

## **Scaffolding Graduate Students' Learning through Collaboration with Gen Y Students**

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## *Abstract*

This paper describes the perceptions and attitudes of high school students and the graduate students they assisted during a university multimedia class. This K-12/university partnership provided collaborative learning experiences between high school students and university graduate students and helped participants to cross traditional educational borders. This research focused on reverse mentoring by high school students were more knowledgeable about the course content than the graduate students enrolled in the course. A social-constructivist stance formed the theoretical framework for this study. This four-year qualitative study used observations, interviews, and focus groups to get at perceptions and attitudes of both groups of participants. It focused on the benefits to high school students and participating teachers as they participated in a reverse mentoring project in which the goal was to bring technology into K-12 classrooms.

*Students represent more than 90% of the K-12 education population, and they likely possess 95% of the technology expertise in the school. Unquestionably, they are 100% of the reason that schools exist.*  
Martinez and Harper, 2002

### *Introduction*

Dennis Harper has done extensive research on the Generation YES (Gen Y) model in which K-12 students form partnerships with teachers. Students bring technological expertise to the partnership while teachers bring pedagogical knowledge. This four-year study extends Harper's model and examines the collaborative learning and border crossing that occurs when high school students mentor graduate students. Further, it examines the perceptions and attitudes of high school students and the graduate students they assisted during a university multimedia class.

### *Definition of Terms*

*Gen Y:* Dennis Harper's Generation YES Program, commonly called Gen Y, was one of four programs deemed exemplary by the U.S. Department of Education's Educational Technology Expert Panel. The program was judged exemplary on its quality, educational significance, evidence of effectiveness, and usefulness to others. Gen Y is designed to infuse technology throughout the school. Students work with teachers to effectively bring technology into classrooms. This collaborative effort provides the students with project-based learning and the teachers with sustainable professional development.

*Scaffold:* The scaffold metaphor, when used in educational settings, describes the support offered to learners to help them achieve learning outcomes. Prior knowledge provided by mentors helps learners by providing a pre-arranged stepping stones, learning advice or learning aids for acquiring new knowledge. The tacit assumption underlying the scaffold model is that students can become independent, self-regulated learners when instruction is carefully scaffolded.

### *Literature Review*

Dennis Harper's Gen Y model is designed to infuse technology throughout the school by having students work with teachers to bring effective technology into the class. This collaborative effort provides the students with project-based learning and the teachers with on-site sustainable professional development.

Martinez and Harper (2002, ¶ 8) summarize the Gen Y model as follows:

Generation Y is an innovative curriculum and resource solution for grades 3-12 that promotes schoolwide technology infusion. It is a technology program with a twist. Gen Y students develop technological fluency while learning how to share their knowledge with others. Each student is paired with a classroom teacher who needs help integrating technology into his or her practice. Each student/teacher team decides on a curriculum component or lesson to enhance with technology. Students learn about pedagogy and lesson plan design while developing their communication, planning and project management skills. The partner teacher receives support for their technology projects when and where they need it - in their classroom.

The concept of scaffolded instruction has grown out of research on how individuals learn (Vygotsky, 1978). The Zone of Proximal Development (ZPD) is "the distance between the actual developmental level ... and the level of potential development ... under adult guidance or in collaboration with more able peers" (Vygotsky, 1978, p. 86). Such collaboration or scaffolding enables learners to participate in complex tasks that they cannot perform adequately without assistance (Moll, 1990).

Herber and Herber (1993) compare the temporary structures that physically support workers while they complete jobs that would otherwise be impossible to instructional. This, they indicate, is a teaching strategy that to teach new skills by engaging students collaboratively in tasks that would be too difficult for them to complete on their own. Hogan and Pressley (1997) have found there are five different instructional scaffolding techniques: modeling of desired behaviors, offering explanations, inviting student participation, verifying and clarifying student understandings, and inviting students to contribute clues.

