



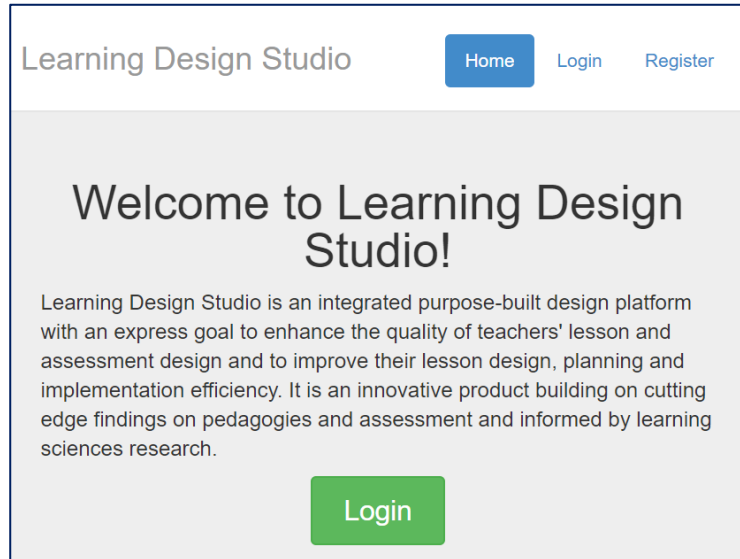
# A GENESIS OF 3 LEARNING DESIGN STUDIOS

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**Nancy Law, Andy Chan, Leming Liang,  
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University of Hong Kong

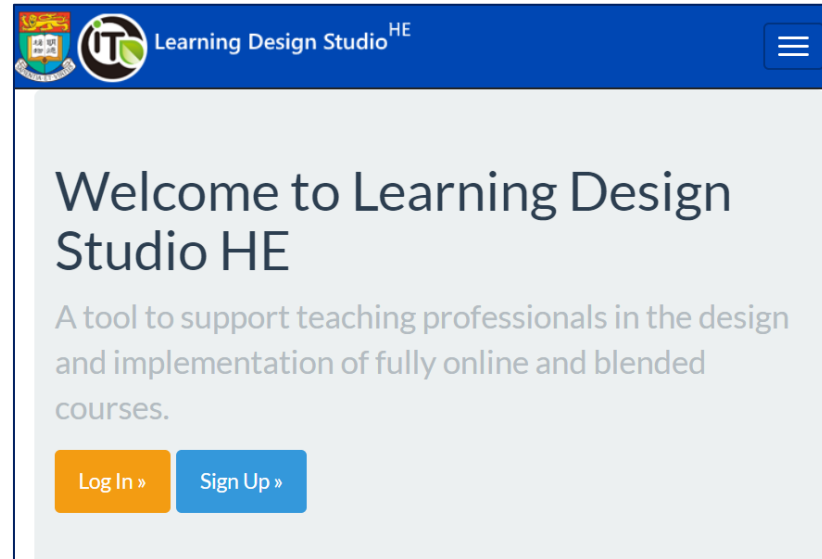
# LDS



<http://lds.cite.hku.hk>

Tailored to support Science/STEM teachers to design curriculum units that promote self-directed learning in students.

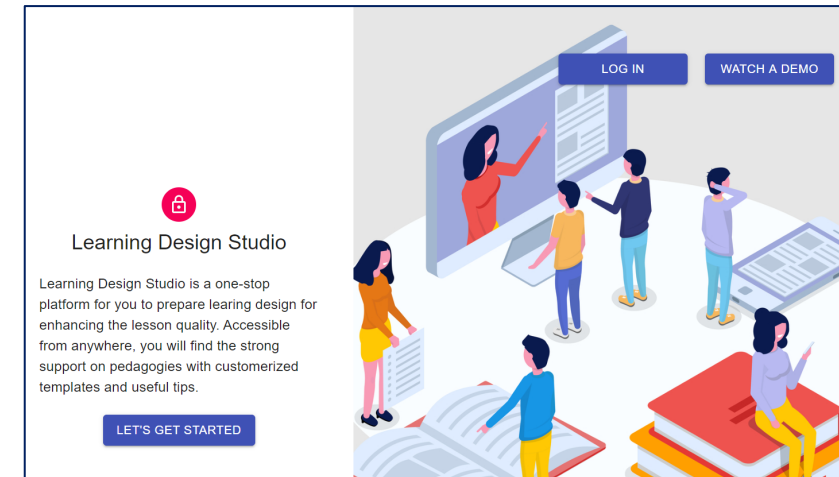
# LDS<sup>HE</sup>



<http://ldshe.cite.hku.hk>

A generic learning design tool that differentiate clearly three levels of design, to be guided by three levels of pedagogical considerations: philosophy, approach and tactics.

