



## GUIDE SHEET

### Overview

The Learning Environment Modeling Language (LEML) is a visual toolkit for communicating and representing instructional design ideas and plans. LEMML is used for designing, evaluating, prototyping, and revising designed learning environments such as courses, training programs, or workshops. LEMML as a framework consists of a set of symbols, each with defined meaning, that can be assembled together to represent information about the design of learning environments.

The following sections of this guide sheet outline each component of the Learning Environment Modeling Language (LEML) framework and presents examples of each. LEMML is comprised of:

- Building Blocks – defines elements in a learning environment
- Contexts – identifies types of environments
- Actions – shows the relationships and flow between elements in a learning environment
- Notations – annotates information about the learning environment

### Building Blocks

Building blocks describe elements used to design learning environments.



#### Type

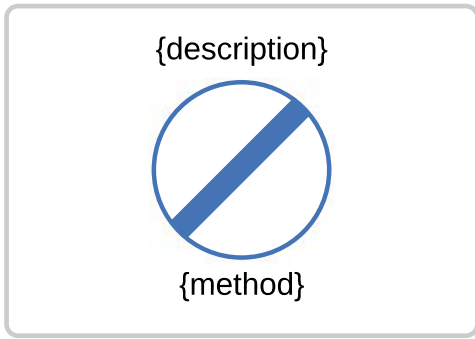
Each building block is comprised of three main components. First, is the building block type. This is the graphical symbol represented in the middle of the building block. The purpose of this symbol is to identify the purpose or function of an element in a learning environment.



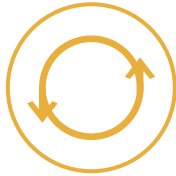

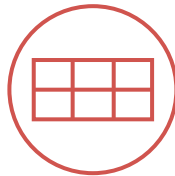
#### Description

Next, is the description. The description is listed at the top of the building block. The purpose of the description is to briefly describe the element. For example, a description might read: “Module 1 Overview”,

#### Method

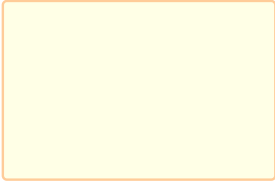

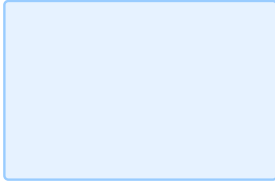
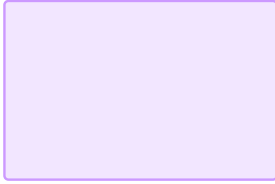
The third component of the building block is the method which is located at the bottom of each building block. The purpose of the method statement is to identify how the element is represented in the learning environment. An example method statement for the Module 1 Overview might be Live Presentation.



LEML Building Blocks				
				
Information	Dialogue	Feedback	Practice	Evidence
<p>Represents elements in a learning environment that presents information to the learner.</p>	<p>Describes communication, reflection, or collaboration elements within a learning environment.</p> <p>Dialogue can involve communication with self (reflection), with other individuals, or with groups.</p>	<p>Represents opportunities where feedback is built into a learning environment. Feedback is used to identify responses provided with the intent of enhancing performance and application of knowledge or skills.</p>	<p>Describes opportunities in a learning environment to rehearse, apply and practice skills. In some situations, this building block is used to represent formative assessment opportunities.</p>	<p>Represents opportunities where evidence of learning is presented in a learning environment. Evidence is frequently associated with a stated learning outcome and is used to represent summative assessment opportunities.</p>
<p><b>Examples may include:</b></p> <ul style="list-style-type: none"> <li>• Articles</li> <li>• Lectures</li> <li>• Textbook readings</li> <li>• Images</li> <li>• Videos</li> <li>• Websites</li> <li>• Animations</li> </ul>	<p><b>Examples may include:</b></p> <ul style="list-style-type: none"> <li>• Classroom discussions</li> <li>• Peer debate</li> <li>• Group discussions</li> <li>• Reflection</li> </ul>	<p><b>Examples may include:</b></p> <ul style="list-style-type: none"> <li>• Diagnostic questionnaires</li> <li>• Instructor feedback</li> <li>• Peer feedback</li> </ul>	<p><b>Examples may include:</b></p> <ul style="list-style-type: none"> <li>• Application activities</li> <li>• Problem sets</li> <li>• Tabletop group exercises</li> <li>• Individual assignments</li> <li>• Practice quiz</li> </ul>	<p><b>Examples may include:</b></p> <ul style="list-style-type: none"> <li>• Individual or group presentation</li> <li>• Essay</li> <li>• Individual or group project</li> <li>• Examination</li> </ul>

## Sample Building Block

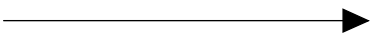
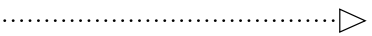
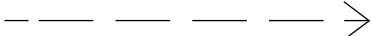
# Contexts

			
<b>Classroom</b>	<b>Online Synchronous</b>	<b>Online Asynchronous</b>	<b>Experiential</b>
Describes interaction that occurs in real time within a physical learning space.	Describes elements that are delivered online and in real-time.	Describes situations where interactions in the learning environment are conducted online and without the requirement of live, real-time interaction.	Describes informal learning spaces.
<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Formal classroom space</li> <li>• Training room</li> <li>• Lecture hall</li> </ul>	<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Webinar platform</li> <li>• Instant message platform</li> <li>• Video chat platforms</li> </ul>	<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Learning management systems</li> <li>• Self-paced online training modules</li> </ul>	<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Learning commons</li> <li>• Laboratories</li> <li>• Workplaces</li> <li>• Onsite field research sites</li> </ul>

Contexts describe the type of environment in which the building blocks reside.



## Actions

Action arrows describe the connection and transition between building blocks

		
<b>Learner Action</b>	<b>Facilitator Action</b>	<b>System Action</b>
Used to describe actions the learners take within a learning environment.	Used to describe actions a facilitator/ instructor takes within a learning environment.	Used to note automated or system-based actions within a learning environment.
<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Learner navigating through a self-paced online lesson</li> <li>• Learner uploading assignment to an online assignment submission system</li> </ul>	<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Instructor-provided feedback</li> <li>• Instructor moving from one lecture topic to the next topic</li> </ul>	<b>Examples may include:</b> <ul style="list-style-type: none"> <li>• Automatic notifications to students</li> <li>• Conditional release criteria placed on content based on learners' performance on an assignment</li> </ul>

# Notations

The Learning Environment Modeling Language allows opportunities to notate and annotate key elements in a learning environment. While there are numerous possibilities for useful elements that could be notated, the following table describes two common notation markers.

	
<b>Start/Stop</b>	<b>Objective ID</b>
Used to represent start and termination points within a learning environment.	Used to note how learning objectives are represented in a learning environment.
<b>Examples may include:</b> <ul style="list-style-type: none"><li>• Start and stop of an instructional sequence or pattern</li></ul>	<b>Examples may include:</b> <ul style="list-style-type: none"><li>• Learning objective alignment and achievement in a learning environment</li></ul>

NOTE: Notations can be added to indicate building blocks or criteria that must be met before a learner can proceed in the learning environment.