

5. Creating a New Design from Scratch

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5.1 Entering the Course Information

In this chapter, we will use "**Designing for the Wise**", a STEAM course developed by our partner school, as an example to demonstrate how to apply the Learning Design Triangle (LDT) framework introduced in [Chapter 2](#) to create a learning design in the Learning Design Studio (LDS).

At the beginning, the LDS guides you to consider some basic course information such as topic, key learning area(s), grade level and lesson time.

Course Information < >

Topic *
Designing for the Wise

Description
Designing for the Wise is an interactive course where you'll discover how to create innovative, user-centered solutions for the elderly. Learn to empathize with the unique challenges the elderly face, apply design thinking processes, and develop practical prototypes that make a real difference. Join us to blend creativity and care as you design a better world for the wise!

Key Learning Area(s)
Science Education × Technology Education × Click to select or type to add a new Key Learning Area

Grade Level
P6

Number of Lessons 14 **Duration per Lesson** 35 min(s)

Total In-Lesson Time 490 min(s)

Contributor Name
IDEALS Admin

Contributor Affiliation
IDEALS Partner School

SAVE CANCEL

Figure 5.1: Course Information Section

Item	Content
Title	Designing for the Wise
Description	Designing for the Wise is an interactive course where you' ll discover how to create innovative, user-centered solutions for older adults. Learn to empathize with the unique challenges seniors face, apply design thinking processes, and develop

	practical prototypes that make a real difference. Join us to blend creativity and care as you design a better world for the wise!
Key Learning Area(s)	Science Education, Technology Education
Grade Level	P6
No. of Lesson	14
Duration per Lesson	35 mins
Total In-Lesson Time	490mins
Contributor Name	IDEALS Admin
Contributor Affiliation	IDEALS Partner School

5.2 Exploring with the Learning Design Triangle

Once you have filled out the course information section, you will use the **Learning Design Triangle** framework to design contextual framework for the entire learning design. This involves specifying the 1) intended learning outcomes, 2) disciplinary practice, and 3) pedagogical approach.

The screenshot shows a web application interface for 'Designing for the Wise'. On the left is a navigation sidebar with the following items: 'Course Information', 'Learning Design Triangle' (highlighted with a red box), 'Intended Learning Outcomes', 'Disciplinary Practice', 'Pedagogical Approach', 'Details of Learning Design', 'Curriculum Components', 'Course Overview', 'Designer Dashboard', 'iLAP Section Arrangement', and 'LD to iLAP Converter'. The main content area is titled 'Designing for the Wise' and 'Intended Learning Outcomes'. It contains a question: 'Which intended learning outcome (ILO) category would you like to begin with? Open our LDS assistant if you need guidance.' Below this are five categories, each with a 'CREATE' button and '+ ADD' and '+ PATTERNS' options: 'Disciplinary Knowledge' (What key concepts, theories, or information will learners acquire?), 'Disciplinary Skills' (What practical techniques or abilities will learners be able to apply in real-world scenarios?), 'Generic Skills' (What transferable skills will learners develop, such as critical thinking, or communication?), and 'Values & Attitudes' (Which core values will learners exhibit and what mindsets will learners develop?).

Figure 5.2: Learning Design Triangle Section

5.2.1 Intended Learning Outcomes (ILOs)

For guidance on developing strong ILOs, refer to [Chapter 2.2 - Intended Learning Outcomes \(ILOs\)](#)

In the Learning Design Studio (LDS), there are four categories of Intended Learning Outcomes (ILOs):

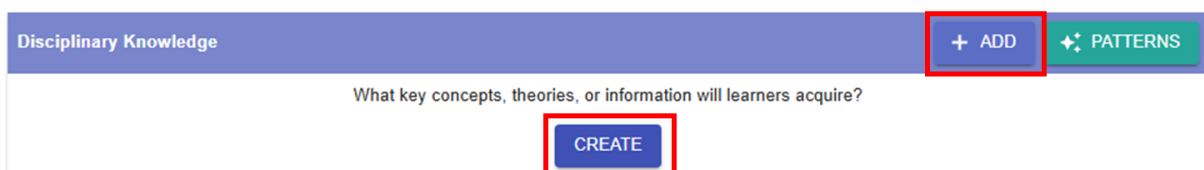
- **Disciplinary Knowledge:** The core concepts, theories, facts, and frameworks that are recognized and developed within a particular field or area of study.
- **Disciplinary Skills:** The specific techniques, methods, and competencies associated with a particular field or area of study.
- **Generic Skills:** The broad abilities that help people succeed in education, work, and daily life, regardless of a particular field or area of study.
- **Values & Attitudes:** The beliefs, principles, and dispositions that guide a person's behavior, decision-making, and interactions with others.

Adding a New ILO

There are two ways to add a new ILO: (1) writing it yourself, or (2) using the ILO patterns.

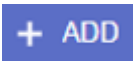

1. Adding a New ILO - Writing it Yourself

- You will write the full ILO to indicate what students is expected to achieve as a result of the learning process.



