Project Title: WWU MakerSpace

Department/Organization: n/a

Project Applicant(s):

Principal Contact
Name: Max Smith  MS  Email: maxsmith216@gmail.com  Phone: 253 315 4983

Others
Name: Bailey Jones  MS  Email: jonesb31@students.wwu.edu  Phone: n/a
Name:  MS  Email:  Phone: n/a
Name:  MS  Email:  Phone: n/a
Name:  MS  Email:  Phone: n/a

Amount Requested for Project

Proposed Budget:

1. Equipment total $ 19369.25
2. Plus site preparation (not STF funded) + $
3. Total Project Cost (spreadsheet total from part IV of this form, Total Project Budget) = $
   4. Less organization’s contribution – $
   5. Less site preparation – $
   6. STF Grant Request = $ 20000.00

IMPORTANT NOTE

1. THE STF Committee will accept only complete proposals by the announced deadline. Every section (I–IX) and all items of this proposal format must be addressed.

I. Executive Summary (800 words max)

Provide a summary of the project and the benefits to be derived. Explain what the students would gain from the project, and how the acquisition would meet the Student Technology Fee mission.

STF Mission:
The Student Technology Fee provides Western students with adequate and innovative technology experiences by:

• Broadening/enhancing the quality of the academic experience
• Providing additional student access to technology
• Increasing integration of technology into the curriculum

Institutions of higher education are at the forefront of new and innovative approaches to learning, and Western Washington University is no exception. While the lecture-style has both benefits and limitations, it is my belief and the belief of many other students and
educators that hands on learning provides a more meaningful and tangible experience. Design thinking is being integrated in nearly every aspect of business and the ability to integrate that into educational practice would empower students to work and think creatively. Fields are constantly developing at rates impossible to keep up with, and a space like this would provide an opportunity for flexibility in problem solving. A new trend of "maker spaces" has begun to emerge in universities all over the country. From North Carolina State University to Arizona State University, these schools have created a space for all students, regardless of their major, to have access to the latest tools and materials to create, design, and experiment.

With tools like 3D printers, laser cutters, and 3D scanners, the potential for creative problem solving is limitless. A student in the chemistry department could 3D print a model of a chemical formula. Those in the Huxley College of education could utilize a laser cutter to develop fun projects for their classrooms. Computer Science students working on developing a game could work with Kinetics and 3D scanners to implement real world objects into their projects. There are no boundaries to who could benefit from this at our university.

These tools and materials would be located in a specific room accessible to current students, and based on several meetings, could potentially coincide in conjunction with current STC facilities. While Western does currently have some of these tools already, they are unfortunately outdated (especially the 3D printers in the Engineer Technology Department) and only accessible to specific majors. Likewise, training on the use of these tools are limited to specific upper level courses, and the maker-space could provide training that would be valuable beyond the scope of one's time at WWU. The makerspace would break down this wall of inaccessibility and allow for all current students to have access.

Q&A

Q: Where would you recommend the equipment be housed/located?
A: The STC reached out to us and offered to assist us in the drafting of this proposal. After several meetings, we came to a unanimous consensus that they would be the best place on campus to house the makerspace and all of its equipment.

Q: Who would you recommend be responsible for the equipment?
A: We recommend that the STC be responsible for the equipment.

Q: What would the noise level/impact be on surrounding areas?
A: Currently, the STC houses large format printers that are quite noisy. The equipment that this proposal is requesting would be quieter, if not just as loud. A dedicated room would help reduce any extra noise from the equipment.

Q: Could the Student Tech Center charge a usage fee?
A: The STC could charge a usage fee. However, after meeting with them, it sounds like they would be willing to provide the equipment for free to students that receive approval from a professor.

II. Relationship to STF Objectives / Impact on Current Academic Programs

The STF Committee will use as its primary assessment criteria the three objectives—quality, access, and integration—defined in the STF mission (above). Given this criteria, describe your proposed project in detail.
1. Tell us—focusing on what the students will gain from the project—how the project would provide positive benefits to specific courses or instructional programs. Specifically, answer at least one of a, b, and c below:

a. How would this project provide additional student access to technological resources?

   By being located in (preferably) the STC, students from varying disciplines could gain access to tools that only a small percentage of engineering students currently have.

b. How would this project broaden or enhance the quality of the student’s academic experience through the proposed technology?

   Students would be able to have access to software and equipment needed to experiment with the latest technology that is changing the world we live in. 3D printing is opening doors to many opportunities and providing students with these tools will help them stay competitive in today’s job market.

c. How would this project increase integration of technology into coursework?

   As noted in the executive summary, the makerspace would increase integration of technology into coursework by giving students another "path". We see students utilizing the makerspace to create new projects that are outside the norm of their major.

