

# Learning Patterns: A Pattern Language for Creative Learners II

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## Abstract

In this paper we present a pattern language for learners who want to learn better without killing their creativity. In order to tell a ‘knack’ about the way of learning we apply the method of pattern language, which was originally proposed in architectural design and became famous in software design. Our proposed pattern language for creative learners, which we named “Learning Patterns”, consists of 40 patterns. Each pattern is described in the same format; pattern number, pattern name, introduction, illustration, context, problem, forces, solution, actions, and related patterns. Although Learning patterns were originally developed in order to support learning of university students, we think it can be applied to any learners in various situations like engineering, business, science, and everyday life due to their fine abstract descriptions as a pattern language. In this paper, we show the overview of 40 patterns and four patterns in detail. Note that other five patterns have been presented in our previous paper at PLoP09 (Iba, *et. al.*, 2009).

## 1. Introduction

In recent complex society, it is essential to find problems and think of solutions from various point of view with a creative mind. People need to learn ability to practice their ideas, and create new viewpoints and ways of thinking. It is also necessary to construct their own living knowledge based on their situation, not just by memorizing existing information<sup>1</sup>. Under present circumstances, a few people can realize such a creative way of learning, but others do not seem to know how to do so.

As it is well known in the scenes of education, there is a difficult problem how one can teach how to learn. While it is quite easy to show the guideline to follow, it may shut learners out of the chance for thinking their own way of learning themselves. Furthermore, there is another difficulty to provide appropriate guideline for all learners who are under various situations. So, is it possible to provide something to help the learners under various situations to think their way of learning? In this paper, we would like to provide a solution for these problems.

In the following sections, we present a pattern language for learners in order to share several 'knacks' against the way of creative learning. It means that we refer the mind and the writing format of pattern language into "learning design", as well as architectural design (Alexander 1977), software design (Beck and Cunningham. 1987; Gamma, *et. al.* 1995), organizational design (Coplien and Harrison 2004; Manns and Rising 2005), and pedagogical design (Anthony 1996; Bergin 2000).

We think that a pattern language is good way to help the student to design their learning, because it focuses on providing a new view for the reader so that they can think. It is quite important that the method is not easy way to get the result without thinking themselves. It is not, however, irresponsible way to leave all up to individual ability. It is considered as the way that tolerates individual ability while making a good use of abstract rules of past experience. The patterns are mainly for the learners, but they are also for the educators. The patterns will become a good tool for sharing the way of thinking.

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<sup>1</sup> Against the backdrop, "Project-based Learning" (PBL) and "Learning by doing" are spotlighted, however they are the method to manage the classes or workshops that are usually closed. Although their aim is related to us, our aim is to support learning in everyday life rather than controlled classroom.

## 2. The Prehistory of the Learning Patterns

Learning patterns, which are presented in this paper, were developed by Learning Patterns Project, Keio University. We have handed out the catalog booklet of learning patterns to undergraduate students (Figure 1). The catalog was handed out to approximately 3,600 students of two faculties: Faculty of Policy Management and Faculty of Environment and Information Studies. These faculties have implemented a unique curriculum that is interdisciplinary and non-graded. It means all undergraduate students can study any kind of academic areas, for example social innovation, public policy, global strategy, environment, life sciences, and information studies, without reference to their grades and experience. Therefore the students should design their own learning, and it is the reason why we made the learning pattern for supporting learning design.