The screenshot shows a user interface for adding a new ILO. At the top, there is a blue header bar with the text "Disciplinary Knowledge" on the left. On the right side of this bar, there are two buttons: a blue button with a white plus sign and the text "+ ADD", and a green button with a white plus sign and the text "PATTERNS". Below the header bar is a white text input field with the placeholder text "What key concepts, theories, or information will learners acquire?". At the bottom center of this input field, there is a blue button with the text "CREATE". Red rectangular boxes highlight the "+ ADD" button and the "CREATE" button.

Figure 5.3: Adding a New ILO

- If you have not added any ILOs before, you can click the  or  button to add a new ILO.

Designing for the Wise

Intended Learning Outcomes / Cre...

Category*

Disciplinary Knowledge



Bloom's Taxonomy Level* ?



ILO Statement*

Identify the unique needs and challenges that elderly face in their daily lives.



ADD SUB-ILOS

SAVE AND ADD ANOTHER

SAVE

CANCEL

Figure 5.4: Interface of the ILO Builder (1)

- We will review each field in the ILO Builder below.

1. Subject/Discipline(s)

Subject/Discipline(s)

Science Education

Technology Education

Figure 5.5: Interface of the ILO Builder (2)

- Select the appropriate discipline(s) for each ILO as needed.

2. Category

Category*

Disciplinary Knowledge

Disciplinary Knowledge

Disciplinary Skills

Generic Skills

Values & Attitudes

Figure 5.6: Interface of the ILO Builder (3)

- Select the category of ILO: **Disciplinary Knowledge, Disciplinary Skills, Generic Skills, or Values & Attitudes.**

3. Bloom's Taxonomy Level

Bloom's Taxonomy Level ?

Understand ▲

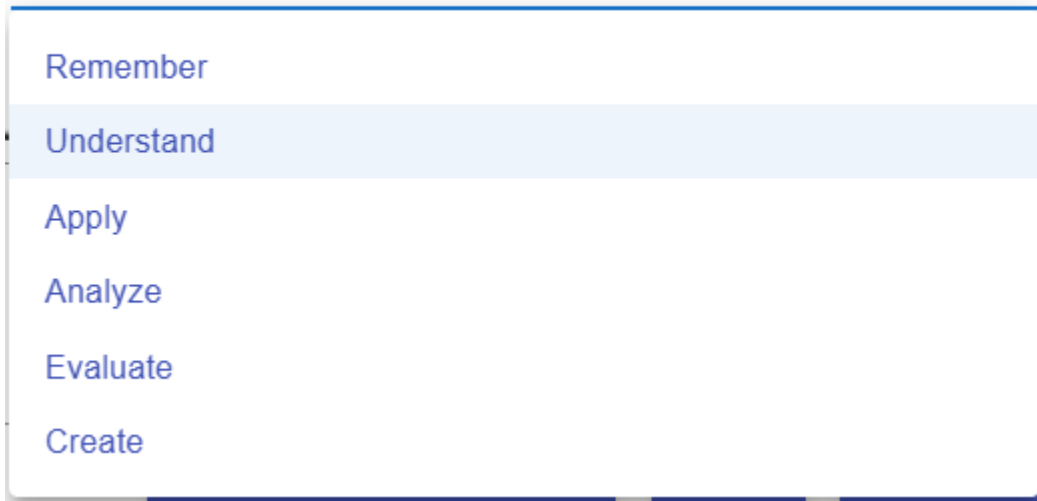


Figure 5.7: Interface of the ILO Builder (4)

- Select the Bloom's Taxonomy level that best reflects the intended skill, knowledge, or value for this outcome (e.g., Remember, Apply, Evaluate).