2. Would other departments be involved with this project?

   No □ Yes ☒ If yes, describe.

   The STC (Student Technology Center) reached out to us and assisted us in nailing out the specifics of what a makerspace would look like in the library.

3. Has any part of this project previously been funded by the Student Technology Fee?

   No □ Yes ☒ If yes, describe.

4. Is the proposed project a pilot project?

   No □ Yes ☒

   Our hope is that if a room cannot be provided immediately for this project and if students show large interest in the 3D printing/modeling aspects, then future expansion could possibly occur.

III. Utilization

List the anticipated number of times and duration per each use—per quarter or per academic year—that students would use the proposed technology. The committee is looking for total student hours and total number of unique students who would use the technology in that time period. Explain how you arrived at this utilization.

Based on the STC’s current annual "large format printing" numbers of 500 prints/year, we’ve estimated that 100 3D models would be printed in the first year of being open.

3D PRINTER:
100 Students x 2.5 hours/model = 250 hours/year
Because the laser cutter is easier to utilize than the 3D printer and much quicker, we’d estimate that 250 individuals would use the piece of equipment in the first year.

**LASER CUTTER:**
250 students x 30 minutes/project = 125 hours/year

The 3D scanners would be checked out in 24-hour time slots. Because it’s a more "specialized" tool, we don’t expect high volumes of students to utilize the equipment in the first year.

**3D SCANNER:**
50 students x 24 hour rental = 1200 hours

### IV. Total Project Budget

This section details the estimated total cost of the project. Include costs that would be covered—by your department or another source—for ongoing costs such as personnel or operating expenses.

1. For assistance in preparing your budget, please consult with relevant campus support departments (ATUS, Purchasing, Space Administration, etc.).

2. For more information about these contacts and helpful tools/links: from the STF website home page ([http://www.wwu.edu/stf](http://www.wwu.edu/stf)), choose “STF Tech Initiatives” on sidebar, then section "II. Tech Initiatives Forms and Instructions."

Attach an Excel spreadsheet if you have additional details.

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Important Notes from the STF Committee:
• We recognize your proposed budget as an estimate. Final funding for successful projects will be established after thorough technical review; some costs may need adjusting due to price changes.

• We recommend that you include a 3 percent cushion to allow for price increases.

• We may impose special conditions on a proposal before approval. See STF Proposal Guidelines.

• Funding is not provided directly to departments for purchases. All purchasing is done via the Office of the VPIT/CIO and savings are retained in the STF fund.

3. What funding or contributions are available from your department or other sources?

   **Note:** “Contribution” is defined as a monetary contribution. A vendor discount, for example, is not considered a contribution.

   n/a

4. Could this project be divided into discrete elements that could be funded separately?

   **Note:** A “no” response to this question creates an “all or nothing” proposal. That is, if the STF Committee decides against funding your entire proposal, it will not consider any elements for partial funding. If elements could be funded separately, the applicant is responsible for prioritizing them before submitting the proposal.

   **No ☐ Yes ☒** If yes, summarize and prioritize project elements with cost estimate for each.

   If designated room is available, the STC could use existing space to house the 3D printers and scanners as well as check out the Kinect Sensors for use. This would reduce the total cost of the proposal by $5,300 as the laser cutter and sewing machines would no longer be needed.

   3D Printers (3)
   iSense Scanners (2)
   Kinect Sensors (2)
   PLA Filament (100)

5. Are course or lab fees charged for any of the courses that will use this equipment?

   **No ☒ Yes ☐** If yes, describe. **Please note:** The total funding requested from the Student Technology Fee must reflect the amount collected from course fees for equipment replacement and/or equipment acquisition.

V. Impact on Existing Resources

Your proposal must address the project’s potential impact on existing resources. Give special attention to the impact on data transmission networks (e.g., sources accessed, networking equipment, etc.), and personnel (e.g., staffing, administrative support, faculty support, etc.).

1. Describe how existing equipment is used. Contrast this to projected use if your project were funded.

   **The STC has noted during our meetings that they would train their student employees to be verse in the set up of any 3D prints. Each student that is interested in printing something would need to work with an STC employee and ensure that their files are correct as well as make sure that the print is not excessive. The laser cutter would need to be watched over during use but because it’s quick, employees would not need to devote much time.**
2. Is similar equipment or technology available elsewhere on campus—such as the Student Technology Center, Classroom Services, Video Services, Western Libraries, a college lab?

   No ☐ Yes ☒ If yes, describe why the existing equipment does not meet the needs outlined in this proposal.

   The engineering department does house several large 3D printers and a laser cutter. However, they’re only accessible to students taking designated CAD classes and in specific majors.