# LDS-STEM



Under development: [lds@cite.hku.hk](mailto:lds@cite.hku.hk)

Building customized versions of LDS that provide pedagogical support for different segments of learning designers, starting with LDS-STEM

# Welcome to Learning Design Studio!

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### Public Designs

Creator name	Topic/Thematic Question	Subject	Level	Time Created	Time Modified	Actions
cpssc	<a href="#">環保太陽能車探究</a> 📌 Goal setting, Revision, Self-evaluation, Self-managing, Self-planning 📍 嘉諾撒小學(新蒲崗)	常識	小五	Sat Nov 11, 2017 14:27	Fri Jan 17, 2020 13:19	Options
sze hung cissy	<a href="#">如何利用環保物料製作一輛迷你太陽能車</a> 📌 Revision, Self-managing, Self-planning, Self-evaluation, Goal setting 📍 聖公會阮鄭夢芹銀禧小學	科學/常識	小六	Wed Oct 30, 2019 16:09	Thu Jan 16, 2020 7:39	Options View/Save as
z7ys	<a href="#">Follow procedures and conduct experiment</a> 📌 Not available 📍 Not available	General Studies	Primary 6	Wed Jul 10, 2019 15:56	Wed Jul 10, 2019 15:56	Options
Lillian	<a href="#">淨水行動——濾水器設計</a> 📌 Goal setting, Revision, Self-evaluation, Self-managing, Self-planning 📍 天神嘉諾撒學校	科學/常識	小四	Tue Aug 14, 2018 20:30	Wed Jul 3, 2019 10:44	Options
Lillian	<a href="#">Science of bread_R</a> 📌 Goal setting, Revision, Self-evaluation, Self-managing, Self-planning 📍 中華基督教會基朗中學	Science/General Studies	Secondary 2	Wed Jun 26, 2019 11:40	Wed Jun 26, 2019 11:41	Options
Lillian	<a href="#">粉嶺圍保育遊</a> 📌 Goal setting, Revision, Self-evaluation, Self-managing, Self-planning 📍 粉嶺公立學校	Cross Disciplines Project/STEM	Primary 6	Wed Feb 27, 2019 15:46	Mon Jun 24, 2019 16:03	Options
sze hung cissy	<a href="#">如何製作一個高效能的迷你吸塵機?</a> 📌 Revision, Self-managing, Self-planning, Self-evaluation, Goal setting 📍 聖公會阮鄭夢芹銀禧小學	常識	五年級	Sat Jun 18, 2016 10:21	Sat Jun 8, 2019 15:53	Options
Jackie	<a href="#">轉廢為能：尋找咖啡渣的第二生命</a> 📌 Goal setting, Revision, Self-evaluation, Self-managing, Self-planning	Integrated Science	Secondary 1	Wed Mar 13, 2019 11:25	Fri May 24, 2019 10:02	Options

# Multi-level Leadership Network for SDL Innovation to Advance STEM Development



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## Learning Design

## Resources




### Making a good bath bomb\_

- 1. Basic information
- 2. Learning activities designs
- 3. SDL Evidence
- 4. STEM Evidence

Author name : Lee Yuen Man School/Organisation : CCC Kei Long College

Topic/Thematic question : Making a good bath bomb

Subject : STEM No. of lessons : 6 Level : Secondary 3

Self-directed learning  : Goal setting (2), Self-planning (2), Self-monitoring (2), Self-evaluation (2), Revision (1)

Science : \_\_\_\_\_

Technology : \_\_\_\_\_

Engineering : \_\_\_\_\_

Mathematics : \_\_\_\_\_

Learning outcomes :

[Creating]	Make a "good" bath bomb
[Analyzing]	which chemical species affect the criteria of being a "good" bath bomb set by students
[Evaluating]	the formula / ratio of ingredients of making a bath bomb
[Applying]	the scientific knowledge to daily life application (such as cleaning oven)
[Understanding]	the underlying chemical reactions between the active ingredients in bath bomb Role of water in chemical reaction
[Evaluating]	Know how to measure the DV (amount of bubble) in the experiment (choice of apparatus)

Characteristics/Remarks : Find out the best formula of making a bath bomb in whole form 3

Self-directed learning levels targeted

Bloom's taxonomy

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Self-directed learning levels rubric

