outreach**

The three MCS computer labs also provide some educational outreach to high school students. The Clarkson Open Source Institute (COSI) lab and Internet Teaching Lab (ITL) are entirely student (graduate and undergraduate) run, and are frequently visited by high school groups. The COSI lab organized a well-attended one day workshop for schools in the area to learn how to install and use Linux and Open Source software. The Virtual Reality lab is creating a virtual reality wheelchair, which will help locals afford electric wheelchairs by demonstrating effective use of the wheelchair to insurance companies.

**Associated Colleges Job Fair**

Clarkson University Career Center runs a job fair in March, in association with St. Lawrence University and SUNY Potsdam. Several hundred students attend the event, although only about a hundred students from Clarkson are represented. The location rotates between the three colleges. Despite several forms of advertisement (email, newsletters, posters, and the Daily Jolt), attendance has remained low. In the past, a Graduate School Fair was run in conjunction
with these schools, but the low turnout resulted in its cancellation. While the Associated Colleges share information, it is difficult to schedule events involving all the colleges due to the differences in the areas of study among the different universities.

Community Needs and Suggestions:

In any successful partnership, an understanding of the needs and wants of both partners must be understood. Although the specific needs and wants vary with the school district, several general needs are prevalent in most area school districts: money, time, technology, higher educational opportunities, and more enthusiasm for the arts and sciences.

The school districts in the area all have very tight budgets. Many schools cannot fund as many field trips as they would like to because they lack funds for transportation. Potsdam Central School has an especially tight budget because of the higher income status of the area, resulting in less state aid, and the large portions of tax-free university land within the district’s domain. Feedback from these school districts indicates that the brunt of funding for any successful partnership should be borne by Clarkson. However, this does not mean that it would be a one-sided partnership, since most of these partnerships would benefit Clarkson as a recruiting tool or as an opportunity for students to apply their learning to real-life problems. Any event that brings students to campus is beneficial; once the students are here, the campus maintains the potential to sell itself.

Between teaching classes, grading homework or tests, coaching sports, organizing extracurricular activities, and filling out paperwork, many teachers do not have a lot of extra time. This is particularly true at Potsdam Central High School, because many teachers are asked to fulfill several roles. This also suggests that Clarkson needs to do the majority of the planning
and organization of any potential partnership. Moreover, it might be difficult to involve teachers in these partnerships because they do not have much available class time. This is especially true of teachers who teach Regent’s courses, because their curriculum is filled with skills required to pass the Regents exams.

One area that most local school districts are lacking in is technological development. Several school districts do not have the resources to obtain the needed technology, and for the schools that have the resources, the technology department is often preoccupied with fixing problems and unable to work with the implementation of new technology in the classroom. Mr. Tomlinson, principle of Banford Elementary School in Canton, believes that Clarkson students could aid schools in the design of a high-tech classroom, which would include all the technological skills that students will need when they go to college. This project would leave the school to fundraise on its own for the needed technology, and would be a constantly evolving project because of the rapid pace of the evolution of technology. Additionally, Mr. Gregory, principal of Canton High School, suggests that Clarkson could give its obsolete technological hardware to the area schools. This arrangement would be beneficial to the school and at no cost to Clarkson. An excellent example of this type of collaboration is the case of Mr. Dixon, a physics teacher at Canton High School, who received a $10,000 machine that St. Lawrence University planned on discarding.

In addition to a need for technological advancement, many area schools have advanced or exceptional students who have few opportunities for higher learning at their school. Most schools offer few honors courses or Advanced Placement (A.P.) courses. The “No Child Left Behind” Federal law has provided many opportunities for students at the low end of academic performance to improve to average levels. However, since there are often unfunded mandates,
this limits the opportunities for gifted students. The schools are interested in partaking in new and exciting opportunities for these gifted students.