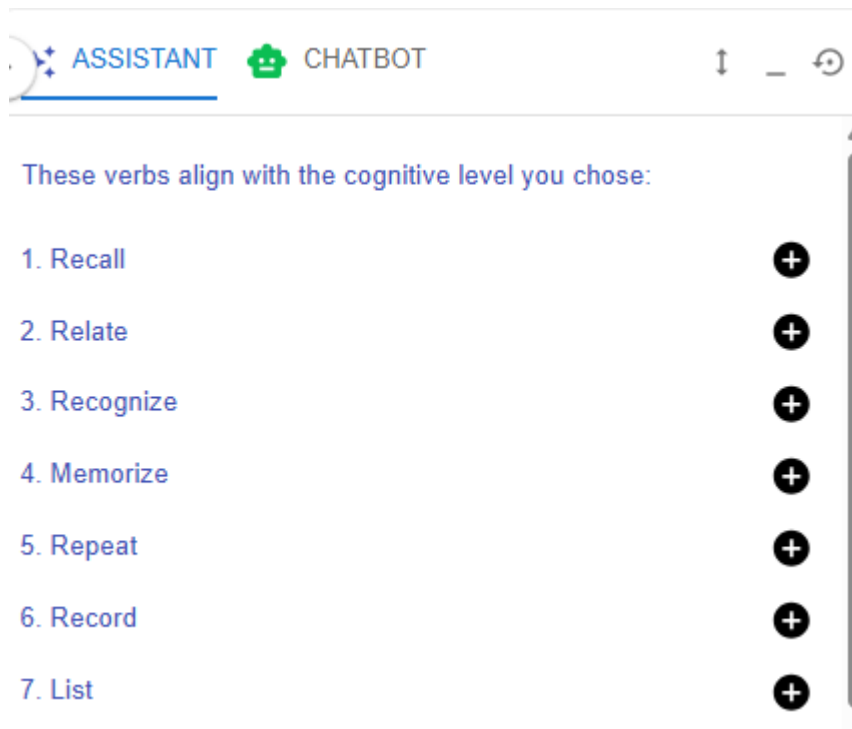


Figure 5.8: Writing a ILO with the Learning Design Facilitator

- After selecting the Bloom's Taxonomy level, the Learning Design Facilitator will recommend suitable action verbs to help you formulate your ILOs.
- Choose the appropriate action verb that best reflects the skill, knowledge, or value targeted by your ILO.

4. ILO and Learning Design Facilitator

ILO Statement *

Identify the unique needs and challenges that elderly face in their daily lives.



Figure 5.9: Interface of the ILO Builder (5)

Click the Learning Design Facilitator button  to request feedback from the chatbot on your ILO.

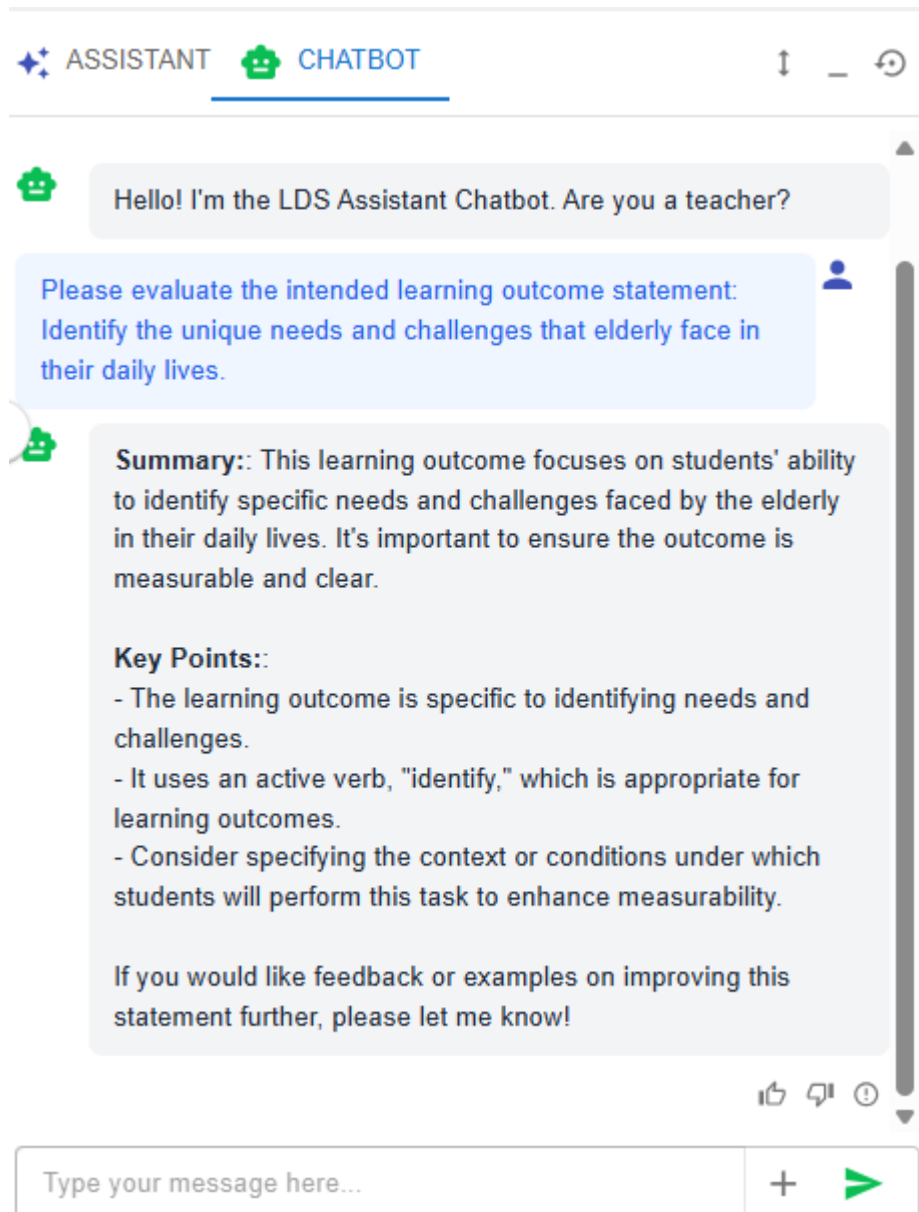


Figure 5.10: Evaluating a ILO with the Chatbot

5. Sub-ILO(s)

Sub-ILO(s) +

Bloom's Taxonomy Level *

Statement *



Figure 5.11: Interface of the ILO Builder (6)

- To provide greater clarity, an ILO can be subdivided into more detailed sub-ILOs as needed.

