Student Technology Leadership Program

How Students Can Lead a School to 21st Century Learning

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Abstract

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Over the last two years the MICDS Student Technology Group has served as a student's first line of defense for problems with their own laptops, or problems completing technology-intensive projects. Furthermore, StuTech has served as a driving force behind many new uses of technology in curricula and assisted teachers in integrating these uses into their classrooms. By leveraging tech savvy students, StuTech has turned these students into allies and forces of institutional support and change while simultaneously keeping these students stimulated in positive endeavors and supporting their further education.

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Outline

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Students apply to be members

We look at:

- Application questions and test
- Interview
- Recommendations from peers and teachers

- What sorts of troubleshooting or problem experience do you have?
- Is the student interested in helping their teachers and peers?
- Are you comfortable getting help from this student?

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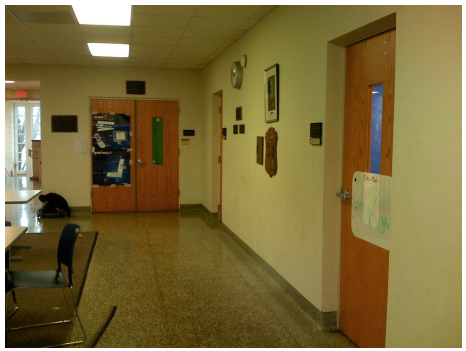
Student Help Desk



- Stocked with the equipment required to help students with media-rich projects (CD-Rs, chroma-key screen and lights, Macs for iMovie)
- StuTech members spend their free periods here
- Located in a high traffic area
- Key pad used to keep unauthorized visitors out

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Other Points

- Autonomy was key to motivating students.
  Don't smother students intrinsic motivation with external requirements — give them the opportunity to take their own education, and the education of their peers, into their own hands.
- Students as involved as they wish.
  Some StuTech members only help out in the classroom, but don't spend their time at the helpdesk.

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StuTech = Learning Opportunity

- Members learn how to help and teach other students and classes.
  StuTech members must learn to simplify information and explain it to students who may have lower levels of understanding on the computer. They must practice making students feel comfortable with the technology and ensure that students feel supported.
- Collaborative and discovery-based learning
  As students work together to understand problems and discover solutions they learn problem solving skills. The environment of students working together towards solutions creates powerful opportunities for collaborative learning.

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Training Course

- The StuTech training course attempts to emphasize the process of troubleshooting over the details of technical knowledge.
- Each meeting begins with a discussion of the previous week's 'war stories'.
- Uses a systems design perspective to look at breaking down problems and understanding how components interact. (e.g. "How to get to TIP" problem as a formal system)
- Students read and and discuss papers documenting well-known systems. (*Therac-25*, *Why Cryptosystems Fail*, *Worse is better*, *Ethernet*)
- Problem sets in the form of "tool box, initial system, and goal" challenge students to develop their own technique.

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- Fun! – Giving the group its own space is a key component of this as it provides an area for students with similar interests, regardless of age, to interact.
- Effort, time and skill are put into positive pursuits: Have students improve your network, not worm their way around in it.
- Gives members a quiet place to work when not helping other students. This can help offset some of the time commitments required of being a StuTech member.

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Supporting Students

- Students are supported, helps minimize technology issues in projects.
  Students can visit the StuTech Helpdesk when their project 'crashes' rather than having to appeal to their teacher.
- Helps students use their own laptops on campuses.
  StuTech registered 238 laptops this year (twice our registrations last year). Of those, 92 were freshmen, 57 were sophomores.

StuTech Total Workload

StuTech processed between 300 and 400 issues in the first semester of the school year.

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Issue Tracking

- Ensures that every student with a problem is helped and that the problem is resolved.
- Streamlines communication between StuTech and students/teachers.
- Makes having new StuTech members examine a problem easy by providing information on what has been tried before.
- Allows us to have valuable information on the types of problems we see, their most common fixes, and *who is helping who with what*.
- Provides a paper trail for the actions of StuTech members. We have never needed this.

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Issue Tracking - The Tech

- Email is the simplest interface for clients — make them have the easy job.
- We have tried two packages: Eventum and RT
- You can also use an externally hosted system.
- Integration into student database provides easy access to valuable resources.
- Force the system to work with your workflow, not the other way around.

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- Helps students and groups 'raise the bar' in their own work.
  Students who wish to try new things with technology (i.e. "Let's put our notes on a wiki") have the technical support necessary to turn these ideas into reality. Extracurriculars can augment their traditional activities with StuTech supported technology based projects (e.g. Campus Democrats / Republicans sponsored mock-primary).
- Provides an advocate for students in regards to technology issues.
  Who do your students go to now when they need a web page unblocked for school purposes? Do the people with the power to unblock web pages have any existing relationship with the students?

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- StuTech Members are able to come into classrooms and provide assistance with tech-intensive projects
- StuTech Members work with teachers to integrate such projects into their curriculum
- StuTech Members can put tech-skills to work to provide technical piece of projects (e.g. hosting wikis, blogs, and other server-side software)

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Examples of StuTech impact on curriculum

- Contemporary Family Stories: StuTech helped with design and editing of videos
- GAT wiki projects: StuTech worked with the teachers to integrate wikis into an existing project idea
- Use of blogs in reading French literature: StuTech went into classes and helped students set up the blogs and taught them how to post

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1. StuTech turned tech savvy students from a group that must be controlled into a group that can be taken advantage of and kept them stimulated in ways that traditional classroom education often fails.
2. StuTech provided its members and other students teacher-less learning opportunities and can help other students stretch their use of technology.
3. StuTech support can help reduce stress on faculty and staff in supporting tech-intensive projects making them more likely to engage in such projects in the future.
4. StuTech has the capability to be the driving force behind new and novel uses of technology in education.
5. As a student-driven group, StuTech can often innovate and adapt to new ideas faster than traditional technology staff providing support for 'in the moment' teaching.

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Questions for consideration

1. How are tech savvy students at your school currently stimulated?
2. How is spontaneous innovation using technology supported?
3. How are students supported when they have issues completing tech-intensive projects?
4. What problems are you currently facing in the implementation of tech-intensive learning? How could a group like StuTech help to eliminate those problems?

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Thank you for coming

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An introduction

This is a version of the MU Puzzle presented by Douglas Hofstadler in *Godel, Escher, Bach*. It is used as an example of a formal system and can be viewed as a problem in "tool box, initial state, goal state" form.

Our puzzle deals with three symbols – `T`, `I`, `P`. This makes up our puzzle's alaphabet. The puzzle consists of rules for transforming strings into other stings, called *transformation rules*. Another transformation rule may then be applied to the result of the first rule, this is a sequential application of rules

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The Problem and Rules

The Question

Provide a set of sequentially applied rules that transform the string `TII` into the string `TIP`, or prove that such a set of rules does not exist.

The Rules

1. `xT` $\longrightarrow$ `xTT`
2. `xIII` $\longrightarrow$ `xIT`
3. `IIx` $\longrightarrow$ `Px`
4. `xTTTx` $\longrightarrow$ `xPx`
5. `Tx` $\longrightarrow$ `Txx`

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