CAMPUS TECHNOLOGY SERVICES
TECHNOLOGY INITIATIVE PROJECT (TIP) GRANTS
INDIVIDUAL DEPARTMENT/PROGRAM PROPOSAL FOR 2012/2013 ACADEMIC YEAR
Submission Deadline: 11/26/2012

Department/Program requesting TIP funding: Penfield Library

Proposal Coordinator Emily Thompson

Individual Proposer Name

Department Penfield Library
Phone Number 315-312-3563
E-mail address emily.thompson@oswego.edu

Signature of Proposal Coordinator

Abstract of TIP proposal (100 words):

According to David Lankes, professor at Syracuse University and library futurist, the library is a platform for ideas rather than a repository for information. To that end, a 3D printer would be an exciting addition to the services and technologies already offered by Penfield Library. The MakerBot Replicator is an inexpensive way to teach our students the magic of designing 3D objects and to give them cutting edge skills. Having a 3D printer in the library would make this service available to students and faculty from across disciplines.

	Yes	X	No	Matching funds available to support this proposal? If yes, please specify on a separate sheet.

Signature of Department Chair: Barbara A. Shaffer

Signature of Division Dean: Barbara A. Shaffer

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Collaborating Departments/Programs: _____

Proposal Coordinator _____
Individual Proposer Name _____
Department _____
Phone Number _____
E-mail address _____
_____

Signature of Proposal Coordinator _____

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Description and outline of request for TIP funding for 2012-2013 academic year. If proposal has several parts, please prioritize each part. Use additional sheets as needed:

Description: In keeping with the library's mission to be a place "where ideas, learning and innovation connect," we would like to make a 3D printer available to all students, faculty, and staff. This device will support our institutional priorities by offering our academic community an opportunity to stretch their imagination and ingenuity and develop new skills. Faculty can integrate this technology into their courses to support concepts of design and students can work in groups or as individuals to explore innovative ideas for problem solving, creativity, and invention.

The MakerBot Replicator 2 is the gold standard in desktop 3D printing. It uses PLA filament (a corn-based bioplastic), heating then extruding it in a series of layers to create an object. Users can design the objects using the free MakerWare software. The design file is put on an SD card (a formatted one is included) which is inserted into the printer. The operator chooses the file and the object is printed. A print can take anywhere from a few minutes to a few hours depending on the size.

The printer will be housed in a secure location in Penfield. Students, faculty, and staff will have access to the device in an environment that can be monitored for safety and security. People wishing to use the device will send their design file to the library and then pick up their object once it is finished. First students will design their object using a 3D modeling program. 3DTin is a free, web-based program, but all files must be licensed using Creative Commons. Blender is an open source software we could install on select library computers. Then they will use the MakerWare software to prepare it for printing. These applications will be available on select library computers.

A roll of PLA filament costs $48.00 a spool. We have included several spools for start-up in our budget below; however, in order to maintain this service on an on-going basis we will charge a small fee for materials. Other organizations charge by weight or length of filament used to determine cost. We currently estimate that a fee of $.10-$.20 per gram should keep the service affordable. According to the video here, one spool of filament can print out 392 chess pieces. The 4.9 gram starfish used as an example would cost our user between $.49 and $.78 to print. This cost would enable us to have multiple colors of filament available and to maintain and repair the device as necessary.

The Learning Technologies Librarian and other interested library faculty and staff will perform maintenance of the MakerBot as necessary. They will also be responsible for starting prints and bringing the finished prints to a centralized pickup place. The Learning Technologies Librarian will also be available to teach the modeling software to interested students or classes.

In the past few years, Makerspaces have become popular features for public libraries, the closest one our students could access is in Fayetteville. While there is some precedence for 3D printing in academic libraries (see the University of Nevada and the University of Michigan for examples), they are usually housed in engineering libraries. Currently there is a 3D printer in the Technology department at SUNY Oswego but this unit is understandably dedicated to supporting their unique curricular needs. Having a 3D printer in the library would make this innovative technology available to everyone.

Once this device is available, we anticipate that demand will be substantial. Interest in this device has already been expressed by a number of faculty members and students, including:

- Roger Taylor (Psychology) would have students build prototypes of ergonomically designed utensils.
- Jennifer Olori (Biology) would print off replicas of skulls for her students to examine.
- Roxanne Jackson and Linda Paris (Art) would use it for sculpture and mixed media assignments.
- Phillip Moore (HCI graduate student) would make prototype game pieces.

In addition, as the Engineering program becomes more prevalent, the students could use it to make prototypes, robot parts, and other models.

Proposals must address academic initiatives that relate to instruction, student usage, improving student usage, and/or improving student learning through the use of technology. Proposals for new, innovative and/or trial initiatives will be given priority; however, equipment replacement and expansion of existing equipment or services will also be considered.

Student impact statement:
(Description of impact of requested hardware and/or software on students' access to computing technology, number of students affected, etc.)

Penfield Library is a central location used by students from across the campus community. Placing a MakerBot in a visible location within the library will get students who have never thought about design interested in making things. In addition, 3D printing is a very new concept in academics. Students who use the device will gain experience with a cutting edge technology that is being used in many different industries.

Most importantly, the ability to design in three dimensions will enhance problem solving skills. Professors can also print off teaching aids to help students with different learning styles. For example, students who have trouble understanding a 2D picture of an item such a skull, art object, or historical artifact may be able to grasp it once they see a 3D model.

EQUIPMENT REQUESTED (rank highest priority first)
Whenever possible, please use the models and costs recommended by CTS:
http://www.oswego.edu/cts/services/administrative/computer_equipment.html

Manufacturer	Model	Units	Unit Cost	Cost
MakerBot	Replicator 2	1	$2199 + $35 (shipping)	$2199.00
PLA Filament		6	$48.00	$288.00
Scale (to determine cost to user)	Cuisinart KS-55C	1	$29.99	$29.99
MakerBot	MakerCare Service Plan	1	$350.00	$350.00
Miscellaneous Shipping			$100	$100
			Total Hardware Cost:	$2966.99

EQUIPMENT BEING REPLACED

Manufacturer	Model	Units	SUNY ID #

SOFTWARE REQUESTED (rank highest priority first)

Manufacturer	Model	Units	Unit Cost	Cost
MakerBot	MakerWare	1	0.00	0.00
Blender	Blender	1	0.00	0.00
			Total Software Cost:	0.00

Total Software Cost:	0.00
Total Hardware Cost:	$2966.99
Total Requested:	$2966.99