2. Adding a New ILO - Use the ILO Pattern

- In addition to writing your own ILO, you may use our pre-defined pattern.

The screenshot shows a form titled 'Values & Attitudes' with a blue header bar. On the right side of the header are two buttons: '+ ADD' and '+ PATTERNS'. Below the header, the text reads 'Which core values will learners exhibit and what mindsets will learners develop?'. At the bottom center of the form is a blue 'CREATE' button.

Figure 5.12: Intended Learning Outcomes - Values & Attitude



- For example, if you want to create an ILO for the **Values & Attitude** category, we can create one by using the ILO patterns.

The first screenshot shows a chatbot interface with the title 'ASSISTANT CHATBOT'. The chat bubble contains the text: 'Intended Learning Outcomes (ILOs) are clear and concise statements which describe what learners will know and be able to do by the end of this course.' Below this are two buttons: 'TELL ME MORE' and 'SHOW ME EXAMPLES'. The text continues: 'Please select one or more ILO categories below to show the Intended Learning Outcome Patterns:'. There is a 'Category' dropdown menu with 'Values & Attitudes' selected. At the bottom is a blue button labeled 'SHOW INTENDED LEARNING OUTCOME PATTERNS'.

The second screenshot shows the chatbot's response. The chat bubble says: 'Review these recommended Intended Learning Outcomes and copy any you wish to use in your design. Clicking the copy icon will automatically fill in the Intended Learning Outcome form for you to review and save.' There is a 'BACK' button. Below the text are two example ILOs in light green boxes, each with a copy icon:

- 'Students learn unity, that is, they can cooperate with others.'
- 'Be aware of the ethical considerations when using ChatGPT and the need of conducting more research on related topic.'

Figure 5.13: The ILOs Patterns in the LDS Facilitator

- After selecting the targeted ILO category in the Learning Design Facilitator, click the **"SHOW INTENDED LEARNING OUTCOME PATTERNS"** button to view suggested patterns. Alternatively, you can click the  button to instantly activate the pattern list.
- By clicking the  button, you can explore the details of the targeted ILO pattern.

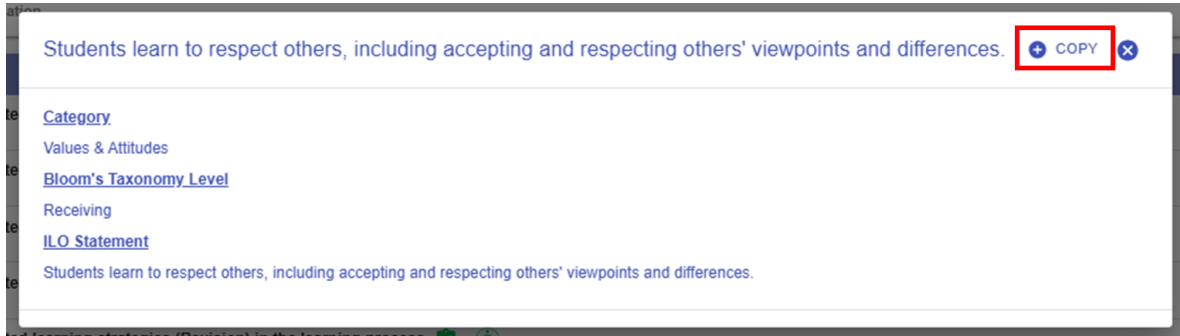



Figure 5.14: Details of the Targeted ILO Pattern (1)

- You can use the targeted ILO pattern directly by clicking **"COPY"** button in the pop-up window, or by clicking the  button in the Learning Design Facilitator. The ILO pattern details will be auto-filled into the LDS.

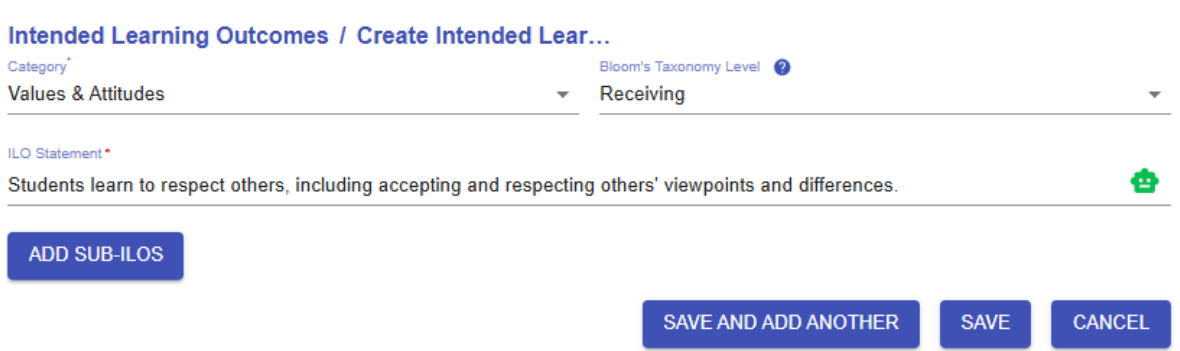


Figure 5.15: Details of the Targeted ILO Pattern (2)