McKenzie (1999) describe eight characteristics of scaffolding. The first six are relevant within the context of the reverse mentoring described in this paper. McKenzie describes scaffolding as:

1. Providing clear direction and reducing students' confusion
2. Clarifying purpose

3. Keeping students on task by providing structure through scaffolded lessons or projects
4. Clarifying expectations and incorporating assessment and feedback
5. Directing students to worthy sources to reduce confusion and frustration.
6. Reducing uncertainty and disappointment

This project was grounded in social-constructivist learning theory and the tacit assumption that learning is facilitated by scaffolded instruction. That scaffolding and mentoring was provided by *younger*, but more knowledgeable peers using a modified version of Harper's Generation YES (Gen Y) model.

### *Project Description*

This reverse mentoring project facilitated learning for graduate students enrolled in an intensive twelve-day multimedia course that was part of their graduate program at a metropolitan university in the southwest. The course goals included learning to effectively use a number of multimedia tools in K-12 classrooms. The final project was the creation of an electronic portfolio that showcased graduate students' skills and abilities to integrate multimedia into the teaching and learning that occurred in their classrooms.

Student enrollment varied from 30 – 35 students pursuing an M.Ed. in Elementary or Secondary Education with a Concentration in Educational Technology. All graduate students were practicing teachers. Since the enrollment was high, the university professor enlisted the help of graduate student interns, who had completed the course earlier in their programs, and high school interns with extensive multimedia skills. Classes were held in a computer lab for four hours per day for twelve days during the summer session.

In addition to large enrollment, the skills and confidence levels of graduate students varied considerably. Therefore, the university professor wished to facilitate teaching and learning at a variety of levels and for a variety of learning styles. Having a number of interns available to graduate students made this goal attainable.

Using a variation on Dennis Harper's Gen Y Model (in which fourth through twelfth grade students team with teachers in their schools to plan technology-infused lessons), the university professor harnessed high school students' multimedia expertise to assist graduate students

during their intensive and demanding course on using multimedia to enhance teaching and learning in K-12 classrooms.

Prior to this study, the university professor had participated in a two-year partnership with a middle school teacher in a local 12-K district. As a result of this partnership, approximately 22 middle school students spent one day per month at a university computer lab as part of their language arts curriculum. During the first year of the partnership, when the students were seventh graders, they learned to create web pages so they could create a Web site for their K-8 school. After deciding on the purpose, audience, and general content for their project, they interviewed teachers, administrators and students in their school, and took digital pictures of classroom and extracurricular activities. Then, working in groups, students created, posted, and revised their school Web site. During the second year of the partnerships, students learned iMovie™ so they could create a series of digital news magazines for their school. In addition, they created a number of short digital essays that fulfilled their eighth grade language arts requirements (Christie, et al, 2004).

The university professor invited approximately eight of these middle school students to assist her in her multimedia course for graduate students. Three chose to become part of the project the first year and four students (who will enter their senior year in high school this fall) have participated for the last three summers and are co-authors of this paper. Equipped with the multimedia skills learned and honed during their seventh and eighth grade language arts class, these high school students, henceforth referred to as Gen Y students, became mentors to graduate students learning to use multimedia in their teaching and learning.

### *Methodology*

In this multi-year qualitative study, the first two authors served as teacher-researchers. During the first two years, we trained the Gen Y students in the use of a wide variety of multimedia tools that they used to complete their language arts requirements during seventh and eighth grades. During this time, we continually evaluated our teaching methodology to be sure that students were meeting their learning objectives. And evaluate whether our modeling a constructivist learning environment would provide the Gen Y students with a teaching methodology we wanted them to use when they became mentors in a university course. During the last four years, we have been evaluating the strengths and weaknesses of using this modified

Gen Y, or reverse mentoring, model in a graduate course. The methodology described below focused only on our study of Gen Y students scaffolding the learning of graduate students.

We collected three types of data: observations of Gen Y students and graduate students, focus groups of Gen Y students and graduate students, and projects created by graduate students when mentored by Gen Y students. Our goal was to evaluate success of reverse mentoring model we used.

The teacher-researcher observations were recorded and discussed on a regular basis. These observations focused more on teaching methodology and our discussions helped us monitor and adjustment our teaching to make it more effective for student learning. We conducted two focus groups in which we asked specific questions on using the modified Gen Y Model in a graduate course. The first focus group was with three Gen Y students and the second with eleven graduate students. Both sessions were audio- and video-taped. The comments from each focus group were transcribed. We intend to repeat these focus groups at the conclusion of our fourth, and perhaps final, year of using this model.

