**2019 Golden Colorado STEM Guitar Participants’ Pre-Evaluation [do be completed on Friday morning]**

**Dear Participant:**  
  
**You are requested to complete this survey because you are participating in a STEM Guitar Building Workshop at the Golden Colorado School of Mines. The STEM Guitar Project (NSF ATE# #1700531) is funded by the National Science Foundation (NSF). Your responses will be important in providing input into the project implementation results that will be reported to NSF.**   
  
**Please feel free to answer as best as you can. Your responses will be grouped with all other participants’ input. No one will be individually identified when the results are reported. Because we are doing a Pre- and Post- Workshop Survey, it is important to be able to link your Pre- and Post- responses. You will be asked to write your Survey ID.**

**Thank you for completing this survey. Make sure you click "Submit" for your responses to be recorded.**  
  
**If you have any questions or concerns about this, please contact the Project PI, Thomas Singer at thomas.singer@sinclair.edu.**

**Survey ID**

Please write your name initials, birth month and year [e.g. John Adam Smith was born on September 10, 1970; he writes: **JAS09101970**]

1. You are about to experience a STEM Guitar Building Workshop, please check if you know any of the following [check all that applies.]:
2. Safety and apparatus [learning importance of protective gear, hand tool use safety, chemical safety
3. Measurements in fabrication and preparation [linear distances using ruler, tape measure, digital calipers; using specialty gauges such as height gauge, radius gauge; coplanar (fret rocker)]
4. Measurements in electronics and set-up [measure resistance, continuity, using digital multimeter; frequencies, using specialty app (pitchlab lite android/iphone, oscilloscope, strobe tuner]
5. Electronics [soldering (soldering iron preparation), shielding and grounding]
6. Separating processes and their tools in fabrication [use of - hand saws; files, rasps; abrasives; power machinery for abrasives (random orbital sander, RIGID spindle/belt sander); power band saw and safety operation; drilling (handheld electric drill and safety operation, stationary drill press and safety operation]
7. Joining processes and their tools [in preparation (use of mechanical fasteners, nails, fretboard align, hammer for install/remove); in fabrication (use of mechanical, threaded fasteners, screws, impact drill for threaded fasteners, adhesives, wood glue, adhesives, cyanoacrylate); in setup of guitar (use of screwdriver for threaded fasteners)]
8. Coating processes for protection and beautification [use of wood sealer, clear finish; dye stain, primer for swirl dipped guitars; application methods (wipe-on, brush, spray); use of non-traditional methods (swirl dip, shou sugi ban, Lichtenberg figure burning)].
9. Other {Please specify.]
10. What STEM-related skills do you think are you going to learn during this STEM Guitar Building Workshop? [Please check all that applies.]
    1. STEM MLA Topics\_Science and engineering-related skills [Forces (tension, compression, torsion), electronics, electromagnetic induction, vibrating string, waves (frequency, period)]
    2. STEM MLA Topics\_Technology-related skills [reading an electronic schematic / diagram; appropriate selection and use of tools for measuring, separating, joining, and coating]
    3. STEM MLA Topics\_Math-related skills [Fret spacing calculation, gear ratios in tuners, frequencies of notes, period of notes]
11. What new soft skills do you think you will learn (or any soft skills you may hone) during the STEM Guitar Building Workshop? [Please check all that applies.]

|  |  |  |
| --- | --- | --- |
| Soft Skills | New | Honed |
| Communication and Collaboration |  |  |
| Creativity and Innovation |  |  |
| Critical Thinking and Problem Solving |  |  |
| Flexibility and Adaptability |  |  |
| Productivity and Accountability |  |  |
| Grit, Initiative, and Self-direction |  |  |
| Leadership and Responsibility |  |  |
| Social and Cross-cultural skills. |  |  |

1. At this time, describe what you know about the following [if any]:
   1. Guitar set-up
   2. Soldering and guitar electronics
   3. Intonation
2. Participant Demographics
   1. Are you…
      1. An undergraduate college student
      2. A graduate student
      3. A faculty
   2. Your gender?
      1. Female
      2. Male
      3. Prefer not to say
   3. Your Ethnic Background
      1. American Indian or Native American
      2. Asian American
      3. Black/African American
      4. Latino/Hispanic
      5. White/Caucasian
      6. Prefer not to answer
      7. Other [Please specify]