- You can edit the details of the targeted ILO pattern in the ILO builder if needed.

Disciplinary Knowledge		+ ADD	✦ PATTERNS
Remember	Identify the unique needs and challenges that elderly face in their daily lives.	!	+

Disciplinary Skills		+ ADD	✦ PATTERNS
Evaluate	Rate the solutions with the established assessment criteria	!	+
Create	Prepare the initial proposal of the product design	!	+
Create	Create the assessment criteria to rate design solutions	!	+
Create	Create prototypes to showcase the ability of turning theoretical solutions into tangible products	!	+

Generic Skills		+ ADD	✦ PATTERNS
Apply	Apply collaborative skills to complete tasks	!	+

Values & Attitudes		+ ADD	✦ PATTERNS
Responding	Demonstrate openness to elderly perspectives in design discussions	!	+
Organization	Value the suggestions of others and be able to find the optimal among all options	!	+

Figure 5.16: An example of a completed ILO section

5.2.2 Disciplinary Practice (DP)

For guidance on choosing disciplinary practice, refer to [Chapter 2.3 - Disciplinary Practice \(DP\)](#)

Adding a New DP

Disciplinary Practice

+ ADD

You don't have any disciplinary practice. Let's create one!

Open our LDS assistant if you need guidance.

CREATE

Figure 5.17: Adding a New DP

If you have not added any DP before, please click the **+ ADD** or **CREATE** button to add a new DP. However, creating a DP from scratch can be challenging. We highly recommend starting with our DP patterns available in the Learning Design Facilitator.

The screenshot shows the Learning Design Facilitator interface. On the left, there is a list of recommended Disciplinary Practices (DPs) with a 'CHATBOT' icon and a search icon. The practices listed are: Engineering Design, Scientific Investigation, Mock Legislative Procedure, Performance Production, and Writing a News Report. Each practice has a 'COPY' icon. The 'Engineering Design' practice is highlighted, and its details are shown on the right. The details include a 'Description' and 'Workflow steps'.

Engineering Design COPY

Description:



The disciplinary practice of 'Engineering Design' supports our young learners to apply their knowledge and skills in developing effective solutions to real-world problems. Like engineers and inventors, learners will engage in identifying problems, then ideate, design, create, and optimize solutions to address those challenges.

Workflow steps

1. Identify the problem
2. Generate ideas for solutions
3. Design the solution
4. Construct a prototype
5. Test the prototype's performance and optimize the product

Figure 5.18: The DP Patterns in the Learning Design Facilitator


Figure 5.19: Details of the Targeted DP Pattern






- By clicking the  button, you can explore the details of the targeted DP pattern.
- You can use the targeted DP pattern directly by clicking "**COPY**" button in the pop-up window, or by clicking the  button in the Learning Design Facilitator. The DP pattern details will be automatically appear in the LDS.

Name * : Engineering Design

Description : The disciplinary practice of 'Engineering Design' supports our young learners to apply their knowledge and skills in developing effective solutions to real-world problems. Like engineers and inventors, learners will engage in identifying problems, then ideate, design, create, and optimize solutions to address those challenges.

Role of Learner: Engineer, Inventor

Workflow steps : 

1. <u>Identify the problem</u>	
2. <u>Generate ideas for solutions</u>	
3. <u>Design the solution</u>	
4. <u>Construct a prototype</u>	
5. <u>Test the prototype's performance and optimize the product</u>	



 

Figure 5.20: An Example of a Completed DP

5.2.3 Pedagogical Approach

For guidance on choosing pedagogical approach, refer to [Chapter 2.4 - Pedagogical Approach](#)

Adding a New Pedagogical Approach

Pedagogical Approach

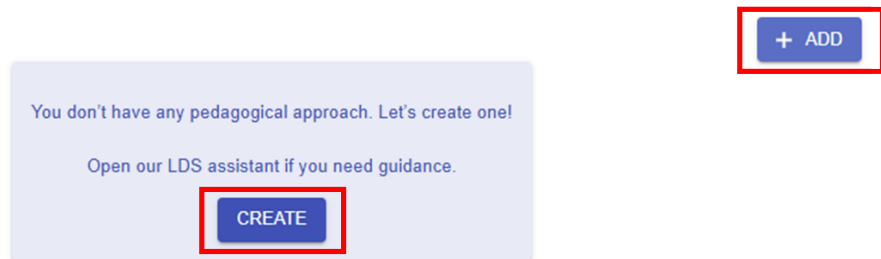
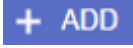



Figure 5.22: Adding a New Pedagogical Approach

If you have not added any pedagogical approach before, please click the  or  button to add a new pedagogical approach. Please read the introduction below to guide you in completing the Pedagogical Approach section.