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## Making a good bath bomb

### Self-directed learning

	0	1	2	3
Goal-setting	<p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Decide all learning activities to be carried out, may not communicate goals to students.</li> </ul> <p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Given explicit directions on what to do, how and when to do it.</li> <li>Do not have opportunities to discuss the learning goals, and may not know why they are doing the activities.</li> </ul>	<p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Share with students the learning goals to achieve through the designed activities.</li> </ul> <p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Given the opportunities to discuss the learning goals.</li> <li>Given the opportunities to articulate their understanding of the link between the learning goals and the activities.</li> </ul>	<p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Discuss the problem set by the teacher.</li> <li>Formulate questions and generate inquiries relevant to the set problem.</li> </ul> <p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Pose a problem/ challenge to students.</li> <li>Guide and encourage students in exploring the problem to generate inquiry questions.</li> </ul>	<p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Identify and articulate a problem (close to everyday life) they wish to tackle/explore.</li> <li>Generate, discuss and refine questions for investigation with some teacher support.</li> </ul> <p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Act as co-learner to raise questions and prompts.</li> <li>Provide encouragement/support when difficulties are encountered.</li> </ul>
Self-planning	<p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Coach students step by step through the learning activities.</li> <li>Does not discuss the activities as a plan for achieving a goal.</li> </ul> <p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Follow instructions to</li> </ul>	<p><b>TEACHERS</b></p> <ul style="list-style-type: none"> <li>Provide a set of planned activities for students to address the learning goal.</li> </ul> <p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Given the opportunities to discuss the plan from 2 perspectives:</li> </ul>	<p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Collaborate with peers to develop a plan of activities/inquiry procedures and needed resources based on the general method/materials given by the teacher.</li> </ul>	<p><b>STUDENTS</b></p> <ul style="list-style-type: none"> <li>Collaboratively develop an inquiry plan with the steps, resources and precautions listed.</li> <li>Collaborate to identify possible methods/ approaches to achieve the targeted learning goal.</li> </ul>

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### Learning sequence

**1**  
Activity 1 - Video watching about bath bombs  
10m

**1**  
Activity 2 - role of water in the reaction of bath bomb  
10m

**1**  
Activity 3 - Identify the ingredients of Bath Bomb  
10m

**2**  
Activity 4 - Investigate the factors affecting the formation of bubbles of the bath bomb  
30m

**3,4**  
Activity 5 - Design the best bath bomb recipe  
70m

**3,4**  
Activity 6 - making a bath bomb into mould  
40m

**5,6**  
Activity 7A - Testing method for the amount of bubbles  
20m

**Title:** Activity 1 - Video watching about bath bombs  
**Inquiry question:**  
1. What are added to the bath?  
2. What can you observe after adding the substances in Q1?  
3. Explain the observe in Q2.

\* Receive Info    In class (no eLearning)    5    No  
Individual    Goal setting    Not entered  
S

**Rundown and detail:**  
1. Watch <https://www.youtube.com/watch?v=gLhJcC7uYol>  
EXTREME 1000+ BATH BOMBS CHALLENGE!  
2. Answer questions on W.S.

\* Discuss    In class (no eLearning)    5    No  
Group (2)    Goal setting    Not entered  
S, E

**Rundown and detail:**  
1. Discuss the criteria on "good" bath bomb  
2. Setting criteria for making the best recipe of bath bomb  
For example:  
The cleaning ability  
The size of bubbles  
The amount of bubbles  
The fragrance of bath bomb  
The rate of dissolving  
(Ss in each group should upload the "good criteria" on Schoology  
T summarize the criteria, and whole class decide the priority)

**Remarks:**

### Type

(Total Duration: 205min)



- Receive Info
- Discuss
- Create
- Reflect
- Practice
- Investigate
- Present

### Mode



- In class (no eLearning)
- In class (have eLearning)
- Beyond class self-learning (offline)
- Beyond class self-learning (online)

### eLearning Tools

- [Forum](#)
- [Database](#)
- [Poll](#)
- [Assessment](#)
- [Mind map](#)
- [Wiki](#)

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- Goal setting
- Self-planning
- Self-monitoring
- Self-evaluation
- Revision

### Goal setting

SDL Levels targeted: 2  
SDL Levels achieved: 3

Students observed the reaction of bath bombs with water and then set criteria for a "good" bath bombs before they made one for themselves.

