# Introduction to LEML

Learning Environment Modeling Language

The Learning Environment Modeling Language (LEML) is a visual toolkit for communicating and representing instructional design ideas and plans. It is likened to a course or lesson map or blueprint – a visual model. The components are like a visual vocabulary. It is a common language shared by all members of the design team.


https://www.nextthought.com/thoughts/2015/08/designing-collaborative-learning-with-leml
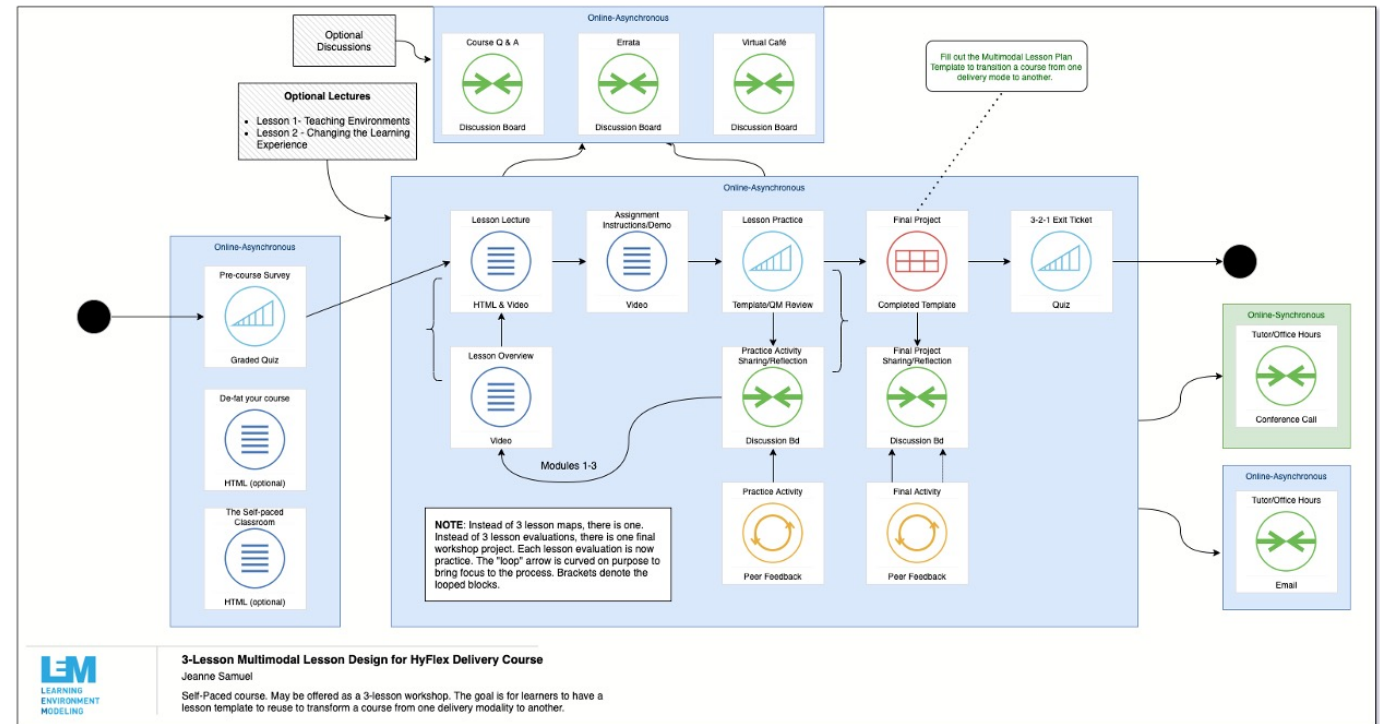
LEML is used for **designing**, **evaluating**, **prototyping**, and **revising** designed **learning environments** such as courses, training programs, or workshops. LEML consists of a set of symbols, each with defined meaning, that can used together, together display the components and lesson or course flow. **Dr. Bucky Dodd** refers to it as making your design thinking visual. Bucky Dodd developed LEM (Learning Environment Modeling) at the **University of Central Oklahoma**.

LEM is useful for **displaying the big picture** of a lesson or course.