In general, we highly recommend starting with the Learning Design Facilitator. You can use the pedagogical approach patterns we have designed for you to copy and use in your own design.

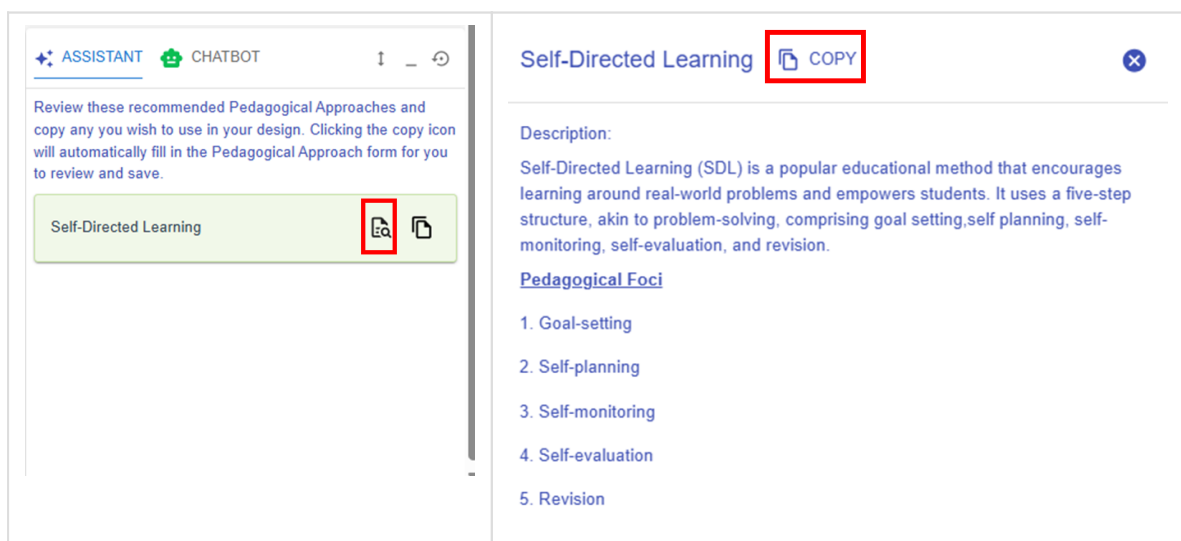




Figure 5.23: The Pedagogical Approach Patterns in the Learning Design Facilitator



Figure 5.24: Details of the Targeted Pedagogical Approach Pattern

- By clicking the  button, you can explore the details of the targeted pedagogical approach pattern.
- You can use the targeted pedagogical approach pattern directly by clicking "COPY" button in the pop-up window, or by clicking the  button in the Learning Design Facilitator. The pedagogical approach details will be auto-filled into the LDS.

Name* : Self-Directed Learning

Description : Self-Directed Learning (SDL) is a popular educational method that encourages learning around real-world problems and empowers students. It uses a five-step structure, akin to problem-solving, comprising goal setting, self planning, self-monitoring, self-evaluation, and revision.

Pedagogical Foci: 

1. Goal-setting 
2. Self-planning 
3. Self-monitoring 
4. Self-evaluation 
5. Revision 

SAVE

CANCEL

Figure 5.25: An Example of a Completed Pedagogical Approach

5.3.1 Creating Curriculum Components (CCs) Part 1

After completing the Learning Design Triangle (LDT) to establish the contextual framework for the entire learning design, we will explore how to develop Curriculum Components (CCs) and learning tasks that align with these elements, transforming overarching design concepts into actionable teaching practices. For a detailed theoretical explanation of Curriculum Components (CC), see [Chapter 2.5 – Curriculum Component Sequence](#).

The following instructions will guide you in creating the first CC for your learning design.

Creating the First CC

The first Curriculum Component (CC) marks the beginning of the course, "**Designing for the Wise.**" It is designed to help learners get started and build a strong foundation for subsequent learning. CC1 prepares students by developing their skills in identifying problems and goal-setting for the inquiry.