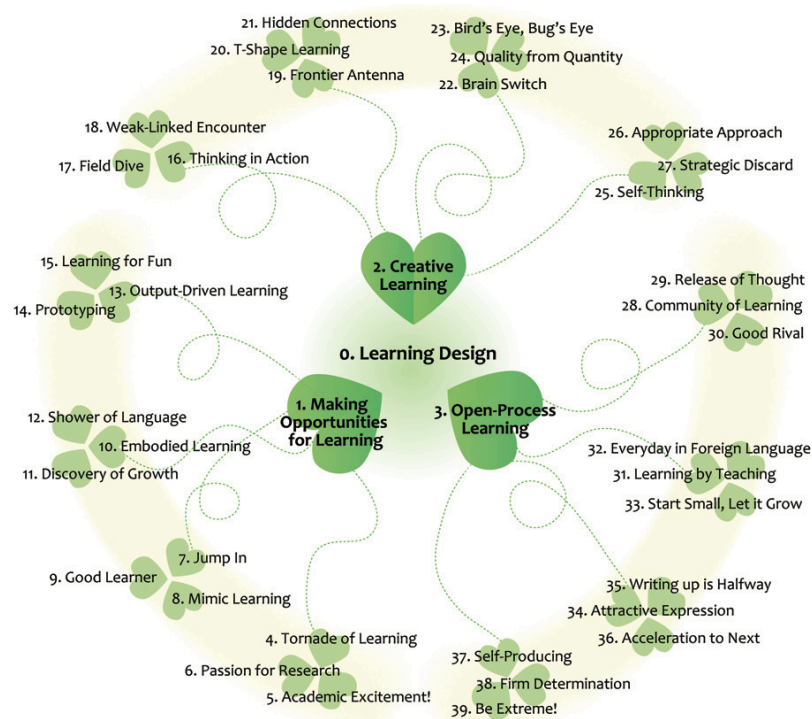


Figure 1: Catalog Booklet of Learning Patterns

## 3. Patterns Overview

Learning Patterns consist of 40 patterns. Figure 2 shows the overview of the whole language of the learning patterns. Learning patterns is organized in three layers according to the abstract level. In the top layer, there is a root pattern: *Learning Design (0)*. This pattern provides an introductory explanation about why and how to use Learning Patterns. Such an explanation is usually provided outside patterns, however we put it in patterns as a self-referential pattern. In the second layer, there

are three fundamental patterns: *Making Opportunities for Learning (1)*, *Creative Learning (2)* and *Open-Process Learning (3)*. These patterns show important attitudes that summarize more specific patterns in next third layer. In the third layer, there are thirty-six patterns as concrete 'knack' of learning: *Tornado of Learning (4)*, *Academic Excitement! (5)*, and so on.



**Figure 2: Overview of Learning Patterns**

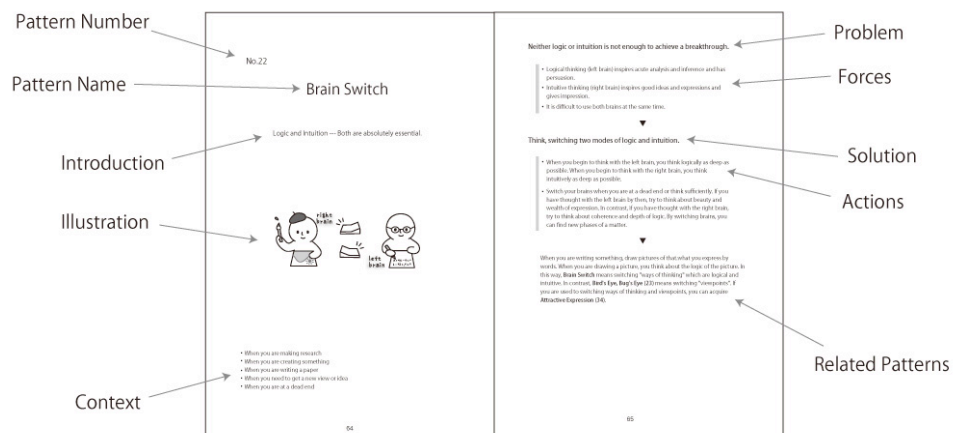
#### 4. Pattern Format

Learning patterns are described in the format which consists of following items; “Pattern Number”, “Pattern Name”, “Introduction”, “Illustration”, “Context”, “Problem”, “Forces”, “Solution”, “Actions”, “Related Patterns.” Especially in the catalog of learning patterns, each pattern is printed in a double page spread (Figure 3), which is handed out for university students, as I mentioned above.

In the first half of pattern, which is printed at the left page in the catalog, the overview of the pattern is described. At first, Pattern Number is sequential number. Pattern Name is named as attractive and memorable phrase. Next, Introduction and Illustration is provided in order to help for the reader to imagine the meaning of the pattern lively. Then, there is a list of when the reader can use the pattern as Context. The reader can search his/her necessary pattern from his/her context with using the context navigation.

