

An Ecosystem for Collaborative Pattern Language Acquisition

Yuki Kawabe ^{*a1}, Takashi Iba ^{*b}

^{*a} Faculty of Environment and Information Studies, Keio University, Japan

^{*b} Faculty of Policy Management, Keio University, Japan

Abstract In this paper, we propose an ecosystem for acquiring pattern languages and introduce a web system called “Presen Box” that implemented the ecosystem. Pattern language is a methodology that describes practical knowledge for enhancing human creativity and has been developed in various fields such as architecture, software design, education, organization and lifestyle. In recent years, interfaces of pattern languages, pattern cards, pattern apps and pattern objects that embed patterns in daily life, etc. have been developed in addition to reading materials such as books and papers. However, there are still things that need to be overcome in order for those who do not know of pattern languages to acquire it and promote higher quality practices. Rather than leaving pattern language acquiring to individual efforts alone, we propose an ecosystem that realizes collaborative acquisition and an “action first pattern practicing method” that supports the ecosystem. In this method, people will learn patterns through repetition of concrete actions. The system “Presen Box” that implemented this ecosystem is a web platform that uses presentation patterns that describe presentation skills, and the users can get ideas for creating high-quality presentations. By repeating execution of ideas, the users can acquire presentation patterns gradually.

1 Introduction

Pattern Language is a tool to enhance creativity in individuals and organizations. It is used as a common language and building blocks of thinking by verbalize closed knowledge in an individual. Adam Grant, an organizational psychologist says, “Organizations that people help each other, share knowledge and care for each other are better with all measurable indicators: profitability, customer satisfaction, employee retention rate, even for operating cost reductions (Grant 2013)”, sharing knowledge has a positive impact on organizations in a variety of ways.

¹ Corresponding author: Yuki Kawabe, email: t16279yk@sfc.keio.ac.jp

To spread pattern language as a more effective tool, we have to develop not only pattern language itself but also interfaces that connect human and pattern languages as well as methods that make it easy for anyone to use patterns. In this paper, we propose an ecosystem that allows more people to learn and acquire pattern languages.

We first provide an overview of the pattern language. Then, we propose the ecosystem with a pillar “Action first pattern practicing method” that support the ecosystem. Finally, we describe “Presen Box”² as a concrete example of an application that implemented the ecosystem and use cases. “Presen Box” is a web system that supports the creation of high-quality presentation by using the presentation patterns, a pattern language that describes expert knowledge of presentations.

2 Pattern Language

2.1 Overview of Pattern Language

Pattern language is a method of structuring patterns that are created by verbalizing and abstracting experts’ secret skills. Each pattern describes a solution to a problem that is likely to occur in a particular context and is given a name. We can share the knowledge with using this as a vocabulary of communication.

Pattern Language is used in various fields. It was invented by an architect named Christopher Alexander, who developed “A Pattern Language” (Alexander et al. 1977), a book that contains 253 patterns for architecture design. This method was then applied to software design (Beck and Cunningham 1987), and many pattern languages have been developed. Since then, patterns have begun to be developed in all fields, such as Fearless Change (Manns and Rising 2004) and Pedagogical Pattern (Pedagogical Patterns Editorial Board 2012). We also created pattern languages about human actions, such as the learning patterns (Iba and Iba Laboratory 2014a), presentation patterns (Iba and Iba Laboratory 2014b), collaboration patterns (Iba and Iba Laboratory 2014c), a pattern language for living well with dementia (Iba and Okada 2015), and project design patterns (Iba and Kajiwara 2016).

² <https://presentation.patternapp.net>

2.2 Pattern Language Usage

There are three ways to use pattern languages, “Vocabulary for communication”, “Glasses of Recognition” and “Triggers to generate new ideas” (Iba 2016).

As “Vocabulary for communication”, it is used as vocabulary, and people can share their knowledge when the skills have names. For example, there is the dialogue workshop. In this workshop, participants talk with each other about past episodes related to a particular pattern and get a practical image of the pattern and discover new usage of patterns. It is hard to talk about past learning experience without topic, for example, the learning patterns will be a topic. What participants get from the workshop is useful when using the pattern in the future.

As “Glasses of Recognition”, it is used when evaluating other’s action and looking back on their own action in a particular domain. For example, when they are looking back on their action, they evaluate the practice of patterns and recognize patterns that should be incorporated, after that they will be conscious of practicing the pattern when they take the action again.