Assertions were drawn after careful analysis of the data using the constant comparative method of Glaser and Strauss (1967). All data were analyzed - not in the sense that Glaser and Strauss (1967) use this method to derive theory - but simply to sort through and process the data. We recursively used the first two steps that Glaser and Strauss suggest that researchers follow: compare incidents applicable to each category and integrate categories and their properties. From this analysis, we were able to propose nine assertions that we felt were justified by the data.

### *Findings*

A number of assertions were developed after a thorough analysis of the observational data, focus group data, and documents generated. Assertions, organized around themes, are summarized below.

*Assertion 1: Gen Y students were capable to mentoring practicing teachers, and most practicing teachers responded positively to such mentoring.*

Although hesitate at first to offer help to graduate students significantly older than themselves, Gen Y students soon realized they

had the skills to help and that most graduate students often needed and wanted help. K-12 teachers acknowledged that kids often know more about using technology than they do

*Assertion 2: Gen Y students needed training.*

Gen Y students needed training in two key areas before they were comfortable serving as mentors to practicing teachers. First, they needed training and extensive and varied experiences using technology and multimedia tools. This technology training needed to include both formal instruction and time to experiment with the tools, use the tools to complete assignments, make mistakes, and problem solve. They also needed training in ways to scaffold learning for the graduate students.

*Assertion 3: Gen Y students felt that using technology comes naturally to them, and practicing teachers generally felt either intimidated by technology or that learning to use technology was a long and difficult process.*

Since the Gen Y students had been using technology both at home and school for most of their lives, they not only considered using technology an integral part of their lives, they often experimented with how to use technology tools in new and creative ways. Most K-12 teachers, on the other hand, felt the need for direct instruction and support when learning to use technology

*Assertion 4: Gen Y students learned by exploring and playing and making mistakes, and K-12 teachers generally preferred to learn using concrete, step-by-step directions.*

Gen Y students preferred “messing around” and learning by doing. They believed mistakes helped them learn and were excited when a mistake resulted in a new discovery. K-12 teachers, however, tried to avoid making mistakes and were often terrified their mistakes would have dire consequences. Generally, they preferred step-by-step instruction and had little interest in learning the multiple ways to perform any specific computer operation. The following focus group comments support and illustrate this assertion:

Gen Y student, Jason: *[Practicing teachers] think that things with iMovie™ can be done in only **one** way.*

Gen Y student, Joey: *The grad students think differently than we do. They don't like to make mistakes. They want it perfect the first time. They should see the cool stuff we've done that started as a mistake.*

*Assertion 5: Gen Y students and practicing teachers were respectful of each other, individually and collectively.*

Gen Y students and practicing teachers were initially polite to each other, but soon came to respect each other because of the expertise that each group brought to the learning situation. The following focus group comments support and illustrate this assertion:

Teacher, Anna: *I didn't think for a moment that [the students] would treat me like I didn't know anything, although I didn't really know much. They were truly there to help out and be supportive.*

Gen Y student, Jayme: *I basically helped Anna make her iMovie exactly how she wanted it.*

*Assertion 6: Gen Y students learned to give help in meaningful ways, and practicing teachers learned to ask for the specific type of help they needed.*

Practicing teachers often didn't know how to ask for the specific kind of help they needed. Many would just "cry help" and say something like "I'm stuck, you fix it!" Over time, Gen Y students learned to interpret non-specific cries for help, and practicing teachers learned to provide context and identify more specifically what the problem was and the type of help they sought. The following focus group comments support and illustrate this assertion:

Gen Y student, Crystal: *I got to know which teachers really needed a helping hand and which ones just had technical questions.*

Gen Y student, Jayme: *After a while I learned how the teachers thought, and I could sense when they needed help.*

*Assertion 7: The K-12 teachers grew appreciative of and valued the Gen Y students and the scaffolding they were able to provide.*

K-12 teachers commented that the “kids” were patient, accessible, friendly, refreshing to work with, positive and receptive, and enjoyable. The following focus group comments support and illustrate this assertion:

Practicing teacher, Cathy: *They felt very valued and worthwhile because they could help us; I definitely valued them.*