In addition to Project Challenge, Mr. Bain, a guidance counselor at Canton High School, suggests that professors at Clarkson could teach A.P. courses on Saturday mornings. By the end of the school year, the student will have completed an entire A.P. course. However, there is the possibility that this may not be a popular option among students or faculty due to other weekend obligations.

Another guidance counselor at Canton High School, Mr. Herzog, had several suggestions. He believes that Project Horizons should be open to boys and that the cost, which has significantly increased recently, should be reduced. Moreover, he believes that Clarkson should offer for-credit courses like Calculus or Chemistry during the summer. This program would give students a taste of their prospective majors, and may attract students from a broad area, including students who do not need financial aid. This program could be a potential recruiting tool that targets qualified students. He also suggested that Clarkson provide a week-long course to help students make the transition from junior high school to high school.

Local home schooled children have very little involvement with other educational facilities in the area. Home schooled students are often interested in going to college, but have a limited background in the arts and sciences. These students are often not able to participate in sports teams at their local schools, and have little access to the technology that would be found in a modern laboratory. Russ Nelson, a Clarkson alumni who home schooled his children, suggests that Clarkson extend the opportunity to work in a lab to all area students, particularly homeschooled students. This would allow the students to gain laboratory experience and help them get accepted into colleges.
Since local home schooled students have no guidance counselors, they are often unaware of career opportunities relating to the sciences. Mrs. Pierce, a mother of six who home schools her children, believes that Clarkson’s University Career Center should either give out pamphlets or hold career information sessions for students, especially home schooled students whose parents may not have a strong background in the sciences.

The principals of Canton Middle and High Schools, Mr. Quackenbush and Mr. Gregory, respectively, both believe that Clarkson should get involved with Project Lead the Way (PLTW) at Canton. Currently, PLTW is a foundling at Canton, and they would like Clarkson’s PLTW program to help develop PLTW at Canton.

Cultural enrichment is very limited in many area schools because of the lack of affordable performing groups in the area. College performing groups will often perform for either no money, or perhaps a small fee, and would be ideal for area high schools. Mr. Gregory would like Clarkson’s performing groups to go to area high schools and to perform in an optional assembly. The performance could have a certain curricular orientation, for example an English class would watch a Shakespearean play or a music class might listen to the Golden Knotes, Clarkson’s Cappella group. This would compliment events at SUNY Potsdam which offers numerous plays and concerts at low or no cost to the public, throughout the academic year at the Crane School of Music.

Recently, the county science fair was discontinued because the teachers who organized the fair left the area. Several more local science fairs have recently been discontinued. The idea that Clarkson hold a science fair was well received by local schools, and even independently suggested by Mrs. Pierce, a mother of home schoolers. We will go more in depth with this idea later.
Benchmark Information Pertaining to Other Colleges:

Since a university is an inextricable part of the community, most universities are actively involved in their respective communities. Universities want a community that attracts potential students, and communities desire to use university resources. We researched the existing partnerships that other universities are successfully engaged in with their communities. These partnerships have served as a benchmark for potential partnerships with the North Country.

University Courses for High School Students:

Many universities allow qualified high school students to take a course at their institution. Such institutions include, Rochester Institute of Technology, the University of Rochester, the University of Pittsburgh, St. Lawrence University, and Dartmouth College. These institutions grant high school students the opportunity to earn college credit.

Rochester Institute of Technology and the University of Rochester have programs in which local high school students take a course at the university with college students. Students from participating high schools can take up to two classes per semester. The high school student may be a junior or senior and must have at least a ‘B’ average. The student also needs to obtain a signature from the course’s department chair. Students who qualify for this program get scholarships to pay for tuition costs. Upon completion of the course, the student’s grades are then reported back to the high school and are placed on the student’s transcript. By passing the course, students receive both high school and college credit.
The University of Pittsburgh uses a much different structure for offering college courses to high school students. The college material is taught to students in a high school classroom by a qualified teacher. The students are then required to take the same exams as the university students. The tests are then sent back to the university where they are graded, and the students receive credit upon passing the course. If the course involves a lab, the students go to the university several times a semester to complete the designated lab work. The students involved in this program only pay for the materials they use in the laboratory. In most cases the fee is minimal.