As “Triggers to generate new ideas”, it is used as a way to generate new ideas with getting perspective from a specific pattern. For example, there is an idea workshop using pattern cards as materials for ideas. In this workshop, the participants gain a new perspective by considering what kind of services should be available to realize the chosen pattern or what they can do if the chosen pattern is incorporated into current projects.

Patterns are also used in various ways not mentioned above. However, in order to actually use patterns in daily life, it is necessary to first remember the pattern users want to use and then recall it at an appropriate timing (Iba et al. 2016). Various tools and methods, like the dialogue workshop (Iba 2014), pattern cards (Iba 2016), pattern objects (Iba et al. 2016), and pattern apps (Mori et al. 2018) are developed to make it easy to use patterns and to image how to practice them. However, there are still things to overcome for recalling patterns. Users must first meta-recognize the situation in which they are placed, which is difficult to do if they are too focused on only what is right in front of them. What is a better way to use patterns? The solution we propose is the process of acquiring patterns while repeating concrete actions. In order to realize this process, collaboration between people who are able to practice patterns and those who are going to practice it and ecosystem of practicing pattern will be important. Rather than leaving pattern practice to individual efforts alone, we think that more people can practice by practicing through collaboration among multiple people.

3 Ecosystem of Pattern Acquisition

Patterns are abstract concepts created from several experts’ skills and used by users as a cognitive structure. The pedologist David Kolb proposes an experiential

learning model and says that skills can be learned by repeating concrete experiences and being abstractly conceptualized through reflective observation and refined with active experimentation (Kolb 2014). Additionally, the Swiss psychologist Jean Piaget says that human cognitive structure is constructed in individuals (Piaget et al. 1971). As shown in Fig. 1a, people don't construct cognitive structure by getting and learning from outside as taught by a teacher at school, but by experiencing and getting feedbacks from the surrounding environment through their own actions as shown in Fig. 1b.

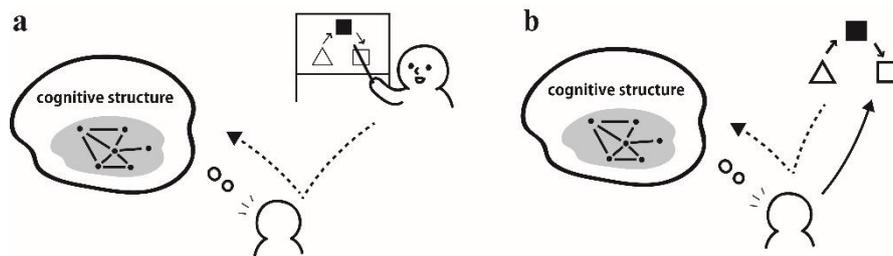


Fig. 1. (a) Learning cognitive structure from outside, (b) Developing cognitive structure through one's own action

As seen in Fig. 2, pattern practice has been done in the process of knowing patterns from books or websites, then recalling the pattern in an appropriate timing and generating a concrete idea with using it as “triggers to generate new ideas” and executing it.

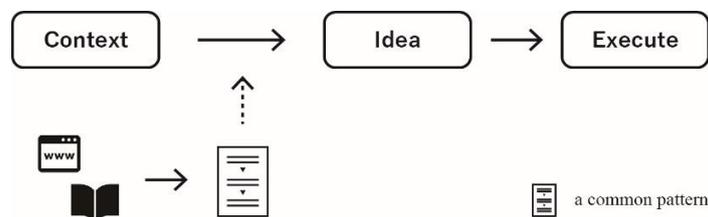


Fig. 2. Pattern practicing process when patterns are learned from outside

However, the real situation changes every second, and there is no time to even recall it for people who don't acquire patterns. For example, right before the presentation or when you are giving it.

Based on Piaget's thesis, the patterns literally given and remembered cannot be used in the real situation. The patterns that constructed while repeating specific actions are the ones that can be used. Alexander also said “It is not enough to merely duplicate a pattern from a book in order for each human being to keep in mind the pattern language as an expression of their daily life attitude” and “A language is a living language only when each person in society, or in the town, has his own vision of this language” (Alexander 1979), in order to practice patterns in

a true sense, instead of imitating the written pattern as it is, people need to learn it as their own personalized model.