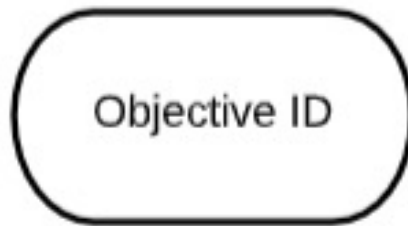LEML helps you to **quickly identify gaps** in engagement and learning environment consistency.
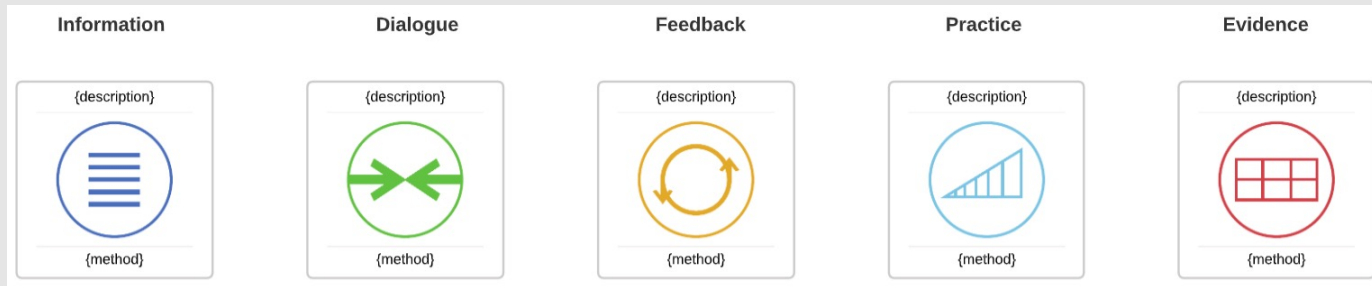
Components
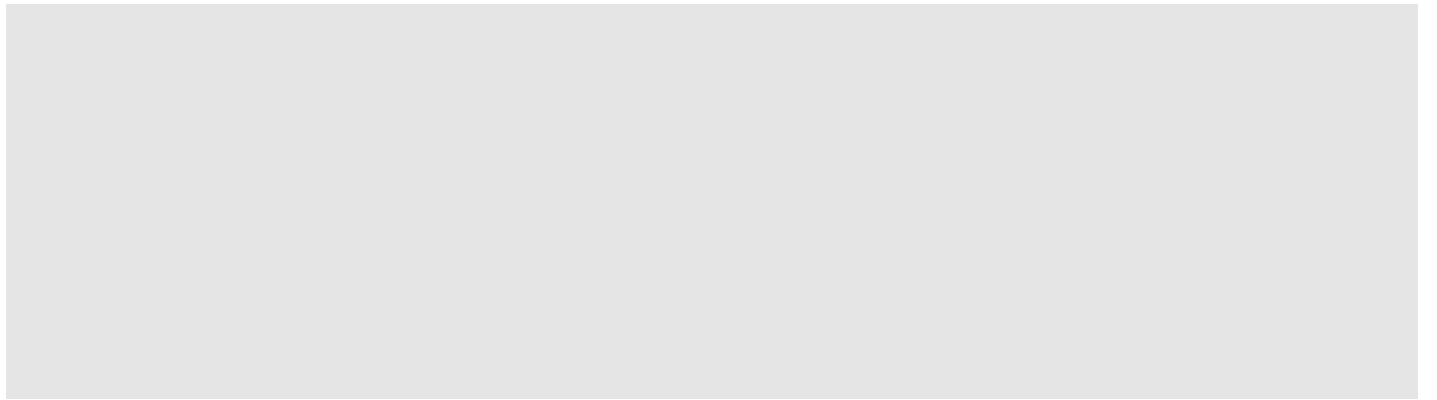
Start/End Point

Objective Achievement

Objective ID

When working with the learning environment modeling language, two objects to start with are the starting point and the objective. The start point is where the lesson journey starts. Think of it as the first spot on a board game. The objective is what the learners should be able to do or demonstrate knowledge of by the end of the lesson. The objective or outcome is measurable and achievable within the timeframe allocated. The start/stop point is the starting or stopping point of an instructional sequence or pattern.

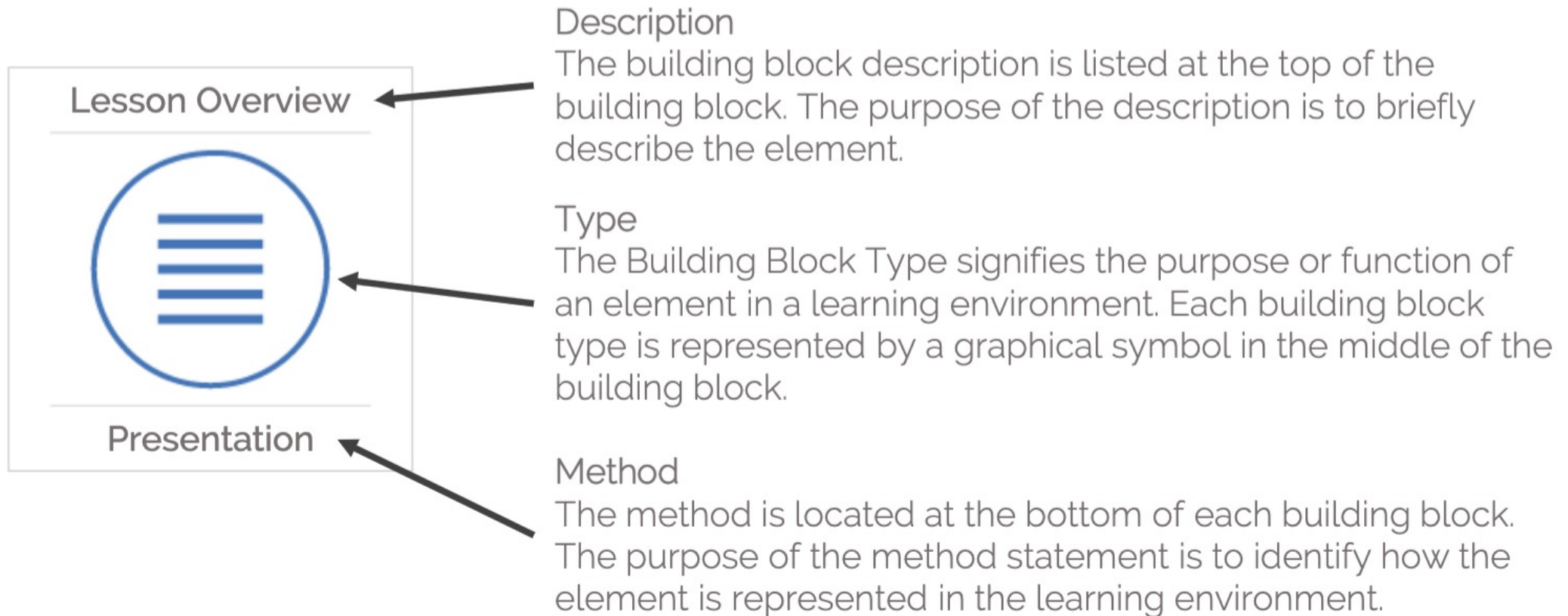| Information	Dialogue	Feedback	Practice	Evidence
{description}	{description}	{description}	{description}	{description}
{method}	{method}	{method}	{method}	{method}