**(DONE) Activity 1: Criteria of a GOOD bath bombs**

Teacher will upload the discussed criteria here

Posted Mon Jan 22, 2018 at 2:19 am

Write a comment

Highlight User 1 Post

Mon Jan 22, 2018 at 2:16 am  
Good Criteria your class selected

- (1) Amount of bubbles
- (2) Solidification of the bath bomb
- (3) non-irritative to skin (close to pH 5.0)
- (4) Good smell (cannot objectively measured)

Students tried different combination of ingredients and acquired some prior understanding of the influence of some possible ingredients. Then they set some a goal to find out the best recipe for their bath bombs.

Group3

Members: [redacted]

After today investigation, we found that we need to use all materials to make more amount of bubbles, also the more citric acid and baking soda that we add, the more bubbles will given out.

Like · Reply



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[Learning Design](#)

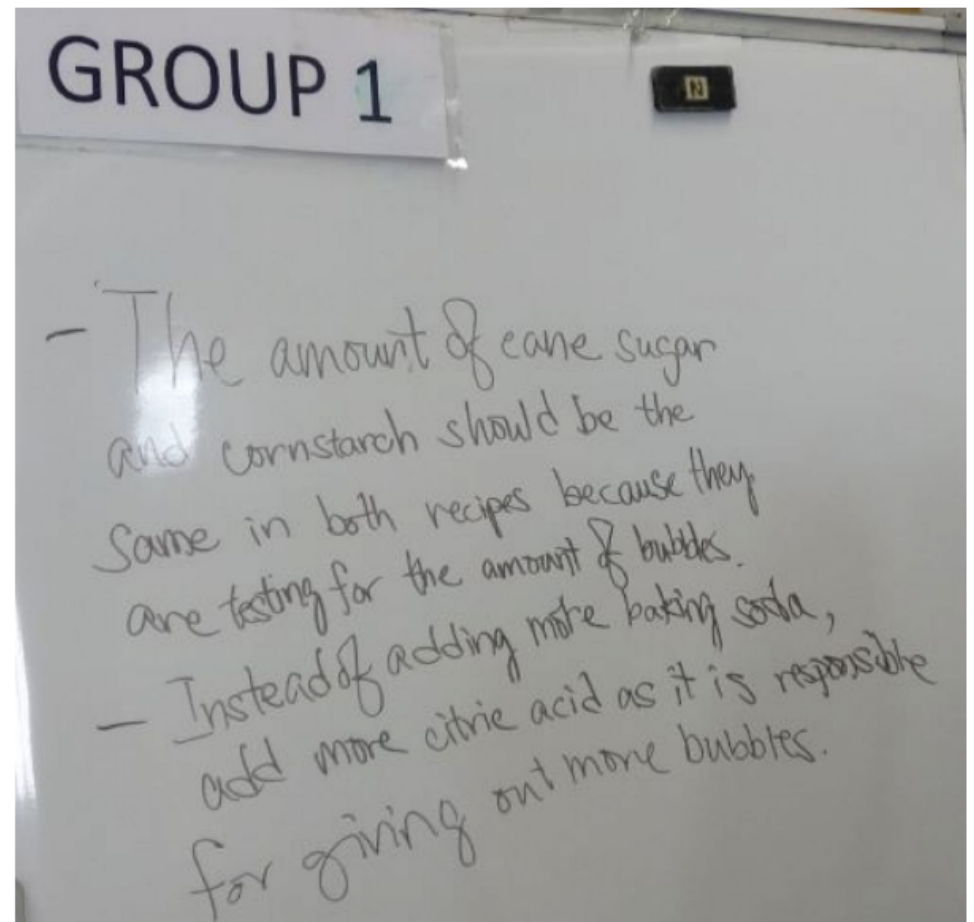
[Resources](#)

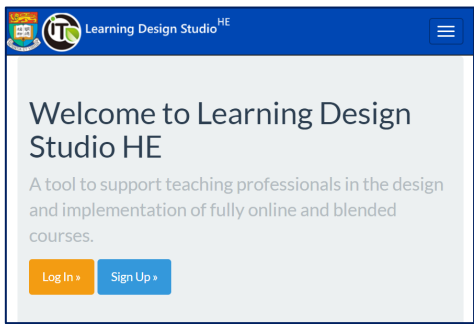


## Making a good bath bomb\_

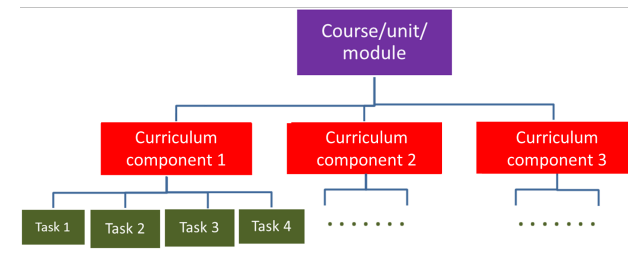
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- [4. STEM Evidence](#)