Practicing teacher, Mary M: *I was impressed with how much of their knowledge they were willing to share. Nothing was protected; they were just there for us.*

Practicing teacher, Elisa: *We grew to trust them.*

Practicing teacher, Dora: *We learned that the kids could help us even though they're younger, much younger, than we are.*

Practicing teacher, Krisit: *I loved the one-on-one instruction and problem-solving strategies I learned from Jayme.*

#### *Assertion 8: Gen Y kids gained self-confidence*

Gen Y students were, at first, shy and reticent to approach a teacher unless asked. Over time, they became more confident in their abilities to help with the wide variety of questions graduate students asked. Even more importantly, they soon learned to provide unsolicited guidance and help to those graduate students who needed scaffolding.

Gen Y student, Crystal: *I learned adults were willing to listen to what I had to say.*

Gen Y student, Jason: *My attitude toward adults is now more open, more confident.*

Gen Y student, Jayme: *My self-confidence is better because of this experience.*

#### *Assertion 9: Scaffolding graduate students' learning through collaboration with Gen Y students benefits all participants.*

The modified Gen Y model used within the graduate multimedia class provided a win-win-win situation. The Gen Y students, the graduate

students who were practicing teachers, and the university professor all benefited from this project. Gen Y students increased their self-confidence, felt valued for their expertise, felt valued for their willingness to help, became more comfortable around teachers, are now more willing to offer help to their high school teachers, are much more familiar with university life, and have had a three- or four-year experience interning in a university classroom. They characterize this experience as "a chance in a lifetime." Graduate students enrolled in a intensive multimedia class felt their individual needs were met despite the large class size, received help when and as they considered necessary, experienced the Gen Y Model, are now using the Gen Y Model in their classrooms, and experience the ZPD and the joy of learning from a "more experience *junior* peer." Finally, the university professor received assistance with popular, over-enrolled graduate class, could accommodate a variety of learning styles, offered improved quality of learning and improved the classroom environment, offered a constructivist classroom featuring personalized and contextualized learning, and had the opportunity to use and study a reverse mentoring model at the graduate level.

### *Conclusion*

This model encourages authentic participation of students as collaborative partners with teachers. After crossing long-established educational borders, Gen Y students: increased their self-confidence, felt valued for their expertise and willingness to help, became more comfortable around teachers, and consequently were more likely to offer help to their own high school teachers. Graduate students felt their individual needs were met – despite the large class size, received help when and as they considered necessary, experienced the Gen Y model, experienced the ZPD and the joy of learning from a "more experienced junior peer," and are now using the Gen Y model in their classrooms. Finally, a university professor received assistance with a popular, over-enrolled graduate course. Because of this assistance, she accommodated a variety of learning styles, offered an improved quality of learning and classroom environment, and provided a constructivist classroom featuring personalized and contextualized learning. In addition, she had the opportunity to study reverse mentoring as Gen Y students ventured into a graduate level university course to assist practicing teachers.

## References

- Christie, A., Naish, V., Kelter, J., Pearman, C., Wycoff, W., and Gender, J. (2004). Language arts comes alive as middle school learners become information producers. *Meridian: A Middle School Computer Technologies Journal*, 7 (1).
- Herber, H., & Herber, J. (1993). Teaching in Content Areas With Reading, Writing, and Reasoning. Allyn & Bacon: Needham Heights, M.A.
- Hogan, K., & Pressley, M. (1997). Scaffolding Student Learning: Instructional Approaches & Issues. Brookline Books, Inc.: Cambridge, M.A.
- Martinez, S. and Harper, D. (2002, December). Student Inclusion = Technology Infusion. Retrieved from <http://www.newhorizons.org/strategies/technology/martinez.htm>
- McKenzie, J. (2000). Scaffolding for Success. [Electronic version] Beyond Technology, Questioning, Research and the Information Literate School Community. Retrieved October 12, 2002, from <http://fno.org/dec99/scaffold.html>
- Moll, L.C. (1990). Vygotsky and Education: Instructional Instructions and Applications of Socio-historical Psychology. Cambridge University Press.
- Vygotsky, L.S. (1978). Mind in society. Cambridge, MA: Harvard University Press.