As shown in Fig. 3, beginners need to learn the pattern by repeating the process of adopting a specific idea that can be used in a specific context and executing it immediately again and again. We call this learning method “Action First Pattern Practice”.

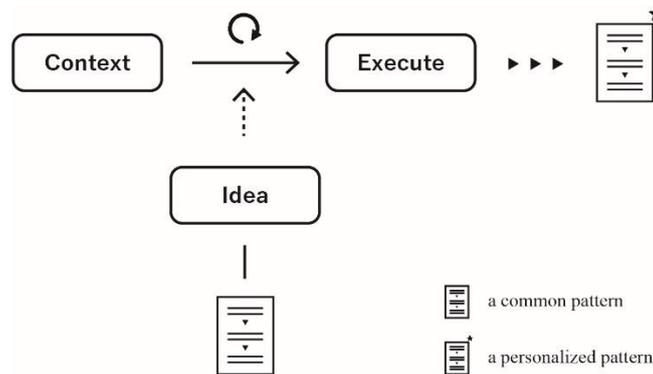


Fig. 3. Action first pattern practicing: Learning patterns through repetition of idea execution

Fig. 4 shows the practice process of people who have personalized patterns. Instead of patterns given from the outside, personalized patterns can be extracted immediately in the real situation. Then, it will be used as “triggers to generate new ideas” to generate ideas that are suitable for the situation.

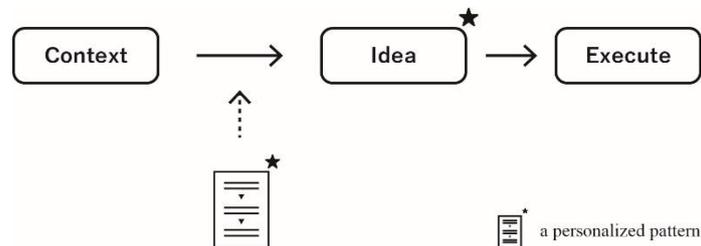


Fig. 4. Process of practicing patterns for people who have personalized patterns

The important thing of this pattern acquisition method is that the idea must be tied with the pattern. Collecting ideas that are tied with patterns is not easy for those who have not yet learned the patterns. Therefore, we solve it by showing the ideas tied to patterns of people who have already acquired the pattern to the person who is going to learn it. At this time, the pattern is used as “Vocabulary of communication” and “Glasses of Recognition”.

Fig. 5 shows the ecosystem that supports pattern learning. Phase 1 shows the learning process of the person who is going to learn, while Phase 2 shows the practice process of the person who has already learned. The idea to be introduced in Phase 1 is the idea that someone generated in Phase 2 in the past. Beginners

execute the ideas that seniors have generated. Personalized patterns are not shareable, but they all link to patterns as a common language. The generated ideas are shared through patterns as a common language.

In addition, people who have learned it can refine their pattern practice by looking at other people's ideas.

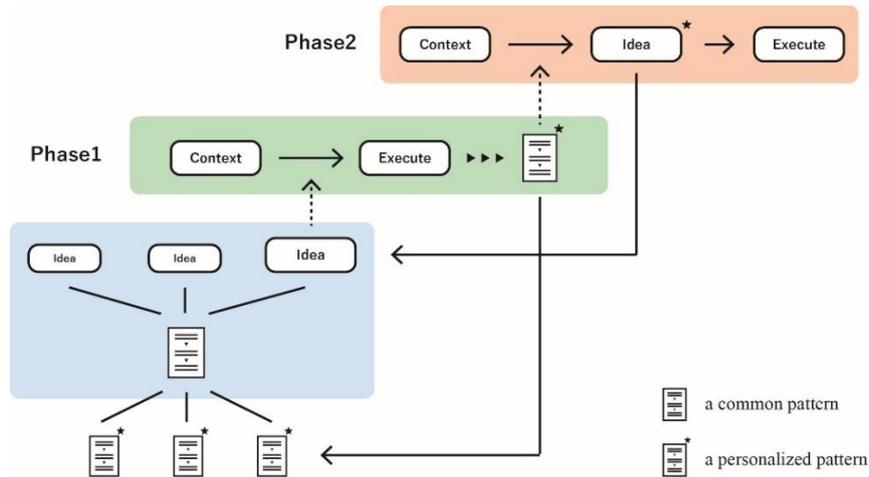


Fig. 5. An ecosystem of pattern language acquisition with collaboration

4 Implemented System: Presen Box

“Presen Box” is a web system that shares ideas for creating a better presentation using Presentation Patterns that describe good behaviors for presentations. The ideas for the presentation are lined up, and the user looks at the ideas that they may like. Users will access this in all situations and get hints when creating materials for the presentation, when considering the composition of the presentation, when trying to relieve tension just before the performance, and when looking back over a past presentation.

