



# TLEF Project – Final Report

Report Completion Date: (2019/09/20)

## 1. PROJECT OVERVIEW

### 1.1. General Information

|                                 |   |                                 |           |
|---------------------------------|---|---------------------------------|-----------|
| <b>Project Title:</b>           | Augmented Guidance Practical Learning for Engineering Students  |                                 |           |
| <b>Principal Investigator:</b>  | Markus Fengler  |                                 |           |
| <b>Report Submitted By:</b>     | Markus Fengler  |                                 |           |
| <b>Project Initiation Date:</b> | 3/2/2017  | <b>Project Completion Date:</b> | 3/31/2018 |
| <b>Project Type:</b>            | <input type="checkbox"/> Large Transformation<br><input checked="" type="checkbox"/> Small Innovation<br><input type="checkbox"/> Flexible Learning<br><input type="checkbox"/> Other: [please specify] |                                 |           |

### 1.2. Project Focus Areas – Please select all the areas that describe your project.

- Resource development (e.g. learning materials, media)
- Infrastructure development (e.g. management tools, repositories, learning spaces)
- Pedagogies for student learning and/or engagement (e.g. active learning)
- Innovative assessments (e.g. two-stage exams, student peer-assessment)
- Teaching roles and training (e.g. teaching practice development, TA roles)
- Curriculum (e.g. program development/implementation, learning communities)
- Student experience outside the classroom (e.g. wellbeing, social inclusion)
- Experiential and work-integrated learning (e.g. co-op, community service learning)
- Indigenous-focused curricula and ways of knowing
- Diversity and inclusion in teaching and learning contexts
- Open educational resources
- Other: [please specify]



1.3. Project Summary

The project was to develop a library of instructional videos for the student machine shop covering safety and basic operations.

1.4. Team Members – Please fill in the following table and include **students**, undergraduate and/or graduate, who participated in your project.

| Name             | Title/Affiliation                    | Responsibilities/Roles   |
|------------------|--------------------------------------|--|
| Markus Fengler   | Machine Shop Lecturer                | Administration, scripting  |
| Benny Nimmervoll | Engineering Technician 4 - Machinist | Video scripting, shooting, editing, hardware acquisition, installation, programming, |
|                  | APSC CIS assistant                   | Video shooting, lighting, video editing  |
|                  |                                      |  |

1.5. Courses Reached – Please fill in the following table with **past**, **current**, and **future** courses and sections (e.g. HIST 101, 002, 2017/2018, Sep) that have been/will be reached by your project, including courses not included in your original proposal (you may adapt this section to the context of your project as necessary).

| Course   | Section | Academic Year | Term (Summer/Fall/Winter) |
|----------|---------|---------------|---------------------------|
| MECH 220 | 101     | 18/19         | Fall                      |
| MECH 223 | 101     | 18/19         | Winter                    |
| MECH 457 | 101     | 18/19         | Fall + Winter             |
|          |         |               |                           |
|          |         |               |                           |
|          |         |               |                           |
|          |         |               |                           |
|          |         |               |                           |
|          |         |               |                           |



## 2. OUTPUTS AND/OR PRODUCTS

2.1. Please **list** project outputs and/or products (e.g. resources, infrastructure, new courses/programs). Indicate the current location of such products and provide a URL if applicable.

| Product(s)/Achievement(s):   | Location:   |
|--|---|
| Video display hardware installed + operational   | 4 locations within Fred Kaiser 1190                                     |
| Programing of video hosting site, display software to play videos on shop floor monitors   | 4 locations within Fred Kaiser 1190                                     |
| Collection of video segments showing machine shop practice, metal cutting, thread overview | Not posted – halted due to production issues/lack of production support |
| Custom shot video of lathe chuck exchanges   | Not posted due to quality issues  |

2.2. **Item(s) Not Met** – Please list intended project outputs and/or products that were not attained and the reason(s) for this.

| Item(s) Not Met:            | Reason:   |
|-----------------------------|---|
| Completion of custom videos | The learning curve for getting the video editing software working was much greater than anticipated. The CIS assistant struggled to get the editing software to work. We greatly underestimated the time and effort required per video for achievement of acceptable quality (initial setup of camera and lighting, editing software complexity. The increased availability of high quality content on Youtube altered somewhat our need to continue developing the use of video for display on the shop floor and the improvement in smartphone displays made having separate video displays obsolete. |
|                             |   |
|                             |   |

## 3. PROJECT IMPACT

3.1. **Project Impact Areas** – Please select all the areas where your project made an impact.

- Student learning and knowledge
- Student engagement and attitudes
- Instructional team teaching practice and satisfaction
- Student wellbeing, social inclusion
- Awareness and capacity around strategic areas (indigenous, equity and diversity)
- Unit operations and processes



Other: [please specify]

**3.2. What were you hoping to change or where were you hoping to see an impact with this project?** *We were hoping to get to a point where students could get basic questions answered by consulting short video segments on their own. It was anticipated that this would help to significantly address students' reluctance to ask questions ("feeling stupid") as well as free up supervising personnel from answering basic questions to focus on helping students on more esoteric issues and provide improved safety monitoring.*

**3.3. Were these changes/impacts achieved? How do you know they occurred?** *While we did get some preliminary videos shot and edited by the designated engineering technician and also got hardware displays installed and had some open source visuals running on the displays along with static information, we did not get this project to the objective of letting students call up instructional videos on-demand as initially envisioned. We did not get to the point where acceptable quality video with audio instruction were produced, due unanticipated difficulties in video shooting and production as well as editing and our inability to get sufficient video work support at the time. In the intervening time, the proliferation of Youtube instructional videos that students can access outside of the shop has taken some pressure off of use to produce our own videos and the advances in display resolution in smartphones has made using the shop-located video displays obsolete. While we still use the video displays, we use them primarily for showing live camera views of tooling setups and procedures when teaching groups of students. We learned (informally) that students are most inclined to rely on staff interaction in the shop, rather than to independently search for online information by having QR codes posted for web locations with supplemental information. Students polled informally indicated that they never used and were unlikely to use the QR codes, given that shop personnel were available, even if that meant waiting for several minutes.*

**3.4. Dissemination** *There has not been any dissemination of the results as we did not meet our objectives and the technological circumstances and needs have been altered by advances in related technologies.*

**4. TEACHING PRACTICES** – *After we closed down this project in 2018 we have produced some of our own supplementary instructional videos and host them on our Canvas course site for our Student Machine Shop and MakerSpace. We anticipate producing more of these as the camera and video editing technologies have become significantly better in quality for the cost and far easier to use.*

**5. PROJECT SUSTAINMENT** –*Video displays will remain to be used on the shop floor for live camera views to supplement demonstration and instruction. Videos will continue to be developed and added to our Canvas site.*