Addressing the Digital Divide: Adding IT to the Emerging Scholars Program

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Executive overview:
The ‘digital divide’ continues to grow within the United States. The problem is even more disturbing when high speed broadband Internet access is considered. According to PEW, 24% of all Americans have high-speed access at home however only 10% of rural Americans go online from home with high-speed connections\(^1\). Unfortunately, it is not difficult to find counties in South Carolina where the penetration of broadband access is significantly less than 10%. While this is in part due to availability of broadband service in rural locations, a significant part of the explanation involves the economic, educational and social barriers that impede rural families from exposure to computers, information technology (IT) and the Internet. This proposal addresses the digital divide within South Carolina. By leveraging the computer and IT skills of Clemson’s Computer Science Department and the existing Emerging Scholars Program we can efficiently address the core issues. We propose to develop and teach a set of computer related skills courses to Emerging Scholars participants. To maximize this investment, it is vital to have the participants share these skills with friends and peers in their local school. Therefore, we further propose: 1) to provide corporate donated laptops to each participating graduate of the proposed computer training program\(^2\); 2) to train and facilitate program participants to start computer clubs at participating schools; 3) to provide a computer and software for each participating school.

Introduction:
The digital divide problem is all about access to technology. In certain areas in the United States, an unreasonably high percentage of young adults leave high school with minimal exposure to computers, information technology and the Internet. Rural counties have significant barriers that impede obtaining these skills. The most significant impediments include economic, educational and social issues. These same issues make it difficult for high school kids to attend and graduate from college. Clemson’s Emerging Scholars program focuses on this issue by bringing roughly 150 high school students of various ages from the 5 poorest counties in South Carolina to campus during the summer for a set of structured training and workshop programs. The local high schools select the candidates for this program targeting kids with ability but who might not succeed without additional help. The participants enter the program as rising sophomores and participate for three summers. The expectation is that by the time they are ready to graduate from

\(^2\) This is dependent on if we succeed in obtaining corporate funding.
high school, their skills in the basic sciences will be readied for college. In addition, workshops are provided that will further motivate and prepare the participants to succeed in college. Currently the program does not include IT training.

Based on our research involving broadband access technologies, several trends are clear: first access speeds will continue to increase at a significantly higher rate than consumer cost; second new and potentially life changing broadband applications will become available. Unfortunately, many low income families will not be able to benefit from these advances. The point of entry requires significant discretionary income (estimated at $2000 per year to maintain a computer and pay for broadband access monthly fees). Additionally the level of computer skills required is a barrier for many if they have not been properly trained.

**Detailed plan:**
We propose to extend the Emerging Scholars Program to better prepare the program participants in the area of information technology. An objective is to facilitate program participants to take these skills back to their communities. This plan will involve myself and my students in the following way³.

1. During the first year of this project (i.e., Summer of 2005), we will conduct a one hour introduction to the program for the first year Emerging Scholars. This advertisement will help prepare the students for their subsequent involvement in the program the following year. The focus of the first year however will be on the second year Emerging Scholars participants. These students are on campus for 2 weeks. We will develop a course module on information technology (details given later in this paper). The module will be given to these students in 4 one-hour long class meetings. In addition, there will be a follow on component that will extend throughout their next year at school.

2. During the second year of this project (i.e., Summer of 2006), the second year students will attend the same 4 one-hour class sessions and the first year students will attend a 1 hour session as described above. However, special attention will be given to the third year participants who are on campus for 3 weeks. This group will attend three one-hour sessions that focus on Internet issues such as security and setting up home networks. These students can then volunteer to participate and help run a computer club at their school for the next year. If they agree to participate they will receive a laptop computer that they can take back home with them⁴. They will be trained to become ‘facilitators’ of a computer program that will be setup at their school. While the details of this program are likely to vary school by school, the basic idea is as follows. An additional computer will be donated to each participating school. This computer is intended to be used to support a ‘computer club’. The Emerging Scholar graduates will run the computer clubs and provide training for its members. The Scholar participant will be given the proper training to run this program during his/her third summer at Clemson. While the hope is

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³ The Emerging Scholars Partnership program involves three groups of high school students based on the students grade level when school begins after the summer. We refer to these groups as first year, second year and third year representing rising sophomores, rising juniors and rising seniors respectively.

⁴ This is subject to obtaining corporate donors.
that the computer club will be self-sustaining, we assume that they will require assistance from time to time. Consequently there must be a follow up program throughout the year to monitor and assist the local computer clubs.

3. This plan will be carried out for 3 years. At the end of the 3 years, a project assessment will be made resulting in a final report and a presentation to be made to Clemson’s leadership team. The program will either be terminated, or if deemed a success, an effort will be made to make the program permanent. The metrics for success will be determined prior to the program kickoff in the summer of 2005.

**Course Description:**

*Second Year Course:*
The second year students will attend a basic course on computer skills. Four one-hour lecture sessions will be provided. The format will be lecture with hands-on computer time. The material will include:
1. Introduction to a Computer
2. Introduction to Windows and key applications like email, Word and Powerpoint
3. Introduction to the Internet and web sites

During the academic year, the students will have 2 assignments that they need to submit, one in the Fall and one in the Spring.

*Third Year Course:*
The third year students will attend four one-hour lecture sessions along with a three hour lab. The course material will include:
1. Advanced computers: The focus will be on explaining computer architecture such that the student can maintain his own computer. For example, how to upgrade memory, what to do if a system becomes infected from a virus (and how to prevent this).
2. Advanced Internet: The difference between dialup, cable, DSL and LAN Internet connectivity. Internet security basics.
3. How to run a computer club. Discuss organization, training techniques and projects.

During the academic year, the students will participate in the computer club.
Open Issues and Concerns

1. If we don’t get corporate partners we will not be able to carry out all of this plan. We will limit the plan to an IT course for the second year and third year participants.

2. The effort required after the on-campus program must be carefully considered. The current approach assumes that some follow up activities throughout the school year is important. Further, it seems likely that the computer clubs need to be monitored to ensure their success.

3. This plan will make use of Computer Science facilities during the weeks of June 6 through July 10. Our department has two labs equipped with 22 and 16 Windows machines. I’ve been told that it should be easy to find available time for this program.

4. The following time line is meant to help identify the program rollout over the next three years. We track participants with a $x$-$y$ naming scheme. The $x$ indicates the program year relative to year 1 during the summer of 2005. The $y$ indicates the participants group. Group 2 are the rising juniors and group 3 are the rising seniors.