[Science](#) [Technology](#) [Engineering](#) [Mathematics](#)





## Hierarchical levels of learning design



## “Pedagogically neutral”

**Learning Context & Characteristics of the Course**

Course Title: MITE6330 Learning design and technology\_2019-2020

Subject: Online Education and Course Development

Semester of Course Offering: 2nd semester, 2019-2020

Teacher / Instructor: [Empty]

Class Size: 19

No. of Sessions: 8

Mode of Learning: Blended

Session Duration: 24 (hours) / 1440 (minutes)

Pre+Post Session Duration: 72 (hours) / 4320 (minutes)

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**Learning Outcomes**

Type	Outcome
Disciplinary Knowledge	1 Comprehend the knowledge about learning design and learning analytics
Disciplinary Skills	2 Apply the skills to design a course, assessment, feedback and learning analytics
Disciplinary Skills	3 Apply the steps of learning design practice to design a course using Learning Design Studio, and manage the development of the learning resources and implement the learning design using LMS (e.g. Moodle)
Generic Skills	4 Collaboration and creative problem-solving skills

Course level

**Curriculum Components**

**Component 1**

Prepare for the conditions of learning – identifying goals

Didactic approach

Specific learning outcomes:  
DK: Learning outcomes and outcome-based approach; Bloom taxonomy; Definition of learning design

[LO1] Disciplinary Knowledge

Edit Curriculum Component

Prepare for the conditions of learning – identify...

1 Setting the science >

---

**Component 4**

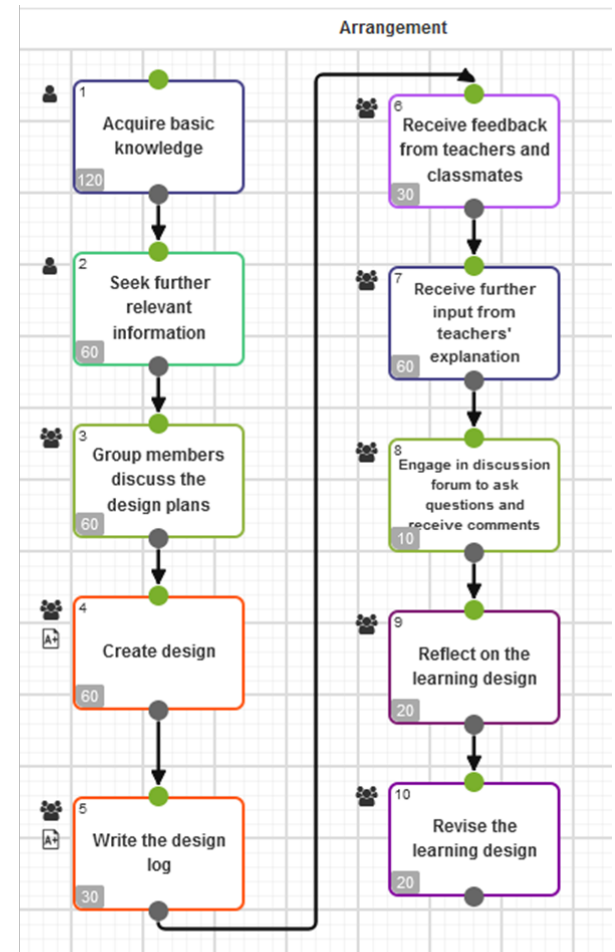
Determine pedagogical strategy and task sequence – it

Constructionist inquiry cycle


Specific learning outcomes:  
DK: Levels of pedagogical decision-making; Curriculum component; Prominent pedagogies; Patterns and pattern language  
DS: Determine pedagogical strategy and task

[LO1] Disciplinary Knowledge [LO2] Disciplinary Skills  
[LO3] Disciplinary Skills [LO4] Generic Skills

