GMS-MAGIC Pilot 2008-2009: A Summary

MAGIC partnered with The Girls' Middle School (GMS) in the 2008-2009 school year for a pilot of its program. The pilot consisted of ten GMS students, each paired with a MAGIC mentor. Four of these mentees were from sixth grade, four from seventh grade and two from eighth grade. The mentoring meetings started in October 2008 and continued through May 2009, culminating in a presentation by each mentee to their parents, mentors and the MAGIC core team. The presentations were on what the mentee had done as part of this program, or a demonstration of one of their projects.

At the same time as the GMS pilot was ongoing, a high school student in Washington state also participated in the pilot, with a remote mentor in the Bay Area.

Of the eleven mentorships, two ended prematurely. The first involved a sixth grader, who was having difficulty with the regular 6th grade coursework and extra-curricular activities. Participation in MAGIC quickly became an additional onus. This was a clear case where prematurely ending the relationship was the right thing to do. Otherwise, the MAGICal experience would not have been pleasant for the mentee, and by extension, for the mentor. The second involved a seventh grader whose mentor's work responsibility tripled after the first couple of months of this relationship. It was getting difficult for the mentor to find time to do justice to the mentee and the program. One of the backup mentors were offered as a replacement, but the mentee's schedule became too over-booked in the spring of 2009, to allow for any changes in her schedule. Hence this relationship also ended.

The remaining mentorships proceeded through the allotted time, and ended in May 2009. Each relationship was different in terms of the number and kinds of projects the mentee did, and the progress of each mentee was different. Each mentee learnt a different set of auxiliary skills, in addition to completing their STEM related projects/activities. For instance, one of the mentees learnt how to use the hands-on experience of a field trip with their mentor, to prepare a presentation that relied on demonstration materials that they passed around the audience – a very effective presentation strategy. Another mentee learnt about the importance of boundary conditions in a program.

The success rate of this pilot was 82% (9/11). It is worth noting that the two relationships that ended prematurely were very useful in terms of the learnings for the MAGIC core team. From this perspective, the success rate of the pilot was 100% (11/11).

The projects/activities done by the mentees during the MAGIC pilot were diverse. These included:

- Making a website
- Writing Scratch (http://www.scratch.mit.edu) programs/games.
- Making a game with stations, each representing a branch of Science, with various questions and clues to help the player pass through that station on to the next.
- Writing Alice (http://www.alice.org) programs/games.
- Figuring out the details of networking from one's house to an Internet Provider's hub.
- Writing Python programs.
- Field trips to their mentors' workplace.
- Learning how the internet works.
- Learning about cool inventions such as the 3D-printer.
- Learning about women in STEM, and cool inventions by women in STEM.

Each mentee was administered a survey consisting of four questions regarding their perception about STEM careers and tools/resources available to them to explore the same. The same survey

with some open-ended questions was administered at the culmination of the pilot. At the midpoint of the pilot, each mentee had a meeting with a MAGIC core team member and a GMS teacher, on their progress in the pilot. The next section describes the results of the two formal surveys, taken at the beginning and at the end of the program.

Survey Executive Summary

The quantitative analysis was non-conclusive. The mentees did not recall the initial scores and could not do a valid comparison. This part of the survey will be modified for the next pilot.

The highlight of the program was the one-on-one time with an adult, with the opportunity to shape the learning, set the direction and work on mentee selected problems.

A high school mentee also cited the opportunity to get real-life perspective from a person working in a STEM field as a favorite.

Minor improvement opportunities mentioned in the survey are:

- Meeting the mentor face-to-face or at frequent intervals in remote relationships. This was a "nice to have" since progress was not impeded by distance.
- A couple of mentees would have liked more frequent meetings.
- One mentee wanted a more structured start. She also wished she had known about the end presentation earlier so that she could have prepared for it from the beginning.

A project is defined as an activity unit. Project types were extremely diverse. They ranged from reading assignments to creating small programs with newly learned languages. Some project categories which got an explicit mention were:

- Projects which introduced mentees to innovative ideas like 3-D printing.
- Projects which explained everyday items like the Internet.
- Learning tools which helped with everyday tasks like designing a room with "SketchUp".
- Easy programming languages (Alice, Python, Scratch) coupled with small projects like paint mixing, creating a tic-tac-toe etc.