St. Lawrence University allows five scholarships for high school students to take a course at the university. Interested students fill out an application which is sent to the Admissions Office at St. Lawrence. Each semester, selected students are allowed to take a class of their choice, where they blend in with the university students in the classroom and gain a firsthand experience with college life.

Dartmouth College runs a similar program where local high school students are allowed to take a course at the university. Only students who have exceeded the current subject offerings at their high school are eligible to take college courses. Students also need a letter of recommendation from a teacher. They can take one class in each of their junior and senior years. Students do not need to pay for tuition if there is an open spot in the desired course.

Overall, universities develop a powerful recruiting tool by bringing high school students to their campus. Prospective students become familiar with the campus, the faculty, and college students, and might grow attached to the university.
Science Fairs at other Colleges:

Successful science fairs have been run at other universities and colleges. One example is the University of Vermont’s Annual Technology and Science Connection Competition. This competition challenges high school teams in the areas of physics and mathematics. Students are encouraged to use what they have learned in classes to design and build a project that will perform certain tasks. The prizes are sponsored by various companies and are usually cash rewards. Projects are also judged on the use of oral and written communication skills.

Another example of a successful science fair is Lehigh University’s Science and Engineering Research Fair. This fair is held for students in grades six through twelve, and aims to get students interested in science, mathematics, engineering, and technology. Judges are usually teachers, and scores are based on an interview, a research paper, and the project displayed. This fair is held on a Saturday, and the first annual event had a turnout of fifty students, which suggests the popularity of, and need for, such events.

Villanova University hosts the Greater Philadelphia Homeschool Science Fair. This fair is meant for home schooled children from kindergarten through senior year. Its purpose is to help students gain hands on experience in science and technology, to prepare them for county-wide fairs, and to increase the sense of community among home schooling families. Businesses and fraternities have sponsored and donated prizes at this fair.

Recommended Future Partnerships:

After a detailed evaluation of the possible options for partnerships, we have chosen the two most feasible prospective partnerships. One proposal is to offer local high school students the opportunity to receive some sort of college credit through Clarkson, which could be designed
in many different ways. The second proposal is for Clarkson University to host a Science Fair inviting participants from throughout the area. Both partnerships are mutually beneficial to Clarkson and North Country education centers and are discussed in further depth in the following sections.

Offering Clarkson Classes to High School Students:

One partnership Clarkson should consider initiating involves the offering of Clarkson Credit to High School students. Four major forms for such a partnership have been identified: students coming to Clarkson for labs and classes, high school teachers offering Clarkson courses at local high schools, distance learning (internet or satellite) systems, and hybrid options utilizing on- and off-campus learning.

Students Come to Clarkson

While all four of the above-mentioned possibilities hold potential, the most promising structure is where students from local schools come to Clarkson to take courses. The admissions office would collaborate with the local guidance counselors to determine which students would benefit most from the opportunity to take college classes. These students would then be given either a full or partial scholarship for the class. The benefits to this approach are that it is relatively easy to organize, cost-effective, and a powerful recruiting tool; prospective students will get acquainted with the campus and perhaps make some acquaintances here. Offering classes to local students at minimal or no cost would also greatly improve the reputation of Clarkson in the surrounding community.
Nonetheless, other options such as having students come to campus at the beginning of the program or at periodic intervals are attractive options currently utilized by the School of Business. Hybrid programs would solve some of the transportation issues, still allow students to experience Clarkson’s campus and academic environment, and allow students from a greater distance to participate. Potential problems include scheduling of on-campus visits and allowing for a wide selection of courses to be offered in this fashion.