Curriculum component level



Task level

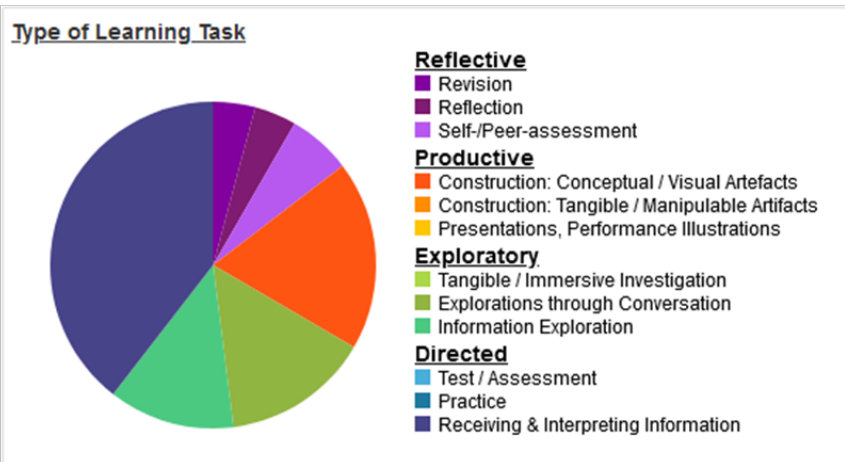
 Learning Design Studio<sup>HE</sup>

Welcome to Learning Design Studio HE

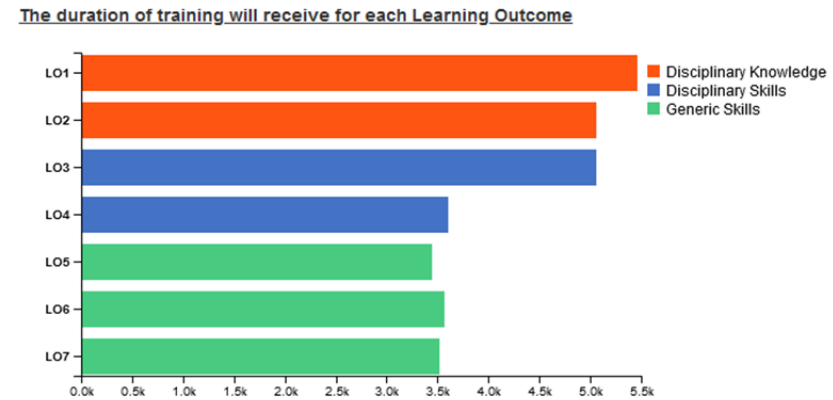
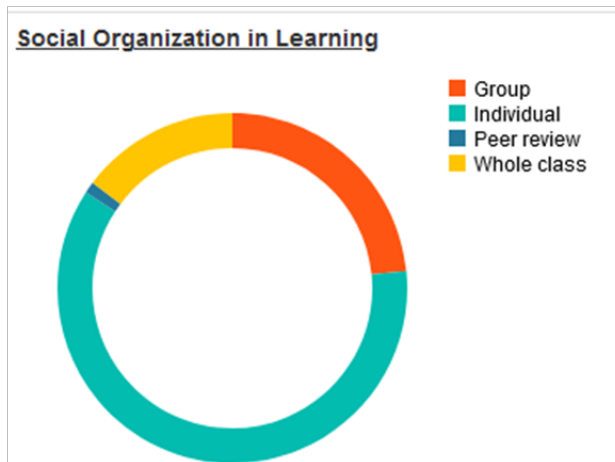
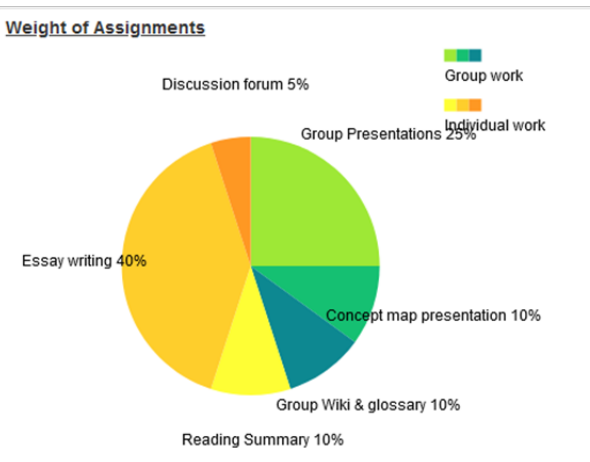
A tool to support teaching professionals in the design and implementation of fully online and blended courses.

