

Lesson Design Patterns: How to Make Learning an Interesting One

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In this paper we propose Lesson Design Patterns; how to make learning an interesting one. Living in this unpredictable world students need to acquire a way and the strength to live their own life. How can teachers plan their lessons so that they can help the students achieve this? We clarified it by interviewing many of the outstanding teachers and mined from our experiences to make the Lesson Design Patterns. In this paper, we will present 6 out of 39 patterns in details: Challenge the Dilemma, Powers of Two, To Be You, Focus on Process, Express Individual, and Metamorphose. Rest of the patterns will be shown in the appendix. Also, the procedures and the reflections of the workshop we conducted to the teachers afterwards are shown in this paper.

General Terms: Education, Teaching

Additional Key Words: Pattern Language, Design

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1. INTRODUCTION

While people, things, and information go around globally and the world is changing drastically day by day, schools are facing a phase where they need to reform the education system. If we are to capture the idea of “competency” by relativizing the needs from the economic field, we may have to question and reconsider the contents of learning or the way of learning at school. In other words, it needs to be shifted from content based learning, what you know, to capacity/ability based learning, what you can do according to the circumstances. (Ishii, 2015)

If the teachers’ ability/capacity grows and are able to create their own individual lessons, the students will enjoy learning and become subjectively towards it. As a result, they will be positive towards changes and will be able to demonstrate their possibility throughout the process and make the society and their lives better.

Of course there are teachers who strongly reject this shift or feel that they are forced to do it rather than doing it subjectively. But it is true that there are many teachers who want to do it. The reality is that it is unclear of what kind of learning environment we can make or we can’t make.

To solve these problems, by copying the lessons of the teacher who are successfully carrying out their lessons is a way to do it. However, they copied without understanding the essentials of successful lessons. By concentrating too much on copying, they were not flexible to different contexts. So they eventually gave up because they felt that it is not working out well.

Lesson Design Patterns are unlike a manual and it enables you to put your own thoughts to it. It allows you to put your essence in it and make your own lesson style. It will also help you when you have the motivation of wanting to change your lessons to an interesting one. By reading the patterns according to the situation you are in now, you will be able to solve the problem.

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Formerly, one teacher made their lessons alone, but now teachers need to tag up. By doing so, students' capacity/ability grows more when all subjects are connected to each other rather than only learning it through each subject. Lesson Design Patterns support the vision shared between teachers. As a result, it can help create a team of teachers with deeper understanding.

In this paper, we will start with the 'Motivation', 'the Creation Process of Lesson Design Patterns', 'Lesson Design Patterns', 'Pattern Application' and 'Conclusion'. But before continuing on with the paper, we would like you to understand two cultural backgrounds of Japan, one is the system of the Japanese education, and the other is the characteristic of Japanese.

In Japanese schools, teachers are responsible for their homeroom students, approximately 30-40 students/class, for their studies, educational guidance, and their academic and career counseling. Lessons are a lot of times presumed by lecture based, one teacher teaching the whole class. Usually, not the students but the teachers are the ones who go to each class for each lesson so the students usually take classes in their homeroom class.

As a characteristic of the Japanese language, the subject is not always recommended in a sentence. By doing so, the sentence can be interpreted in many ways according to readers and situations. We have left this characteristic when translating the patterns to English, so that they would hold the same characteristic. The subject in a sentence are sometimes unclear for this reason.

2. MOTIVATION

Kaetsu Ariake Jr. & Senior High school, where we work as teachers, is known in Japan as one of the advanced schools to learn in active learning style. In junior high school, there is a subject called 'science' to gain the skills to learn. In high school, there is a subject called 'project' to use those skills achieved in science and presume project based learning. Through these classes, the students realize their inner interests and become to learn subjectively. Many teachers around Japan come to observe these classes to gain the skill for themselves. Unfortunately, it was hard to share the tips of how to do it. Even though many teachers had the tips individually, it had been an issue of how to share the tips that would work for many teachers.

Pattern language verbalizes 'what' and 'why' and 'how' to do it in certain areas. There are three functions of pattern language by verbalizing it. First is to have the concept to realize things. Second is to use it when building up the way of thinking; it is made by a small unit so that it is easy to think about the aim. Lastly, it can be used as a tool of communication. (Iba, 2013)

These functions of pattern language enforce us to verbalize the tips of designing lessons. By verbalizing this, it enables the readers to try their own way of designing lessons. As a result of those lessons, the students can enjoy learning and learn subjectively.

3. THE CREATION PROCESS OF LESSON DESIGN PATTERNS

Creating the Lesson Design Pattern started from May 2016 as a project of Tatsuaki Kanai, Keishiro Shinohara, Seiji Uchiyama, Ko Kobayashi, Hiromitsu Fujiwara, Ayaka Saito, and Ayaka Sato (Miho Tsutsui joined afterwards and especially engaged in translating). We referenced 'Pattern Language of How to make Pattern Language (made by Iba lab, Keio Univ.)' when making the Lesson Design Pattern. The process is introduced as below.

3.1 Interviewing

The seeds of the patterns lie in the people who are successful and to dig the seeds out, we conducted an interview. When choosing the interviewees, we picked up teachers at Kaetsu Jr. & Senior High school who are designing the lessons making the most out of their characteristics, and making learning an interesting one. After listing those teachers, we chose 7 of them who presume to have excellent performance.