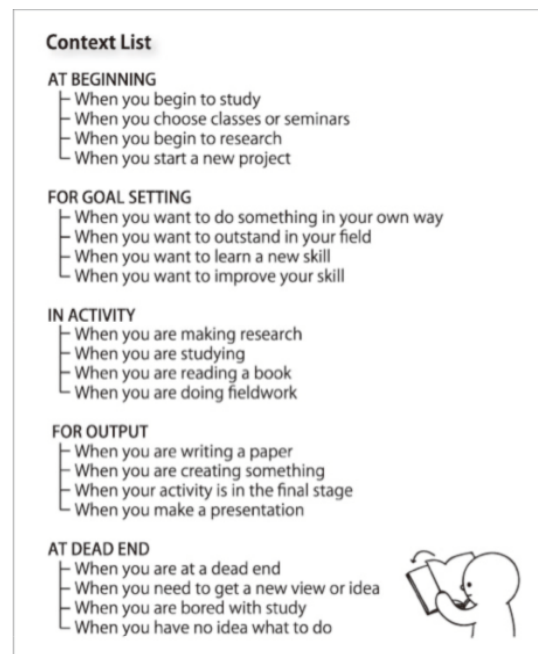
In the last half of pattern, which is printed at the right page in the catalog, the detail of the pattern is described. At first, Problem that is often occurred is described. Problem is emphasized in bold type. In succession to Problem, Forces are written as laws that are not able to or difficult to be changed. The difficulty to solve the problem comes from the existence of these forces, because your solution needs to meet all of them. After the Forces, the separator is placed. Next, Solution is written in bold type. Then, in the part of Actions, more concrete advice like examples or alternatives is introduced. After the Actions, the separator is placed again. At the last, Related Patterns are provided. Good learning is effectively achieved by combining some patterns. The reader can understand the meaning of the pattern deeper through reading the section of Related Patterns.

Note that it was a conscious choice not to show item names, such as “Problem” and “Solution”, in the format because of readability for students. Our format is midst between Alexander’s patterns and the design patterns.



**Figure 3: Pattern Format of Learning Patterns**

In the catalog booklet, there is some navigation to find the patterns. One of the navigation is based on contexts of patterns. There are five categories of contexts: “at beginning”, “for goal setting”, “in activity”, “for output”, and “at dead end” (Figure 4). Each category consists of four contexts, which indicate to related patterns respectively. Therefore the reader can find patterns that are relevant to their situation.



**Figure 4: Context List of Learning Patterns**

Another navigation in the catalog is provided in association with the curriculum of our university. Each course indicates to related patterns, therefore the student can find the patterns that are relevant to the classes they are taking.

## 5. An Example of Usage

Take, for example, a pattern of *Acceleration to Next (36)*. This pattern is supposed to be needed under the context like “When you are researching” or “When you are studying”. The problem

frequently occurred is “It not seldom happens that people slack off their efforts subconsciously just before the goal”, and the solution is “Set next goal and pass through the current goal without slow down” (See more details in the next section of this paper).

The student who read this pattern may find new idea to design his / her learning activities, because pattern languages can become concept to comprehend the reality and amplify the ability of recognition. Thus, the method of pattern language provides the way to understand the existence of problem and the clue of the solution. Moreover, by virtue of the name of each pattern, it is getting easier to mention some aspect of learning. With using the example above, the teacher can advice the student with using the pattern name; “Don’t forget Acceleration to Next! ”. Otherwise, student can ask the teacher “Do you think I should increase Acceleration to Next?” Like this, pattern languages contribute to increase the vocabulary about learning among teachers and students. These are the reason why pattern language is called “language” of patterns.

## 6. Four Learning Patterns

Here we take four patterns as examples: *Learning Design (0)*, *Brain Switch (22)*, *Community of Learning (28)*, and *Acceleration for Next (36)*.

No.0

## Learning Design

*Design your learning.*



- Always when you want to learn



**It is not easy to learn “how to learn”, while it is essential ability in complex and liquid society.**

- Human is not able to learn everything because the time and memory is limited.
- There are several ways to study.
- People who learn effectively have a knack for good learning, which is independent on their fields or themes.



**Learn the ‘knack’ of learning from the experienced learners, and design your way of learning based on them.**

- You can work on your activity with “learning patterns” which tells you the knack of effective learning.
- First, read roughly whole patterns to understand what “learning patterns” is like, especially the first half of each pattern; pattern name, introduction, illustration, and context. It is better to remember the pattern name and the illustration.
- Read the detail of patterns in which you are interested. In the last half of each pattern, there are description of “problem”, difficulties why the problem is a hard to solve as “forces”, “solution”, and “actions” which are for solving the problem.
- You can find a learning pattern according to your situation with using the list of “context”.
- Use “pattern name” of learning pattern as a common language, when you talk about learning with other students or teachers.