When working with the learning environment modeling language, two objects to start with are the starting point and the objective. The start point is where the lesson journey starts. Think of it as the first spot on a board game. The objective is what the learners should be able to do or demonstrate knowledge of by the end of the lesson. The objective or outcome is measurable and achievable within the timeframe allocated. The start/stop point is the starting or stopping point of an instructional sequence or pattern.

Anatomy of a LEML Building Block

Lesson Overview

Presentation

Description
The building block description is listed at the top of the building block. The purpose of the description is to briefly describe the element.

Type
The Building Block Type signifies the purpose or function of an element in a learning environment. Each building block type is represented by a graphical symbol in the middle of the building block.

Method
The method 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.

Information represents elements in a learning environment that presents information to the learner. In the context of HyFlex, consider how you might implement the block for online or in-person learning. Examples of information may be,

- Articles
- Lectures
- Textbook readings
- Images
- Videos
- Website
- Animations

{description}

{method}

For Lecture 1 (description), you might provide a video (method) followed by a reading (method)

Lecture 1 Summary

Video

Lecture 1 Summary

Reading
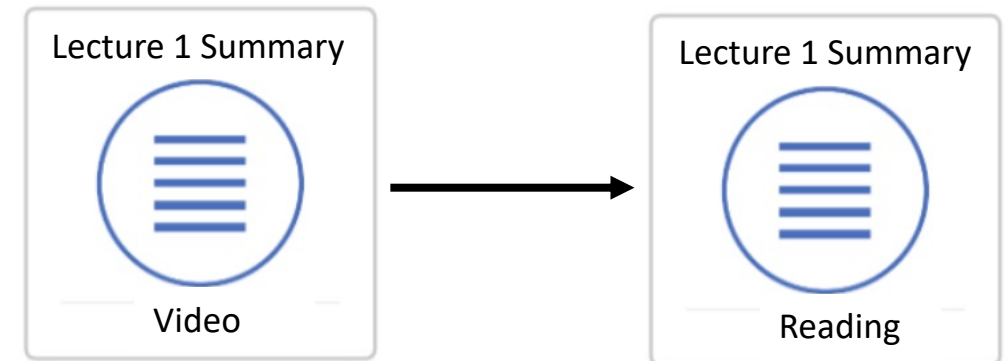
Dialogue describes communication, reflection, or collaboration elements within a learning environment. Dialogue can involve communication with self (reflection), with other individuals, or with groups. For example,

- Classroom discussions
- Peer debate
- Group discussions
- Reflection

Feedback 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. **Feedback may be a mix** of system (automated, instructor, self, and peer). Examples include,

- Diagnostic questionnaires
- Instructor feedback
- Peer feedback

{description}

{method}

Practice 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**. For example,

- Application activities
- Problem sets
- Tabletop group exercises
- Individual assignments
- Practice quiz

Evidence of learning in a learning environment is frequently associated with a stated learning outcome and is used to represent **summative assessment opportunities**. In other words, this is **how we determine whether the lesson outcome or objective has been met**. In the Backward Design model, after you define the learning outcome, you create the assessment (evaluation). Evaluation examples include,