[Log In >](#)
[Sign Up >](#)

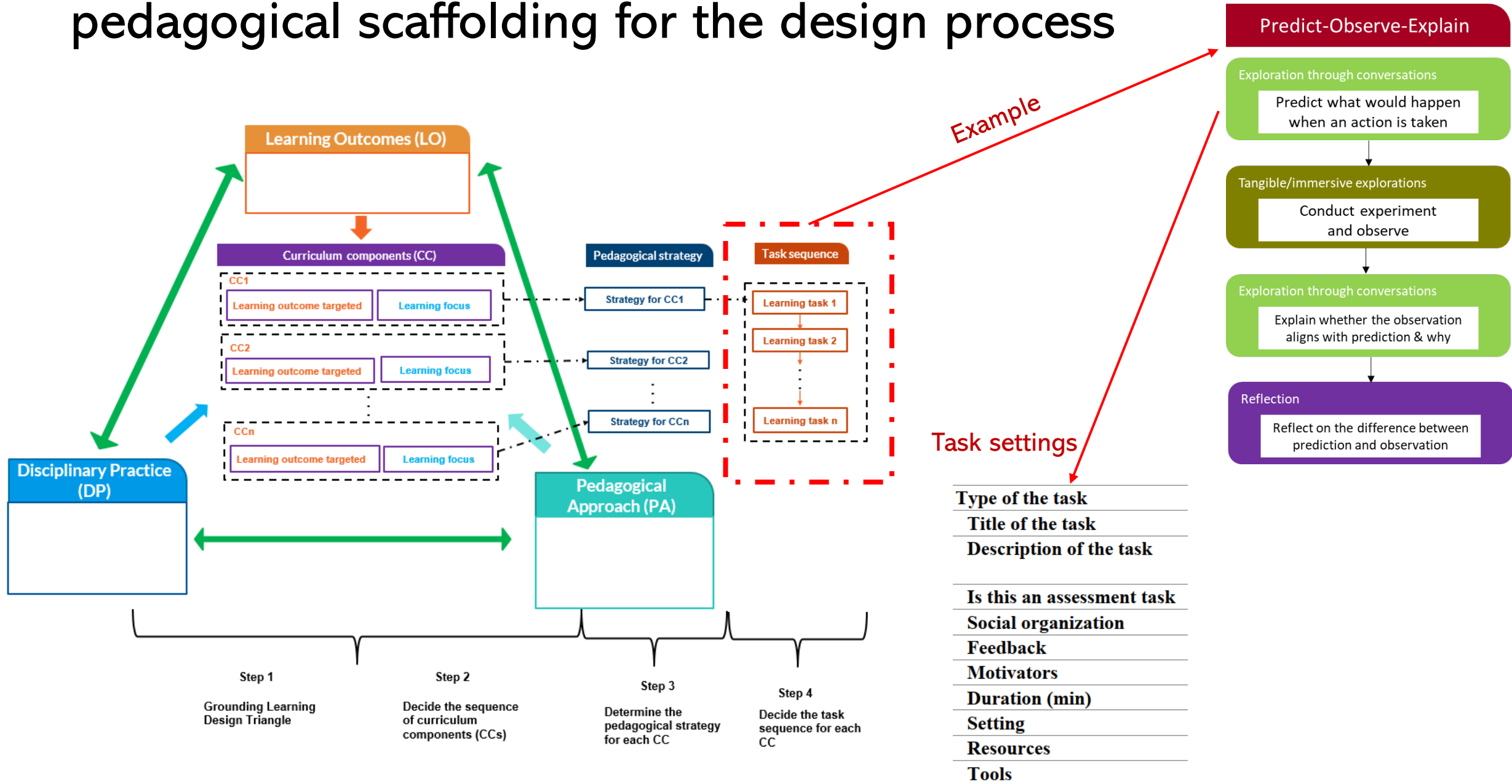
## Designer dashboard to monitor design progress

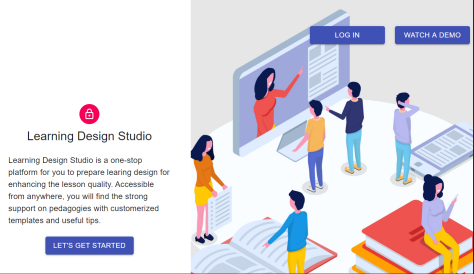


- Proportion of time spent by learners on different activity types
- Weight of Assignments
- Proportion of learning time by social organization of learning activities
- Time Organization for the face-to-face class and self-directed study after classes.