In the listing page (Fig. 6a), users choose ideas they like from listed ideas, and if there is something they can do, execute it. Ideas are listed with a card design and have titles, thumbnails, references, and patterns that are tied to the idea (Fig 6b). Each idea is tied with patterns and on the idea detail page (Fig. 7) other ideas that are tied with the same patterns are displayed as a recommendation.

The pattern detail page (Fig. 8) shows the description of the pattern and the ideas tied with it. As described above, users can search for new ideas in three ways, selecting from the list, choosing another idea from idea through tied pattern, or choosing an idea from a specific pattern.

The feature of the way of selecting from the list is to enable users who do not know about pattern languages to try patterns first and solve the problem that users

cannot be put into practice without learning the pattern. All they have to do is choose and practice presentation ideas even if they don't know the patterns.

Choosing and practicing another idea with the same pattern from one idea helps to understand the pattern. By repeating the practice of multiple ideas that are tied to the same pattern, they will gradually understand what the pattern means.

Tying patterns with a particular pattern will increase the searchability. For example, if users are nervous just before the presentation, they can ease the tension by acting the ideas that could be found from the pattern details page of [Best Effort] and [Construction of Confidence]. In addition, when preparing to make a presentation that attracts the audience, they can refer to the ideas linked to [Dramatic Modulation], [Doors of Mystery], and [Significant Void].

Users can follow the patterns. Ideas tied with following patterns are displayed preferentially on the list. You can stock your favorite ideas and find out immediately when you use them in the future.

When posting an idea, users input the title, content, an image, and the pattern associated with it. It is difficult at first to post ideas for those who don't know the pattern so much, but it will be possible with repeating practice and getting deep understanding of the pattern. The process of recognizing abstract concepts from concrete actions and generating specific ideas from abstract concepts further deepens the understanding of pattern languages.

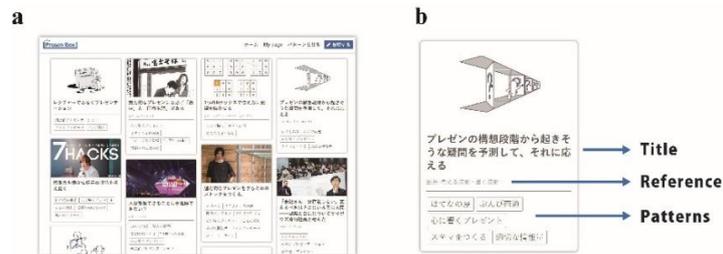


Fig. 6. (a) Idea listing page, (b) Card design of an idea



Fig. 7. Idea detail page



Fig. 8. Pattern detail page

5 Use Cases of Presen Box

In this section, we introduce three important points found out from the interview to the user group, and explain how the “Presen Box” actually contributed to the acquisition and practice of the patterns on its ecosystem. The interviewee knew the presentation patterns and already practiced some of them, but the other patterns had not yet been mastered. The first one pointed out is that the “Presen Box” promotes the users to link actual presentations to patterns. The second point is that it allows users to search and collect higher quality information by using patterns as tags. The last point is that it can be used as a support tool when improving someone’s presentation with patterns.

Good presentation practices can be used as reference whenever needed, if they are well organized. “Presen Box” helps users organize the set of ideas extracted from good presentation practices using patterns, and thus, it naturally reminds the users to link the practices with patterns. In addition, while writing paragraphs to share the important ideas with others, they could gain a deeper understanding of what each pattern actually means and what the good practice in this context would be like.

Since all the ideas posted on the “Presen Box” needs to be somehow linked to the patterns, the quality of information is ensured to a certain extent. By using patterns as search tags, users can quickly reach higher quality articles and practical ideas that meet a specific purpose, compared to when searching with search engines. In fact, a lot of articles are written only for gaining the number of accesses based on the SEO algorithm. The “Presen Box”, however, provides users a platform to find high-quality information as fast as possible.