**Basics of Implementation:**

Freshman courses such as Calculus, Chemistry, Physics and Biology are currently taught in large lecture settings that are often unfilled. This suggests that enough space exists within such courses to incorporate talented high school students. Administratively this eases potential issues with overcrowding and some issues with scheduling. High school students that have been offered the opportunity to take courses would be evaluated thoroughly by Clarkson and high school guidance departments, thus limiting the number of participants.

As these offerings would be geared toward lecture based courses, financial issues are less of a hurdle since there are no additional costs to Clarkson aside from administrative costs. Laboratory courses involve additional financial considerations which are described in depth in the following section. Hence, courses could be offered to students at a much reduced cost or even without cost. Already, area schools such as Canton High School have commented on the fact that such courses would be most beneficial and appealing to students if offered free of cost.
Issues and Hurdles:

While it is easy to incorporate high school students into lectures, labs pose another sort of problem. Basic chemistry lab runs once a week for two to three hours, while physics is every other week for approximately the same duration. High school students do not have the flexibility of scheduling nor the spare time to easily incorporate lab work. Only students with flexible or part-time schedules would have time to incorporate laboratory sections into their schedules. Thus it would be beneficial to offer labs in evenings or in early morning slots on days without lectures. Friday afternoons might also be a more feasible time slot if evening or morning labs do not easily fit into scheduling regime.

Along with the scheduling issues regarding laboratory work there are also issues regarding cost and safety. It is conceivable that high school students have the potential to be just as cautious in laboratory as college freshmen, provided proper safety instruction is offered. However this assumption does not erase prevalent barriers such as insurance precautions. Clarkson might require additional fees for the sake of insurance, and would need to further investigate what types of legal issues might come into play. Other cost issues include the burden of supplies. Again this issue could be resolved by requiring students taking lab sections to pay laboratory fees. Thorough investigations of added costs from insurance and required supplies must be completed in order to determine whether or not it would be feasible for additional fees to be absorbed by the university.

Scheduling issues provide a significant deterrent for the option of high school students taking courses on Clarkson’s campus. Most high schools begin class at or before 8 a.m. Students enrolled in an 8 a.m. class may miss only the first or second period of a normal high school day. This would require Clarkson to ensure that basic freshman courses have at least one
section in an early morning slot. St. Lawrence University already offers morning courses to high school students, but these classes do not begin until 8:30am. Thus Clarkson would have a competitive advantage over St. Lawrence due to scheduling ease. The alternative option is to offer such courses after school. For most schools the optimal start time for such courses would be around 3 p.m. or 4 p.m. However, morning courses appear to be most feasible as students would spend less time attending class. Also, afternoon classes could limit the number of participants, as it would prevent students from participating in athletics and other after school endeavors such as work or sports.

Benefits to the University:

As with any partnership the most fundamental consideration for allowing high school students to enroll in Clarkson classes is the potential benefits to the University. The most substantial benefit is drawn from the recruiting power such a program would offer. By encouraging high school students to come onto Clarkson’s campus on a regular basis, Clarkson is able to showcase its resources to potential students of higher caliber, and the quality of Clarkson classes is firmly highlighted to students. Clarkson may also become enticing to students since such students would be guaranteed to enter the university with credit and possibly an advanced standing depending on other coursework completed. Students might be more likely to apply to Clarkson rather than attempt to transfer credits to other universities. From another angle, Clarkson also has the opportunity to screen local students and develop a list of students who show great potential to succeed at the level of academics taught at the university. This
A more subtle advantage of enrolling high school students in Clarkson courses is drawn from the added diversity of perceptions it induces. Perhaps courses such as Calculus, Physics and Chemistry would not show a marked benefit, as student participation is usually minimal, yet courses such as Great Ideas could. Courses such as Great Ideas demand the expression of student experience, perception, and position on major issues. Thus the more diversified the classroom setting, the greater the degree of learning and tolerance realized.