- Individual or group presentation
- Essay
- Individual or group project
- Examination
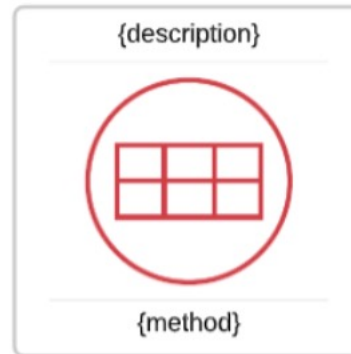
Contexts
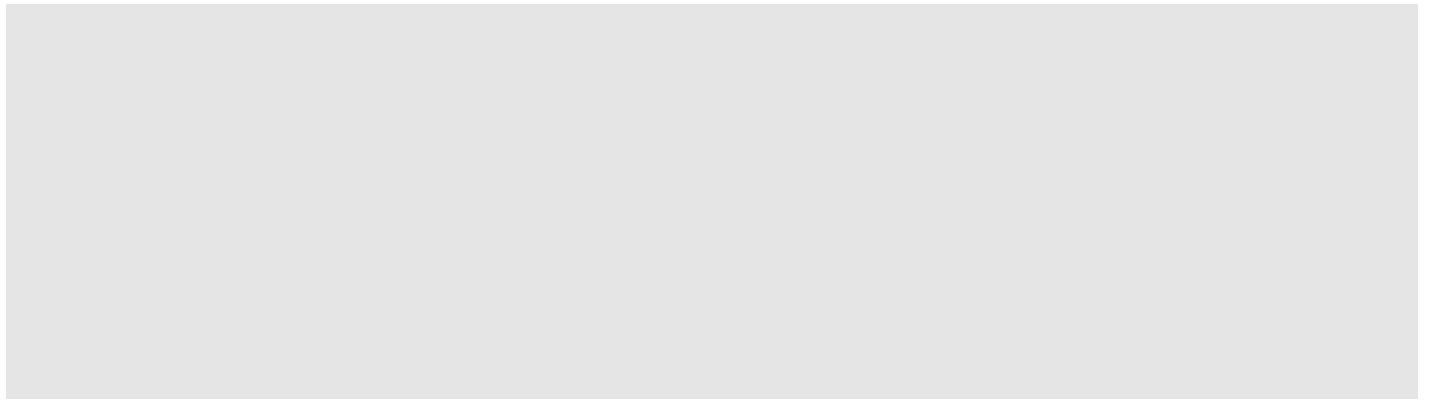
Contexts describe the type of environment in which the building blocks reside. They are essentially the learning environment.

| Classroom | Online Synchronous | Online Asynchronous | Experiential |

Classroom describes interaction that occurs in real time within a physical learning space. It may be called Face-to-face (F2F) or in-person. Classroom examples include,

- Formal classroom space
- Training room
- Lecture hall

Online synchronous describes elements that are delivered online and in real-time. For example,

- Webinar platform
- Instant message platform
- Video chat platforms

Online asynchronous describes situations where interactions in the learning environment are conducted online and without the requirement of live, real-time interaction. For example,

- Learning management systems
- Self-paced online training modules
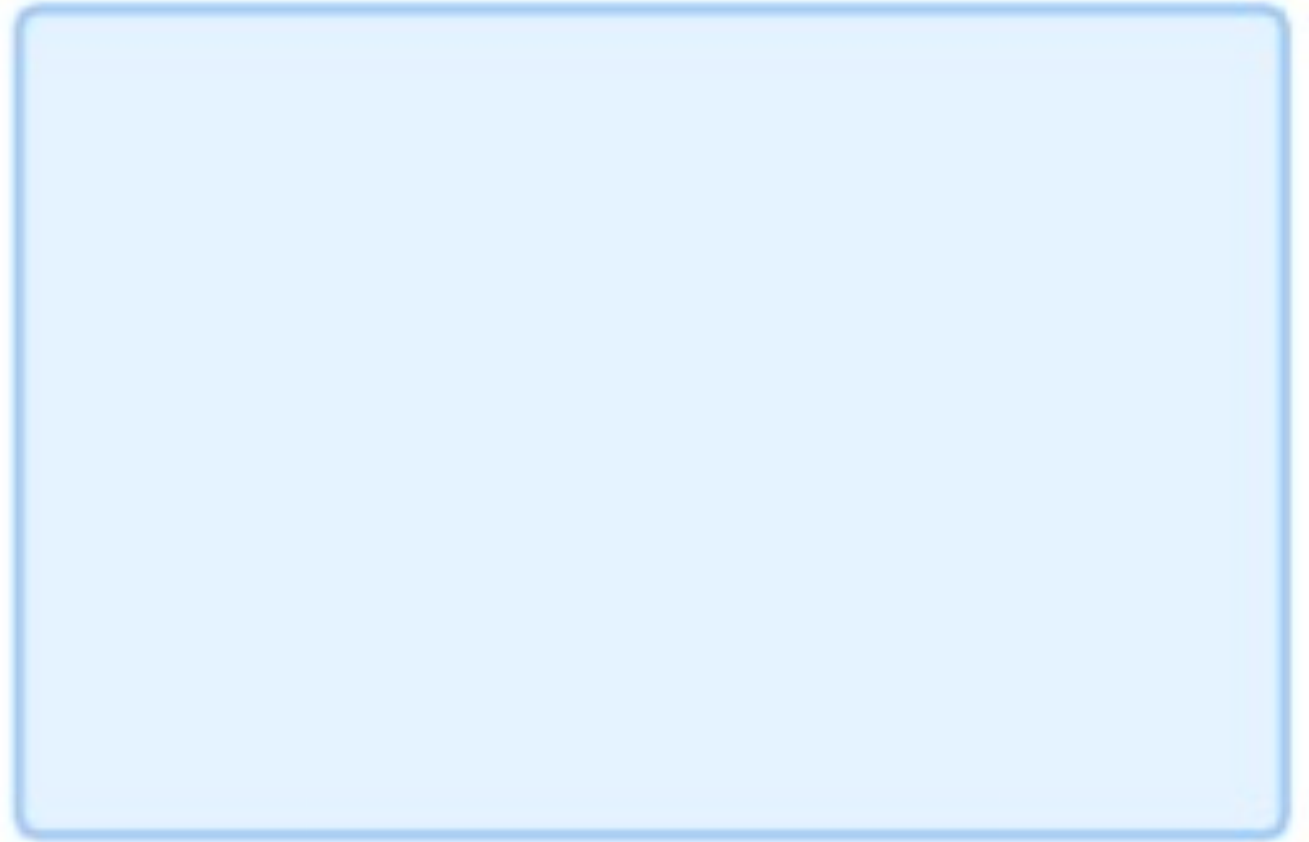
Experiential describes informal learning spaces. For example,