When commenting on someone’s presentation using patterns, it would be much easier if you have some concrete examples. Even if the instructors have no such concrete example, the “Presen Box” shows some which would help learners

understand the suggestion most effectively. Furthermore, it is very convenient in a way that it enables an online lecture by sharing a link.

As described above, it was found out that there are several advantages in enhancing one's learning and practicing patterns and sharing information in a small group. In the future, we would like to figure out what happens if this tool is used by people who don't know about the pattern language at all and if it is introduced in a community in which many people belong to.

6 Conclusions

In this paper we proposed an ecosystem that enhances pattern practicing and acquisition and "Action first pattern practicing" method that supports the ecosystem, and presented "Presen Box" which is a web system based on them. The method of recognizing patterns by repeating concrete actions promotes the practice for those who did not learn the pattern so far and contributes to deep understanding of the pattern for those who already learned the pattern. However, in order to share knowledge and improve collaboration using pattern languages, there is a need for further exploration of how individuals can get involved in the process. For example, "Presen Box" has been implemented as a web system but connecting pattern objects and web system will enable smoother practice by linking the Internet with the real world. We would like to test the feasibility of this system by using it in the daily situations and collaborative works and improve effectiveness.

References

1. Alexander C, Ishikawa S, Silverstein M, Jacobson M, Fiksdahl-King I, Angel S (1977) *A Pattern Language: Towns, Buildings, Construction*. Oxford University Press, NY
2. Alexander C (1979) *The Timeless Way of Building*. Oxford University Press, NY
3. Beck K, Cunningham W (1987) Using Pattern Languages for Object-oriented Programs. In: *OOPSLA-87 Workshop on the Specification and Design for Object-Oriented Programming*, Orlando, FL
4. Grant A (2013) *Give and Take: Why Helping Others Drives Our Success*. Weidenfeld & Nicolson, London
5. Iba T (2014) Pattern Language as Media for Creative Dialogue: Functional Analysis of Dialogue Workshop. In: Baumgartner P, Sickinger R (ed) *PURPLSOC: The Workshop 2014*, Krems, p 212-231
6. Iba T, Iba Laboratory (2014a) *Learning Patterns: A Pattern Language for Creative Learning*. CreativeShift Lab, Yokohama
7. Iba, T, Iba Laboratory (2014b) *Presentation Patterns: A Pattern Language for Creative Presentations*, CreativeShift Lab, Yokohama
8. Iba, T, Iba Laboratory (2014c) *Collaboration Patterns: A Pattern Language for Creative Collaborations*, CreativeShift Lab, Yokohama

9. Iba T, Okada M (eds), Iba Laboratory, Dementia Friendly Japan Initiative (2015) Words for a Journey: The Art of Being with Dementia, CreativeShift Lab, Yokohama
10. Iba T, Kajiwara F (eds), Iba Laboratory, UDS Ltd. (2016) Project Design Pattern, Shoehisha, Tokyo
11. Iba T (2016) Pattern language 3.0; human action, dialog; workshop; behavioral properties. In: Baumgartner P, Gruber-Muecke T, Sickinger R (ed) PURSUIT OF PATTERN LANGUAGES FOR SOCIETAL CHANGE, Krems, p 200-233
12. Iba T, Yoshikawa A, Kaneko T, Kimura N, Kubota T (2016) Pattern Objects: Making Patterns Visible in Daily life. In: Zylka M, Fuehres H, Colladon A, Gloor P (ed) Designing Networks for Innovation and Improvisation Proceedings of the 6th International COINs Conference, Switzerland, p 105-112
13. Kolb D (2014) Experiential Learning: Experience as the Source of Learning and Development, 2nd Edition. Pearson FT Press, NJ
14. Manns ML, Rising L (2004). Fearless Change: Patterns for Introducing New Ideas, Addison-Wesley Professional, Boston, MA
15. Mori H, Kawabe Y, Iba T (2018) Patterns We Live By: Pattern App as a Platform to Familiarize Pattern Languages. Paper presented at the 7th Asian Conference on Pattern Languages of Programs, Waseda University, Tokyo, 1-2 Mar 2018
16. Pedagogical Patterns Editorial Board (2012) Pedagogical Patterns: Advice for Educators. Joseph Bergin Software Tools, San Bernardino, CA
17. Piaget J, Inhelder B (1971) Mental Imagery in the Child: A Study of the development of imaginal representation, translated from the French by P.A. Routledge & K Kegan Paul, London