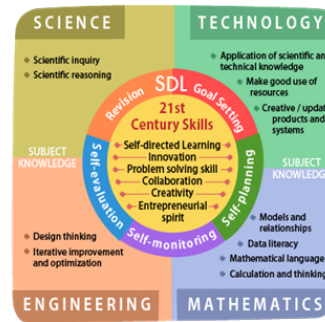


# Learning Design Triangle to provide pedagogical scaffolding for the design process



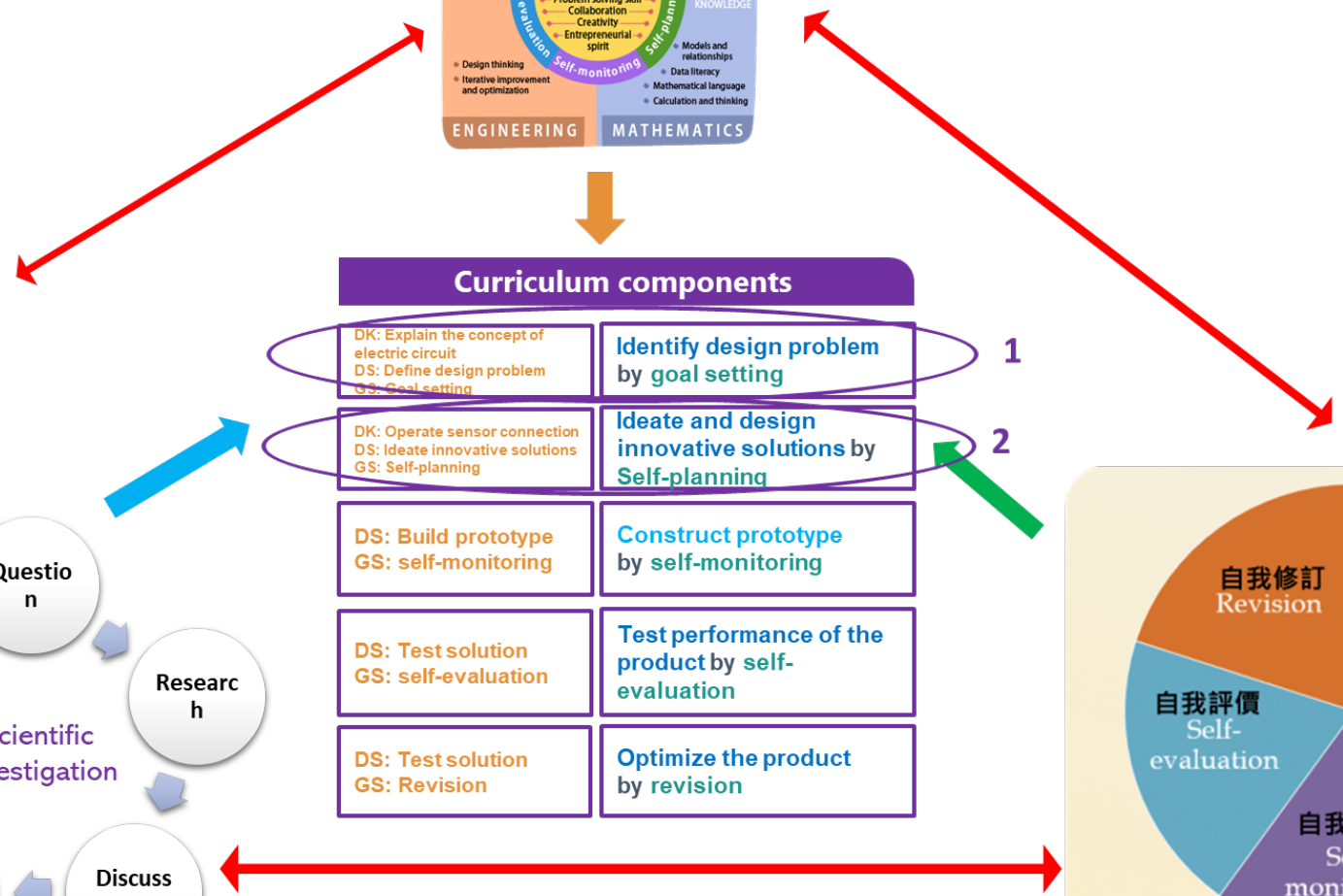


**Curriculum components:** a set of learning experiences for the learner to achieve specific sets of learning outcomes.



**Curriculum components**

DK: Explain the concept of electric circuit DS: Define design problem GS: Goal setting	Identify design problem by goal setting	1
DK: Operate sensor connection DS: Ideate innovative solutions GS: Self-planning	Ideate and design innovative solutions by Self-planning	2
DS: Build prototype GS: self-monitoring	Construct prototype by self-monitoring	
DS: Test solution GS: self-evaluation	Test performance of the product by self-evaluation	
DS: Test solution GS: Revision	Optimize the product by revision	



# Join us to explore further:

- Do you think it is helpful to enforce and scaffold learning design as a multilevel process?
- Do you have a preference for any of the three versions of LDS?
- What do you consider as the most important features of a learning design tool for teachers?