**Makerspace Tools: littleBits**
Grade: 6th-8th  
Subject: Educational Technology

**Essential Questions:**  
How do littleBits impact the educational process?  
How do littleBits promote an innovative mindset?

**Design Thinking holds the key characteristics for engineering which answers the following questions:**  
1. What’s the problem and how can we define it?  
2. Who will use it, and what do we need to know about them to design for them?  
3. What can we make that will solve this problem?  
4. How will we know our solution?

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<tr>
<th>Concept/Content  (Outcomes)</th>
<th>Learning Target/Skills  (Performance Tasks)</th>
<th>Recommended Activities/Resources  (Examples)</th>
<th>Assessments</th>
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</table>
| **S1.C1: Knowledge and Ideas**  
Use technology to generate knowledge and new ideas. | **PO 1:** Analyze information to generate new ideas and products. | [littleBits Lessons](#)  
[Educator’s Guides](#) | Student authentic products  
[4Cs rubrics](#) |
| **S1.C2: Models and Simulations**  
Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding | **PO 1:** Recognize and explain relevant interdependent elements of a digital model or simulation. | [littleBits Lessons](#)  
[Educator’s Guides](#) | Student authentic products  
[4Cs rubrics](#) |
| **S1.C2: Models and Simulations**  
Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding | **PO 2:** Explore and experiment with system variables using models or simulations. | [littleBits Lessons](#)  
[Educator’s Guides](#) | Student authentic products  
[4Cs rubrics](#) |
| **S1.C2: Models and Simulations**  
Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding | **PO 3:** Compare and contrast two systems using a digital model or simulation. | [littleBits Lessons](#)  
[Educator’s Guides](#) | Student authentic products  
[4Cs rubrics](#) |
<table>
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<tr>
<th><strong>S1.C3: Trends and Possibilities</strong></th>
<th><strong>PO 1:</strong> Identify patterns and trends to draw conclusions and forecast possibilities.</th>
<th><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</th>
<th><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</th>
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<tr>
<td><strong>S1.C4: Original Works</strong></td>
<td><strong>PO 1:</strong> Analyze information using digital creativity tools to create original works and express ideas.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
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<tr>
<td><strong>S1.C4: Original Works</strong></td>
<td><strong>PO 2:</strong> Use digital collaborative tools to analyze information to produce original works and express ideas.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
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<tr>
<td><strong>S2.C1: Effective Communications and Digital Interactions</strong></td>
<td><strong>PO 1:</strong> Communicate digitally with others by selecting and using a variety of appropriate communication tools.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
</tr>
<tr>
<td><strong>S2.C2: Digital Solutions</strong></td>
<td><strong>PO 1:</strong> Communicate and collaborate for the purpose of producing original works or solving problems.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
</tr>
<tr>
<td><strong>S3.C1: Planning</strong></td>
<td><strong>PO 2:</strong> Predict which information sources will provide the desired data.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
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<td><strong>S3.C2: Processing</strong></td>
<td><strong>PO 4:</strong> Use appropriate digital tools to synthesize research information to develop new ideas and/or create new understanding.</td>
<td><strong>littleBits Lessons</strong>&lt;br&gt;Educator’s Guides</td>
<td><strong>Student authentic products</strong>&lt;br&gt;4Cs rubrics</td>
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<tr>
<td><strong>S4.C1: Investigation</strong></td>
<td><strong>PO 1:</strong> Write essential questions to investigate a topic or issue using</td>
<td><strong>littleBits Lessons</strong></td>
<td><strong>Student authentic products</strong></td>
</tr>
</tbody>
</table>
| **S6.C1: Understanding** | **PO 1:** Define and correctly use terms related to networks. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
| Recognize, define and use technology term, processes, systems and applications. |  |  | Student authentic products |
| **S6.C1: Understanding** | **PO 2:** Define and apply knowledge of various technical process terms. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
| Recognize, define and use technology term, processes, systems and applications. |  |  | Student authentic products |
| **S6.C1: Understanding** | **PO 3:** Choose technology applications appropriate for the audience and task. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
| Recognize, define and use technology term, processes, systems and applications. |  |  | Student authentic products |
| **S6.C1: Understanding** | **PO 4:** Recognize and demonstrate ergonomically safe and sound use of equipment. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
| Recognize, define and use technology term, processes, systems and applications. |  |  | Student authentic products |
| **S6.C1: Understanding** | **PO 5:** Identify physical risks of using digital technology. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
| Recognize, define and use technology term, processes, systems and applications. |  |  | Student authentic products |
| **S6.C3: Troubleshoot Systems and Processes** | **PO 1:** Use the help function within software and hardware to troubleshoot issues and problems. | **littleBits Lessons**  
**Educator’s Guides**  
- Vocabulary diagram  
- Word wall  
- Scavenger hunt  
- Create a manual or tutorial of...  
- Create a student dictionary | **4Cs rubrics** |
# S6.C4: Transfer of Knowledge

Transfer current knowledge to learning of new technologies.

## PO 1: Transfer understanding of current input/output devices, symbols and icons, and applications to learning new technologies.

### Terminology:
- 9V Battery
- Button
- Buzzer
- Cable
- Circuits
- DC motor
- Fan
- Fork
- Input
- Inverter
- Latch
- Light sensor
- Light wire
- littleBits
- Long LED
- Modules
- Motormate
- Output
- Power
- Pulse
- RGB LED
- Screwdriver
- Servo motor
- Slide dimmer
- Sound trigger
- Temp sensor
- Timeout
- Wire

### Resources:
- [littleBits Lessons](#)
- [Educator’s Guides](#)
- [littleBits Projects](#)
- [Getting Started with Arduino and littleBits](#)
- [littleBits Tutorials](#)
- [littleBits Quickstart](#)

### Explore these helpful STEAM Student Set resources:
- [What littleBits Can Do Now](#)
- [Introduction Lesson Plan](#)
- [Additional Lesson Plans for Different Levels](#)
- [Scratch LittleBits Extensions](#)
- [littleBits Arduino Bit Guide](#)
- [Introducing the Invention Cycle](#)
- [STEAM Student Set - Teacher Guide](#)
- [Connecting Lessons to NGSS Standards](#)
- [littleBits Invention Log](#)