-

  - Learning commons
  - Laboratories
  - Workplaces
  - Onsite field research sites

Actions

Action arrows describe the connection and transition between building blocks.

Learner Action	Facilitator Action	System Action
⟶	⟶	⟶

Learner action arrows are used to describe actions the learners take within a learning environment. For example,

- Learner navigating through a self- paced online lesson
- Learner uploading assignment to an online assignment submission system

Learner Action

Facilitator action arrows are used to describe actions a facilitator/ instructor takes within a learning environment. For example,

- Instructor-provided feedback
- Instructor moving from one lecture topic to the next topic

Facilitator Action

System action arrows are used to note automated or system-based actions within a learning environment. For example,

- Automatic notifications to students
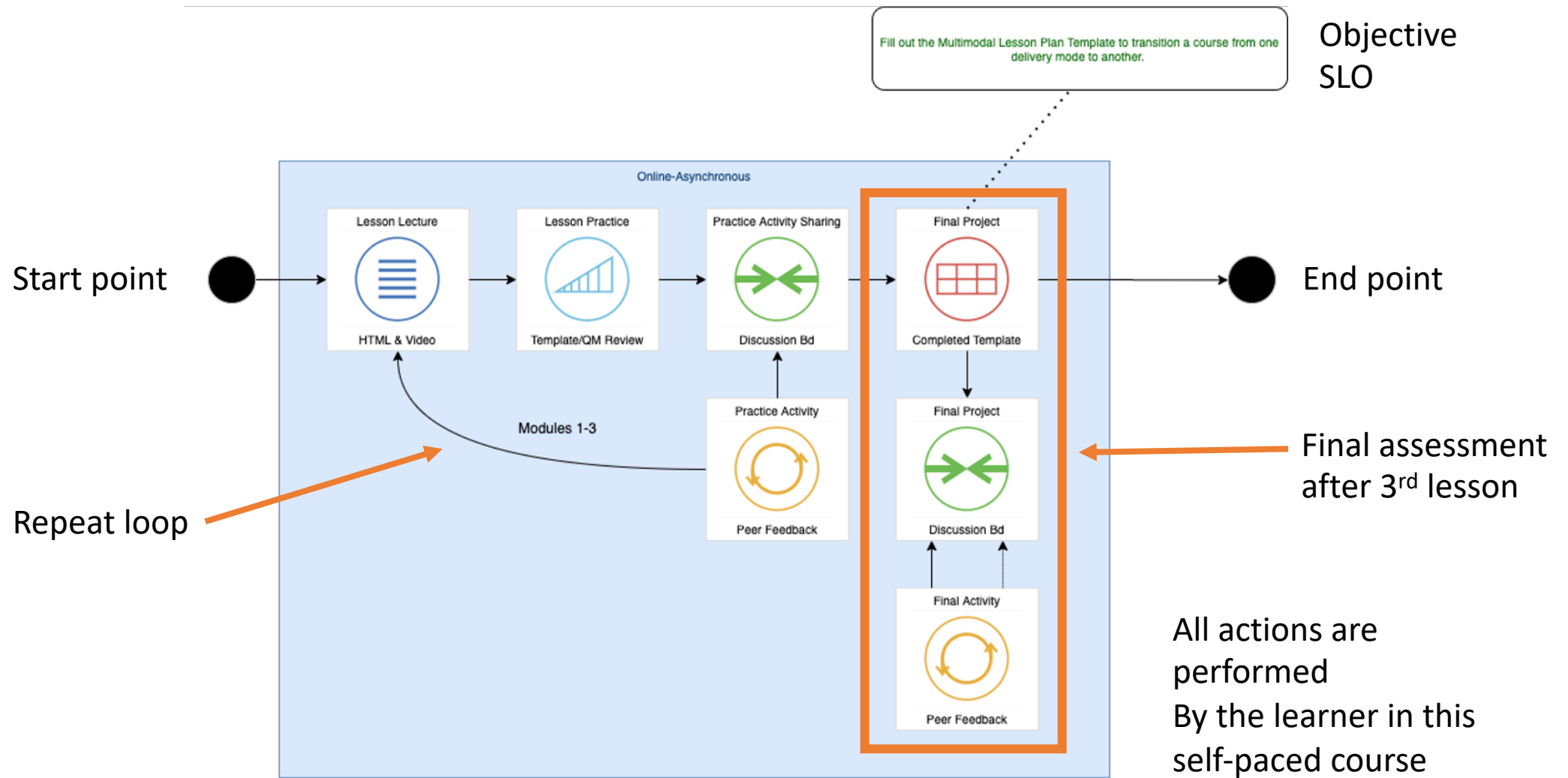- Conditional release criteria placed on content based on learners' performance on an assignment