3. If this project involves the replacement of equipment, including computers:

   a. Describe the “before and after” configuration changes. (A spreadsheet reflecting these changes may be attached.) Or, write “N/A.”

      The only change in equipment would be the addition of autocad software onto the laptops that the STC checks out to students in the library. Because of current license agreements with AutDesk, this would be at no additional cost.

   b. Describe the costs and benefits of replacing vs. upgrading. Or, write “N/A.”

      n/a

4. Would this equipment be available to students outside of your department?

   No ☐ Yes ☒ If the proposed technology would be used by students outside of your department, describe how they would gain access, how equipment availability would be publicized, the hours/week when equipment would be available, and any costs that would apply.

   Since I am not working with a specific department to provide these tools and working with the STC, the equipment would be available to any student.

5. Does this project involve the check-out of equipment to students?

   No ☐ Yes ☒ If yes, discuss whether or not the Student Technology Center/ATUS Loan Pool could be assigned this task.

   As discussed with them, the STC could check-out laptops and 3d scanning tools for 24-hour periods of time.

6. Does the department have adequate operating funds to provide ongoing maintenance and support?

   No ☐ Yes ☐ If yes, describe.

   Maintenance wouldn’t be required for most of the equipment. However, the filter of the laser may need to be swapped out as well as new PLA filament for the 3D printers. The STC mentioned their interest in utilizing the existing pool of money that they have to purchase new PLA filament when needed.

7. Does the department have adequate personnel funds to provide ongoing staff support for the project?

   No ☒ Yes ☐ If yes, describe.

**VI. Space and Site Information**
This section addresses any space alteration or site preparation necessary for the proposed project. Site alterations include painting, holes in walls, security systems, carpeting, construction, lighting changes, or conversion of a lab or office.

Special Note: If this project would require any site preparation, or if this project would use any space not currently under your department's control:

a. You must submit a draft proposal to Space Administration by March 13, 2015.

b. Space Administration and Facilities Management will then conduct a site survey and respond to you by March 20, 2015 about project feasibility, cost, and schedule.

c. You must include the site survey response with your final proposal.

1. Location for installation of equipment or technology:

   Student Technology Center

2. Would site modification be required?

   No ☐ Yes ☒ If yes, describe the modifications (e.g., electrical, air, painting, lighting, security, network access, etc.).

   A room would not need to be heavily modified. The laser cutters as well as any sewing machines would make less, if not just as much, noise then the large format printers currently in the library. Our choice of the Ultimaker 2 is also known for its quiet sound.

   Any room that houses the laser cutter would need a window to ventilate the fumes.

   After talking to the STC it was noted that, if no room was available to house the equipment, the STC could rearrange some of it's current facility to house the 3D printers and scanners.

3. Would this project use space not currently assigned to your department or area?

   No ☐ Yes ☒ If yes, describe.

   Note above response.

VII. Project Schedule

Describe your overall implementation schedule. (Remember that project awards are announced during spring quarter, and that projects are to be substantially completed by the end of the calendar year.) If any site preparation is involved (see section VI above), align your project schedule with the schedule provided by Space Administration and Facilities Management.

   Once a dedicated room is assigned for the makerspace, the process of purchasing and setting up the equipment would take roughly 1-2 months to implement.

VIII. Constraints

List or describe any external or internal factors/constraints that could affect your project schedule, project objectives, or the project budget (e.g., if external approval is required for curricular changes, or if funding must be received by a certain date).

The only constraint that is apparent at the moment is the lack of a dedicated room to house the equipment. A room would only need to be altered slightly to house the tools. All that is needed
are tables and chairs to support the 3D printer and Scanners. The laser cutter stands on its own but would need a window to ventilate fumes.

IX. Submitting the Proposal

1. Make sure your proposal does not exceed 12 pages (not including Tech Initiatives Summary Sheet).

2. Complete a 2015 Tech Initiatives Summary Sheet for the front of the proposal.

3. Submit the proposal and summary sheet electronically for prioritizing (PDF preferred, or Word document):
   a. Faculty and staff: Submit by internal due date, which must be before proposal due date of April 2.
   b. Students: Submit by March 31 to AS VP for Academic Affairs at ASVPforAcademicAffairs@wwu.edu.

4. Submit prioritized proposals:
   a. Organization reps and AS VP for Academic Affairs: Submit to Student Technology Fee (STF) Committee by 12:00 noon on April 2.
   b. For each proposal, email one electronic version (PDF preferred, or Word document) of both the proposal and the summary sheet to diane.bateman@wwu.edu (the STF Committee secretary).

Note: Paper copies of proposals are no longer required; please do not send.