Step 1: Adding a New CC

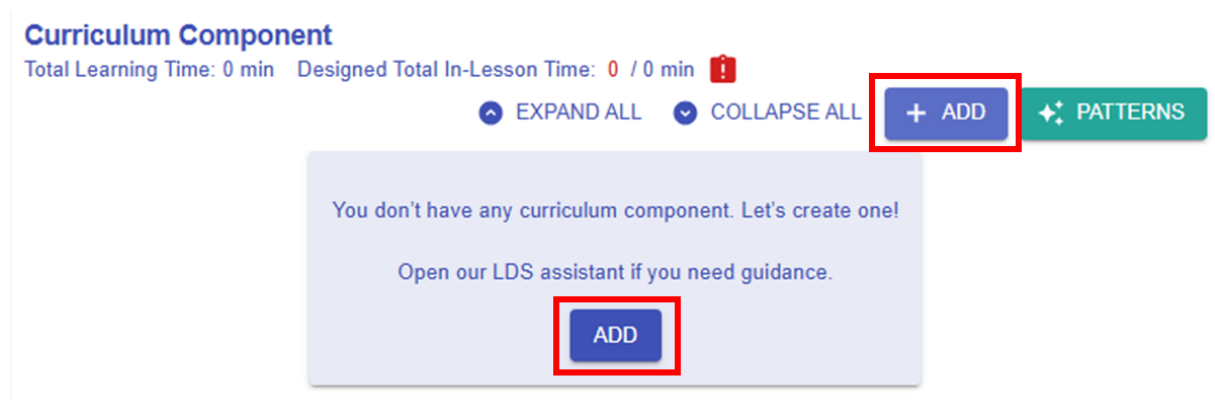


Figure 5.27: Adding a New CC

- By clicking the **ADD** button, you can open the CC builder.

Step 2: Mapping the LDT Elements to the CC

Curriculum Components / Edit Curriculum Components

CC name *

Through stimulus observation and conducting interviews with the elderly to understand their unique needs and daily challenges to identify problems for goal-setting.

Workflow steps: Identify problem

Pedagogical foci: Goal-setting

Linked Intended Learning Outcome(s)

Disciplinary Knowledge

Understand Identify the unique needs and challenges that elderly face in their daily lives

Values & Attitudes

Responding Demonstrate openness to elderly perspectives in design discussions

Figure 5.28: The Interface of the CC builder

- Please read the introduction below to guide you in creating a CC.

2.1 CC Name

Formula of naming a CC

Through the 1) focal task(s) to 2) achieve the intended learning outcome to 3) implement the workflow step(s) of a disciplinary practice for 4) applying the focus or foci of the pedagogical approach.

- E.g. Through 1) stimulus observation and conducting interviews with the elderly to 2) understand their unique needs and daily challenges to 3) identify problems for 4) goal-setting.