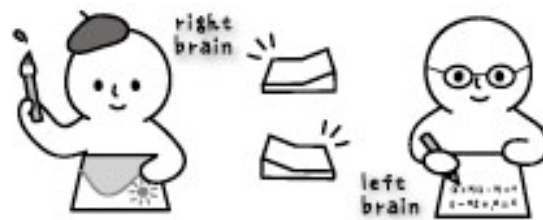


Learning Design is important to do Making Opportunities for Learning (1). For cultivating the opportunity, keep the tips of Creative Learning (2) in mind, and you can learn with excitement. Open-Process Learning (3) helps you recognize the significance of communities that you are in.

No.22

## Brain Switch

*Logic and Intuition — Both are absolutely essential.*



- When you are making research
- When you are creating something
- When you are writing a paper
- When you need to get a new view or idea
- When you are at a dead end

**Thinking tends to be leaning to only logic or intuition, which each is not enough to achieve a breakthrough.**

- Logical thinking (left brain) inspires acute analysis and inference, and has persuasion.
- Intuitive thinking (right brain) inspires good ideas and expressions, and gives impression.
- It is difficult to use both modes of thinking at the same time.



**Think, switching two modes of logic and intuition.**

- When you begin to think with your “left brain”, think logically as deep as possible. When you begin to think with your “right brain”, think intuitively as deep as possible.
- Switch your brains when you are at a dead end or think sufficiently. If you have thought with “left brain” by then, try to think about beauty and wealth of expression. For example, when you are writing something, draw pictures of what you express by words. In contrast, if you have thought with “right brain”, try to think about coherence and depth of logic. For example, when you are drawing a picture, think about the logic of the picture. By switching brains, you can find a new aspect of a matter.

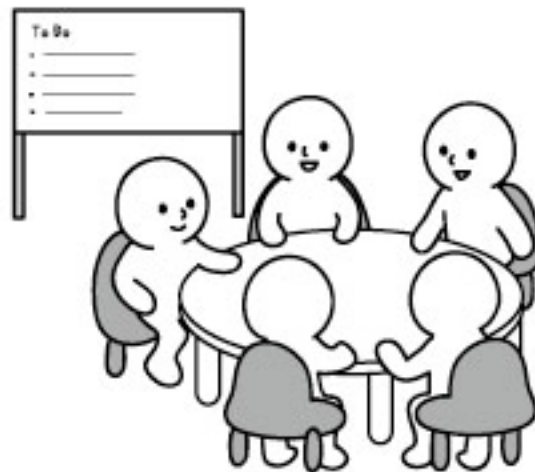


Brain Switch means switching “ways of thinking” that are logical and intuitive. In contrast, Bird’s Eye, Bug’s Eye (23) means switching “viewpoints”. If you are used to switching ways of thinking and viewpoints, you will provide Attractive Expression (34).

No.28

## Community of Learning

*It is not necessary to study alone.*



- When you begin to research
- When you begin to study
- When you are bored with study
- When you want to learn a new skill
- When you want to improve your skill

**Individual's capacity is limited.**

- The time we can spend is limited.
- Everyone has his/her own knowledge and viewpoints.
- By getting various viewpoints, human can deepen their understanding.
- Human can work harder with partners together than do alone.

**Find people with common objectives and build a community of learning to stimulate each other.**

- First of all, plan for making “community of learning”. For example, you plan that what kind of workshop or research project you can do.
- Gather some members of your surroundings who are interested in your plan. Then, you launch your project and make some concept and rough schedule with them.
- Decide how you show your efforts of your learning. For example, you can make a paper, and publish it on the web site or have a conference. This makes you keep your motivation.
- On the basis of this plan, accept applications for your “community of learning”, preferably on a large scale beyond your acquaintances. It may be that you can gather more members who have similar interest than those of your acquaintances. Moreover, with the member of people who you don't know, you can avoid loose meeting and keep focusing on.
- To keep the member's motivation, confirm what you have done with each other regularly. If is necessary, you should reset your goal.