System Action

Put it all together

Next is an example of the format of a LEML lesson blueprint or map. The course or lesson outcome is listed. All supporting content aligns with achieving the outcome.

- Notice the start and end points.
- One arrow is used to show a loop or repeat the steps. This helps to keep the blueprint easy to read.
- For the 3 lessons, the learners will view or read a lecture, practice or apply the lesson information, discuss the practice activity, and receive discussion feedback.
- After the 3rd lesson, the learners will complete and assessment activity (evaluation), discuss the final assessment, and receive final assessment feedback. The details of the lesson lecture, practice, discussion, evaluation, and feedback will be written in a narrative style lesson plan to accompany the LEML map.

Objective
SLO

Fill out the Multimodal Lesson Plan Template to transition a course from one delivery mode to another.

Online-Asynchronous

Start point

End point

Lesson Lecture
HTML & Video

Lesson Practice
Template/QM Review

Practice Activity Sharing
Discussion Bd

Final Project
Completed Template

Practice Activity
Peer Feedback

Modules 1-3

Repeat loop

Final Project
Discussion Bd

Final Activity
Peer Feedback

Final assessment
after 3rd lesson

All actions are
performed
By the learner in this
self-paced course

Multimodal Lesson Design for HyFlex Delivery
Jeanne Samuel
Self-Paced

LEARNING ENVIRONMENT MODELING

This is an example from the iLED Learning Environment Modeling Guide Sheet. Note that at a glance you can determine the learning environment, the activities, and the flow of the flow of the activities. In addition, you know the type of activity and how (in what format) it will be offered.