2.2 Workflow steps

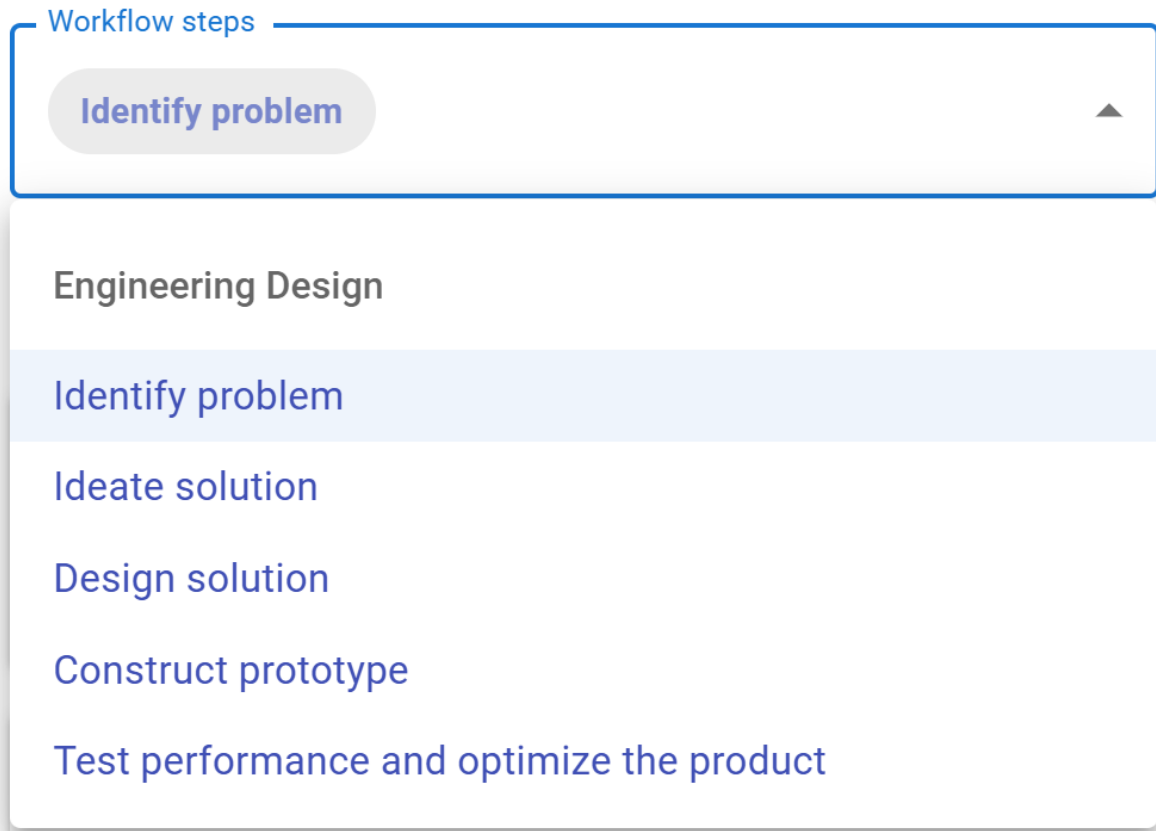


Figure 5.29: The Workflow Steps of Engineering Design

- The workflow steps of Engineering Design are drawn from the Disciplinary Practice (DP) section you completed previously.
- Select "Identify problem" for this CC.

2.3 Pedagogical foci

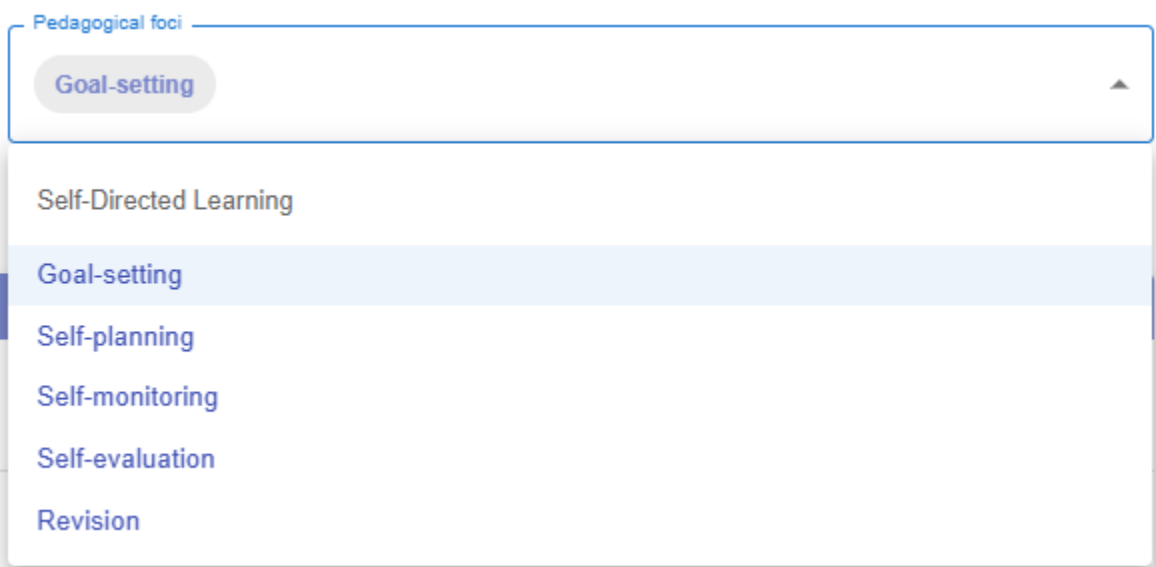


Figure 5.30: The Pedagogical Foci of Self-directed Learning

- The pedagogical foci of Self-directed Learning are drawn from the Pedagogical Approach section you completed previously.
- Select "Goal-setting" for this CC.


2.4 Linked Intended Learning Outcomes (ILOs)

- Finally, we will select the ILOs to be achieved in the CC, ensuring they align with the chosen workflow steps of disciplinary practice and pedagogical approach within the specific phase of learning.

2.4.1. The Link Button



Figure 5.31: Linking the ILOs to a CC (1)

- You can view all the Intended Learning Outcomes (ILOs) entered in the LDT section by clicking the  button.

2.4.2 Selecting the Appropriate ILOs



Figure 5.32: Linking the ILOs to a CC (2)

E.g.

- Identify the unique needs and challenges that elderly face in their daily lives.
- Demonstrate openness to elderly perspectives in design discussions.

2.4.3 The Alert Icon and Complete Icon

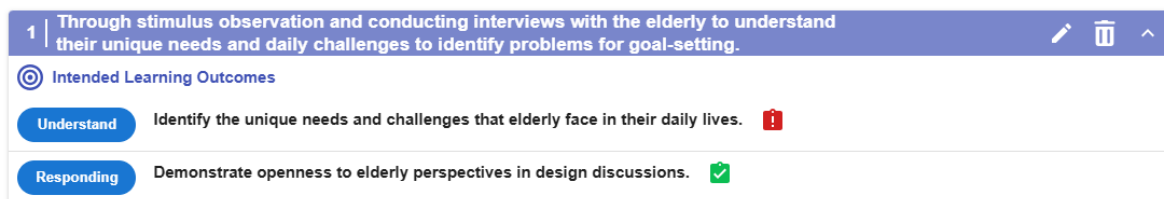


Figure 5.33: Unassessed ILOs in a CC