**2019 Golden Colorado STEM Guitar Participants’ Post-Evaluation [to be completed on Sunday noon]**

**Dear Participant:**  
  
**You are requested to complete this survey because you are about to complete your STEM Guitar Building Workshop at the Golden Colorado School of Mines . Your responses will be important in providing input into the project. implementation results that will be reported to the National Science Foundation (NSF). As you have known, the STEM Guitar Project (NSF ATE# #1700531) is funded by the NSF.**  
  
**Please feel free to answer as best as you can. Your responses will be grouped with all other participants’ input. No one will be individually identified when the results are reported.** **Because we are doing a Pre- and Post- Workshop Survey, it is important to be able to link your Pre- and Post- responses. Please make sure that you write exactly the same Survey ID you used in your Pre-Survey.-**

**Thank you for completing this survey. Make sure you click "Submit" for your responses to be recorded.**  
  
**If you have any questions or concerns about this, please contact the Project PI, Thomas Singer at thomas.singer@sinclair.edu.**  
  
**The STEM Guitar Project Team**

**Survey ID for Pre-Post Survey Comparison.**

Please write your name initials, birth month and year [e.g. John Adam Smith was born on September 10, 1970; he writes: **JAS09101970**]

1. Having gone through the STEM Guitar Building Workshop, what have you learned? {[Please check all that applies.]
2. Safety and apparatus [learning importance of protective gear, hand tool use safety, chemical safety
3. Measurements in fabrication and preparation [linear distances using ruler, tape measure, digital calipers; using specialty gauges such as height gauge, radius gauge; coplanar (fret rocker)]
4. Measurements in electronics and set-up [measure resistance, continuity, using digital multimeter; frequencies, using specialty app (pitchlab lite android/iphone, oscilloscope, strobe tuner]
5. Electronics [soldering (soldering iron preparation), shielding and grounding]
6. Separating processes and their tools in fabrication [use of - hand saws; files, rasps; abrasives; power machinery for abrasives (random orbital sander, RIGID spindle/belt sander); power band saw and safety operation; drilling (handheld electric drill and safety operation, stationary drill press and safety operation]
7. Joining processes and their tools [in preparation (use of mechanical fasteners, nails, fretboard align, hammer for install/remove); in fabrication (use of mechanical, threaded fasteners, screws, impact drill for threaded fasteners, adhesives, wood glue, adhesives, cyanoacrylate); in setup of guitar (use of screwdriver for threaded fasteners)]
8. Coating processes for protection and beautification [use of wood sealer, clear finish; dye stain, primer for swirl dipped guitars; application methods (wipe-on, brush, spray); use of non-traditional methods (swirl dip, shou sugi ban, Lichtenberg figure burning)].
9. Other {Please specify.]
10. What STEM-related skills have you learned during this STEM Guitar Building Workshop? [Please check all that applies.]
    1. STEM MLA Topics\_Science and engineering-related skills [Forces (tension, compression, torsion), electronics, electromagnetic induction, vibrating string, waves (frequency, period)]
    2. STEM MLA Topics\_Technology-related skills [reading an electronic schematic / diagram; appropriate selection and use of tools for measuring, separating, joining, and coating]
    3. STEM MLA Topics\_Math-related skills [Fret spacing calculation, gear ratios in tuners, frequencies of notes, period of notes]
11. What new soft skills have you learned (or any soft skills have honed) during the STEM Guitar Building Workshop? [Please check all that applies.]

|  |  |  |
| --- | --- | --- |
| Soft Skills | New | Honed |
| Communication and Collaboration |  |  |
| Creativity and Innovation |  |  |
| Critical Thinking and Problem Solving |  |  |
| Flexibility and Adaptability |  |  |
| Productivity and Accountability |  |  |
| Grit, Initiative, and Self-direction |  |  |
| Leadership and Responsibility |  |  |
| Social and Cross-cultural skills. |  |  |

1. Having gone through this STEM Guitar Building Workshop, describe what you learned about the following build stage (including the tools you used in learning each of these) and upload at least two pictures indicating what you learned for each build stage:
   1. Guitar set-up
   2. Soldering and guitar electronics
   3. Intonation
2. Please suggest any improvements or areas of growth for a STEM Guitar Building Workshop in the future.
3. Any other comments?