Tool Kit
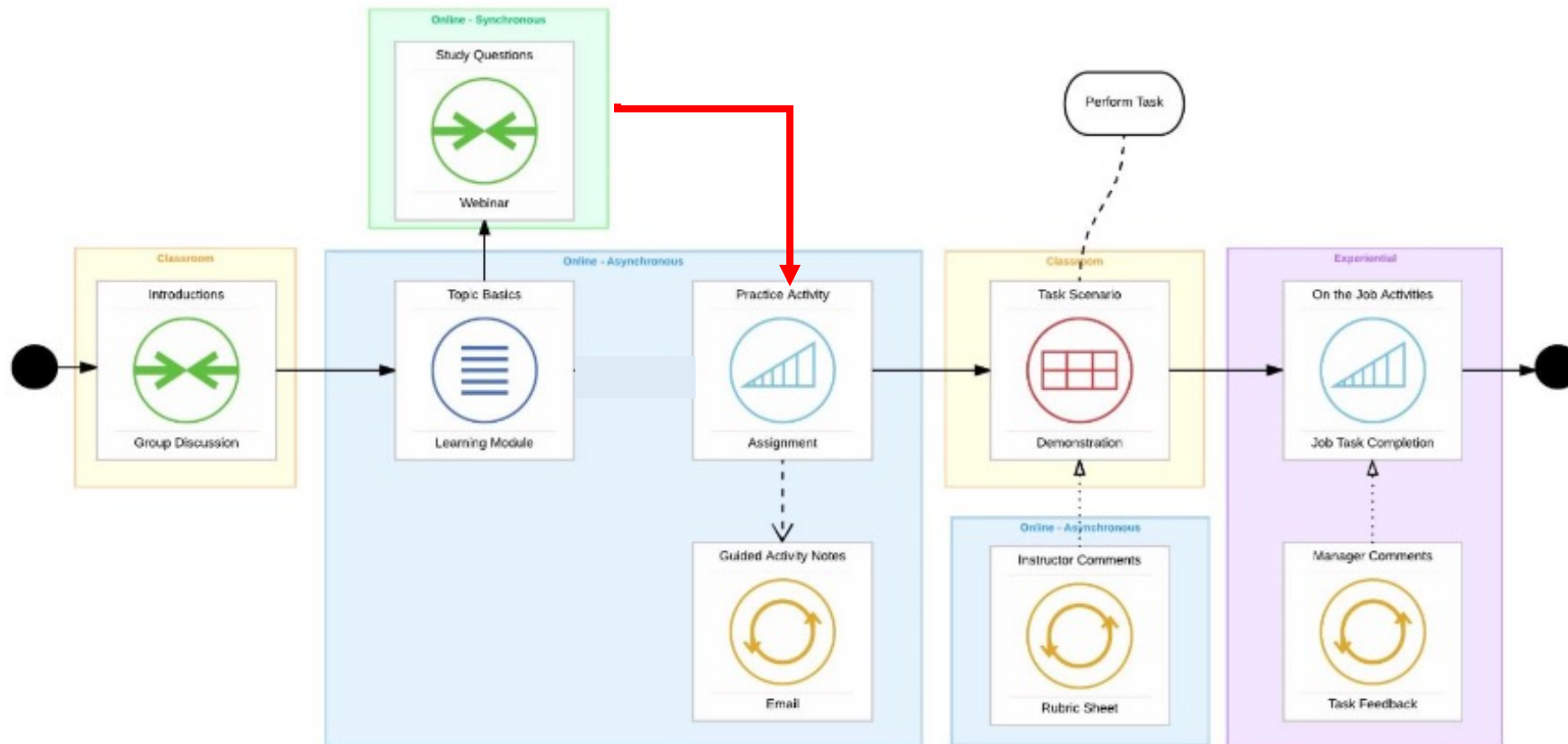
Draw IO

https://app.diagrams.net/
formerly draw.io, is free online diagram software. You can use it as a flowchart maker, network diagram software. "draw.io" can import .vsdx, Gliffy™ and Lucidchart™ files .
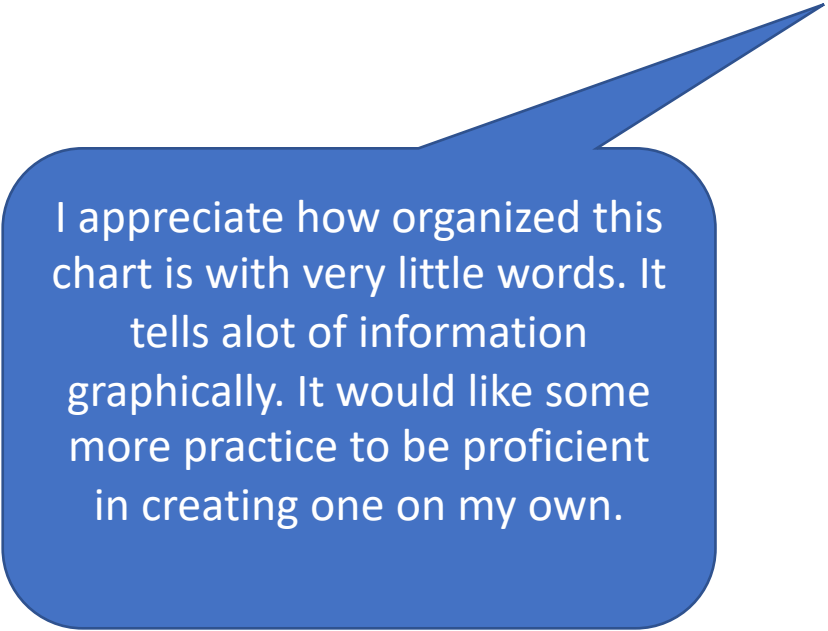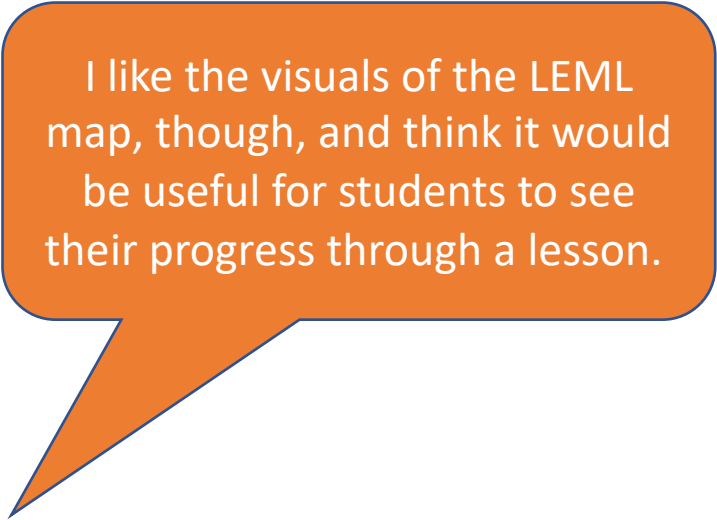
LEML Icon Kit

- There is an icon kit for draw.io available from DxStudio (formerly iLED) when you take a course