The final major advantage of Clarkson’s offering of courses to high school students is simply an improved reputation of the school. Clarkson tends to draw some negative connotations from the local citizens as not being overly concerned with the welfare of the surrounding community. Integrating high school students into Clarkson’s student body reaches out to students, teachers, parents and the local community. Thus Clarkson would be provided the opportunity to showcase its strengths and concern for the community.

Teaching Clarkson Classes at High Schools:

Another approach to students taking Clarkson classes would be to have a high school teacher teach the course material at local high schools. Teachers could be trained to teach college level courses over the summer by Clarkson professors. The students would then take the course as a regular class at their high school and take Clarkson exams. In this case, the students involved would only come to Clarkson for labs but would still receive college credits for the course. In addition, the high schools would also have the option of giving the student high school credits. Enacting the program in this way would solve the transportation problem and
allow students who are a little farther away from Potsdam to take classes. It also eliminates scheduling conflicts.

There are many drawbacks to this option. Since most of the local school districts are very small, it may be difficult to find enough students interested in taking these classes, and the schools would have trouble finding enough teachers to teach these additional courses. It would also be a drawback for Clarkson since students would not be experience Clarkson’s campus and resources fully, and thus the program would serve as a less effective recruiting tool. From the feedback we received from local school districts, the overwhelming response was that using this approach would not be feasible. Most of the local schools are very small and do not have the resources to offer additional classes. Their budgets are already tight and the teachers do not have room to take on additional classes.

**Offering Courses Through Distance Learning:**

Another approach is to offer courses as Distance Learning courses. This would involve making available all course materials and lectures by means of video conferences or through the internet. The advantages of this approach are that it solves the problems of transportation for high school students, scheduling issues, and staffing difficulties.

Distance learning systems are faced with several difficulties. A lack of interaction between students and instructors can make mastering material a difficult task. Also, since students do not actually come to Clarkson, much recruiting power is sacrificed. Finally, the cost of distance learning programs and limited benefits to the university could raise the cost of the course.
Although a pure distance learning program is fairly infeasible, the concept itself is not completely without merit. Most notably, as pointed out by President Collins, hybrid programs already exist and integrate distance learning with periodic visits to the participating universities. Students could come to Clarkson at the initiation of a course, meet fellow students, and get acquainted with professors. This hybrid program would be very attractive to students who already have full schedules. They would be able to do the work at any time that they have free. The previous ideas that we discussed are rigidly structured so the hybrid program should be considered. Periodic visitations for testing and reinforcement ameliorate the learning processes, and ensure that Clarkson’s facilities are showcased. Such exposure to Clarkson boosts the programs ability to maintain value in recruitment while solving some transportation and scheduling issues.

Science Fair:

Clarkson has consistently demonstrated its proficiency in educating students in the areas of science and technology. These areas often draw the attention of many pre-collegiate students, but few opportunities exist to develop the interests of elementary students. As demonstrated by several current partnerships, students need to be approached at a young age to cultivate interest in the sciences. A science fair on the Clarkson campus would provide the opportunity for local students to display their knowledge, creativity, and interest in the sciences. Moreover, it would give the students a better understanding of the importance of the sciences. Seeing other students’ projects and ideas in a fun and competitive atmosphere would give them a sense of achievement and pride in their accomplishments. Such a spark often keeps students motivated to study and pursue careers in science and technology.
Exciting students about science and technology is beneficial to students and the technical world. Bringing students, especially high school students, to the campus offers Clarkson a convenient and productive recruiting tool. Clarkson would benefit from the opportunity to interest the motivated, intelligent students that a science fair would attract. Although Clarkson would not offer scholarships to winning contestants, private funds or businesses could provide prizes such as scholarships or cash awards. The fair might be combined with laboratory open houses and other activities aimed at showcasing Clarkson’s research and academic activities.