There are no fixed rolls such as “teacher” or “student” in *Community of Learning*. So, all participants have opportunities for *Release of Thought (29)* and *Learning by Teaching (31)* as well as learning from others. One may find *Good Rival (30)* in the community. Your *Tornado of Learning (4)* based on your interests grows together with the other member's, and grows bigger and bigger. As a result, you will encounter *Academic Excitement! (5)* more and more.

No.36

## Acceleration to Next

*Just before the goal, people tend to press the brake pedal subconsciously.*

*Now is the time to set next goal and press down on the accelerator.*



- When you are making research
- When you are writing a paper
- When you are creating something
- When your activity is in the final stage
- When you are at a dead end

**It not seldom happens that people slack off their efforts subconsciously just before the goal.**

- Just before achieving the goal, human tend to lose their motivation unconsciously.
- Finishing work is always tough.
- Human can work hard in active, just in the process of pursuing our goal.



**Set next goal and pass through the current goal without slow down.**

- Think of the meaning of your activity, and imagine what you should do after achieving its goal.
- Set the next goal on the extension of your activity temporarily, and consider the immediate goal as a passing point. With an image of bigger goal, you can avoid losing the end work.



Even if you work on your activity with the mind of Passion for Research (6) and Firm Determination (38), it seems be tough to finish the work before its goal. When you are in the situation like this, it is important to put Acceleration to Next. Work on your activity with Bird's eye. Bug's eye (23) for taking the immediate goal as a part of next big goal. With “Bird's eye” for looking down a whole of your project, think of what you can do now, and take next goals. In this way, if you keep on progressing while you take your goals as passing points, you will be Be Extreme! (39).

## Appendix: Other Learning Patterns

Here, we shall show a summary of all 40 patterns together form a language for creative learning. We begin with the part of the language that defines learning design itself. This is the root and premise to use this pattern language;

0.	Core	<i>Learning Design</i>
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Next, we shall go through the part of the language that gives fundamental attitudes for learning;

1.	Fundamental Attitudes	<i>Making Opportunities for Learning</i>
2.		<i>Creative Learning</i>
3.		<i>Open-Process Learning</i>

Now we start the part of the language that tells how you can achieve to learn more actively in detail. This part can be roughly divided into twelve groups of patterns, where each group consists of three patterns respectively.

4.	For Motivation and Fundamental Aspect	<i>Tornado of Learning</i>
5.		<i>Academic Excitement!</i>
6.		<i>Passion for Research</i>
7.	Key to Start	<i>Jump in</i>
8.		<i>Mimic Learning</i>
9.		<i>Good Learner</i>
10.	Acquire and Improve the Skill	<i>Embodied Learning</i>
11.		<i>Discovery of Growth</i>
12.		<i>Shower of Language</i>
13.	Make Your Learning More Interesting	<i>Output-Driven Learning</i>
14.		<i>Prototyping</i>
15.		<i>Learning for Fun</i>



16.		<i>Thinking in Action</i>
17.	For Active Effort	<i>Field Dive</i>
18.		<i>Weak-Linked Encounter</i>
19.		<i>Frontier Antenna</i>
20.	Scope of Learning	<i>T-Shape Learning</i>
21.		<i>Hidden Connections</i>
22.		<i>Brain Switch</i>
23.	For Innovative Thinking	<i>Bird's Eye, Bug's Eye</i>
24.		<i>Quality from Quantity</i>
25.		<i>Self-Thinking</i>
26.	The Way of Going about Activity and Learning	<i>Appropriate Approach</i>
27.		<i>Strategic Discard</i>
28.		<i>Community of Learning</i>
29.	Social Aspect of Learning	<i>Release of Thoughts</i>
30.		<i>Good Rival</i>
31.		<i>Leaning by Teaching</i>
32.	Improve the Skill or Works	<i>Everyday in Foreign Language</i>
33.		<i>Start Small, Let it Grow</i>
34.		<i>Attractive Expression</i>
35.	Idea for the Final Phase of Activity	<i>Writing up is Halfway</i>
36.		<i>Acceleration to Next</i>
37.		<i>Self-Producing</i>
38.	Strategy for the Medium and Long Term	<i>Firm Determination</i>
39.		<i>Be Extreme!</i>

The sequence presented here is not only one possible sequence, because “A pattern language has the structure of a network” (Alexander 1977). We can capture and trace the relation among the patterns in many ways. This is related to one of Alexander's significant findings that the design of a building and a town cannot be reduced to the structure of tree, but can be considered as semi-lattice.

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