- You can use Word or PPT and the icons copy & paste

- You can hand draw

- You can order design sheets and building block sticky notes from LxStudio.com resources.

https://lxstudio.com
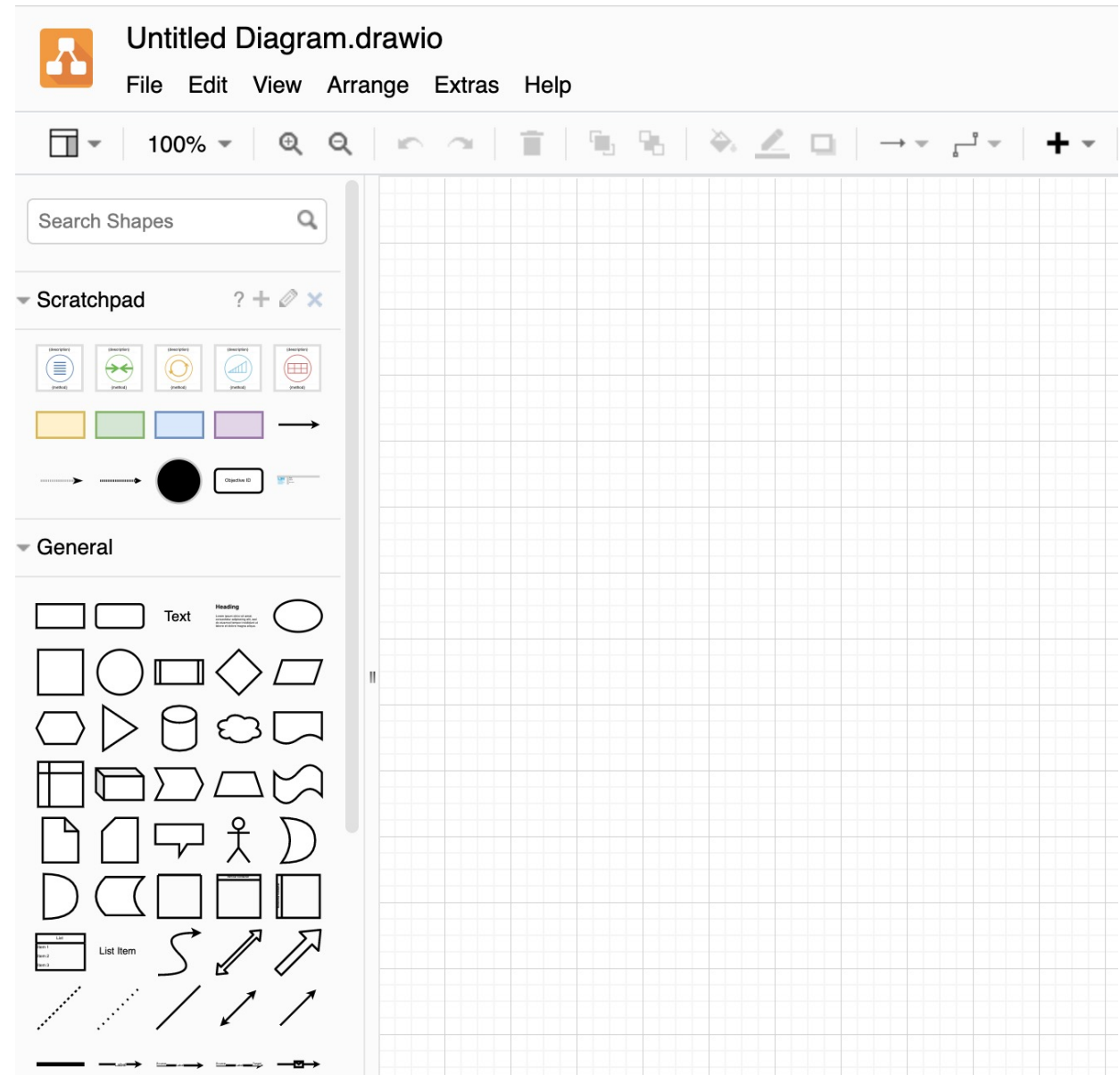
Faculty Comments

I like the visuals of the LEML map, though, and think it would be useful for students to see their progress through a lesson.

I appreciate how organized this chart is with very little words. It tells alot of information graphically. It would like some more practice to be proficient in creating one on my own.

Note, LEML is a design tool that students do not see. Although, they could. Regarding the comment, the students will benefit from seeing course progress because the map ensures that feedback is frequently provided (where, when, how).

Overview of LEML - https://www.youtube.com/watch?v=ltn5qrHgbgw

Lucid Chart and LEML - https://www.youtube.com/watch?v=d_lCXwC91g4

LEML Actions - https://www.youtube.com/watch?v=4ySWd3ObaP4

LEML Building Blocks - https://www.youtube.com/watch?v=dBPVfLCwlkU

LEML Contexts - https://www.youtube.com/watch?v=wzq-MsgHCmo&t=5s