For recruitment purposes, it would be ideal to have Clarkson professors and students available to interact with participants during the science fair. Participants would then be familiar with the fields of research available at Clarkson. Involving Clarkson students and professors in the Science Fair might be done by having them as judges for the competition. Another possibility would be a mentoring program where a Clarkson student would mentor a participant or group of participants in developing the project. Such a program would be almost essential for involving home schooled or small private schooled students who probably do not have teachers with a wealth of technical knowledge nor the facilities to research. Additionally, Clarkson students involved in mentoring would gain valuable teaching and research experience.

One benefit of the science fair is the potential for flexibility of participation. Participants could be from many age groups and disciplines of study and include groups like home schoolers that are often left out of other school-related activities. Though college science fairs often involve only high school students, the science fair could include students from third or fourth grade on. In fact there is interest in participation in the science fair by elementary schools. Thus age divisions would be necessary in the organization of the science fair. The science fair would also not be limited to public school students. Private and home schooled students could easily
prepare projects and compete in competition, though they may require some help with technical aspects and laboratory access for certain projects which could be resolved by the previously mentioned mentoring program.

Subject divisions would be helpful in dividing projects by topic. Traditional disciplines such as chemistry, biology, and physics could be joined by topics such as engineering, web-site design, computer programming, and (though it is a “science” fair) business. Though the need for a science fair is obviously greatest in the local area, there is no reason why the fair could not include students from outside the North Country. Participation from schools in Ontario and Quebec would add an exciting international flavor to the fair and expose more Canadians to the benefits of considering Clarkson. Students from other areas of upstate New York and Canada might also be interested in presenting work, and participating in an event hosted by a renowned technical institute.

Even with a small initial size, such an event would require a great deal of organization and management. The annual nature of the science fair also demands an enduring commitment and continuous resources from Clarkson. From a management aspect, the distribution of responsibilities could be dispersed in several ways as to not overburden any one office or department. The ideas and benefits of a science fair would lie within the interests and goals of the Educational Outreach Office and could conceivably be overseen by them. From there, responsibility could be distributed to a project-based program under the umbrella of the Business School or the Center for Entrepreneurship. The coordination and communication skills that would need to be employed to handle the logistical issues of this event are the type of skills that would be beneficial for business students to obtain practical experience. A general faculty mentor/organizer is critical to the management of the event.
Effective advertising is crucial to the success of this event, as it is necessary to attract both participants and spectators. Promotion and advertisement tools, such as websites and fliers, would be beneficial. One suggestion is that a website for the science fair and could be created and maintained by a web-design class. There is plenty of enthusiasm from local schools about the idea of a science fair, so the schools would most likely be willing to help get their students involved in any science fair. Ideally, to cover the monetary issues, Clarkson could use businesses to sponsor the event. This would strengthen the relationships that Clarkson has with these businesses and give the businesses the opportunity to advertise to motivated students of the sciences.

Although beginning a science fair requires a great deal of organization and coordination, it would quickly gain momentum and become well-established and reputable, building enthusiasm in the youth for the sciences, and improving Clarkson’s image as an institution involved in the local community. These benefits should make the science fair a worthwhile investment for Clarkson.

A Science Fair should easily draw enough interest to grow at a rate that would justify its initial effort. The benefits of instilling an interest in science and technology to pre-collegiate students are many and broad. By inspiring and encouraging prospective students, Clarkson establishes its position as a leader in technology. Upon becoming successful, a science fair would greatly add to the image of Clarkson as an exciting institution that is interested in educating the local community in fun and interesting ways.
Conclusion:

Clarkson currently has many educational partnerships with the community. However, most of these programs and collaborative efforts are obscured because of the lack of a centralized office that organizes and helps to promote these activities. The two potential partnerships that appear most feasible and are mutually beneficial to both Clarkson and local educational institutions are offering Clarkson courses to high school students, and an area science fair. The opportunity to offer classes to advanced high school students would help the university to recruit the advanced students from the surrounding community. An area science fair would encourage interest in the sciences, and make Clarkson more accessible to the community. These two partnerships should help to fulfill Clarkson’s vision for a positive image and a more active role in the community.
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