Our most important aim was to dig deep into their experience when interviewing them. For example, we asked them what is important to them, why it is important, how they presume it, what was the initial motivation of doing it, when they started it, what kind of difficulties they had, and how

they overcame it. We wrote down the ideas interviewer gave us on a post-it, which added up to 150 in the end, using short sentences.

3.2 Clustering

After the interview, we clustered the pattern seeds using the KJ method. The reason we used this method was to get a new point of view or to realize the critical problem by organizing the complicatedly related information in designing a lesson. To do this, we spread the post-its on a big paper and paired them up that are connected in essence. Then we connected the pairs and categorized them into groups. We did this over and over and made a bigger group. Then we gave the group a name that symbols its character. (Figure 1)



Figure 1 (Clustering)

3.3 Finding the Seeds

Seeds of the patterns were made through this process. These seeds later became the frame of our Lesson Design Pattern. From these seeds, we wrote the outline of each pattern in a sentence. Each pattern contains 'Context: what kind of situation you are in', 'Problem: what kind of problem you may face' and 'Solution: the hint for a solution'. We took the first letter of each and named them "CPS." We designed the structure based on how each patterns are related using these CPS. (Figure 2)



Figure 2 (Finding Seeds)

3.4 Writing

After the structure was made, we added the details to the CPS. We wrote down the background of the problem (Force), the action that gives a clearer idea for the solution, and the better future you can make when you get on with the action. There are 3 aspects that we were careful when writing this.

One is to write it so that the reader can discover something and come up with new ideas. The next one is to write it logically and clearly so that the reader can take in the idea easily. The last was to write it so that you would get excited and feel that you want to give it a try. (Figure 3)

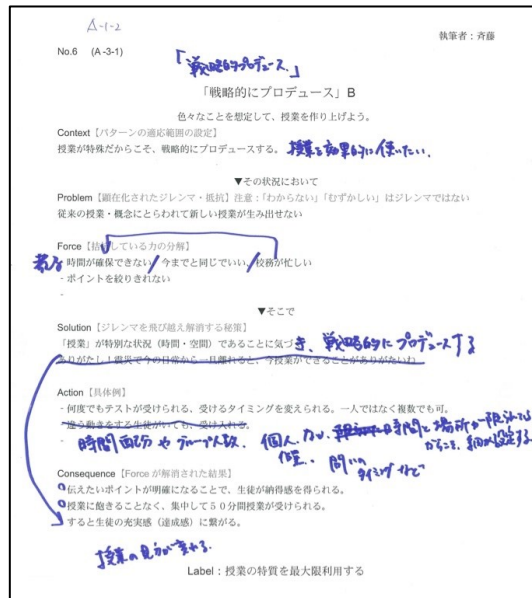


Figure 3 (Writing)

3.5 Symbolizing

As we brushed up the words, we named the patterns. We carefully chose words that captures essence of the pattern but yet can be easily used in daily life. At the same time, we started to link illustration to the patterns. The project member gave the ideas and Ayaka Saito completed them. The illustration will enable us to understand the patterns instinctively. We looked over the structure and arranged the patterns before finishing the process. (Figure 4)

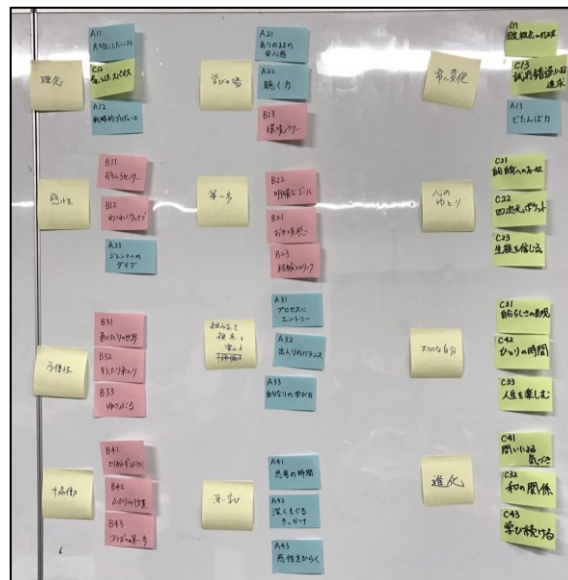


Figure 4 (Symbolizing)

4. Lesson Design Patterns

4.1 The Structure of Lesson Design Patterns

Lesson Design Patterns shows the elements that make learning enjoyable. In order to have them understood in different levels, the patterns are categorized and put into structure. As any patterns do, the 39 individual patterns relate to one another. They provide solutions to an enjoyable lesson based on the pattern language format. They can give the patterns in Lesson Design Patterns a wholeness rather than just a collection of patterns and form a “language”. A negative consequence might occur as a result of applying a pattern. To solve this, you may use other patterns (Figure 5).

The patterns are put into 12 small groups. Each group is made from 3 patterns which are similarly related. The small groups show a bigger vision of the 3 patterns. The groups are then categorized again into 3 even bigger groups; <<Paradigm Shift>>(no.1), <<Produce>>(no.2), and <<Self-Design>>(no.3). These 3 groups create a higher leveled pattern containing the individual patterns. The structure can guide you to get ideas of how you can have a <<Paradigm Shift>> to redesign your lessons, being able to <<Produce>> learnings accordingly, and how you can <<Self-Design>> and become a better self on designing lessons.

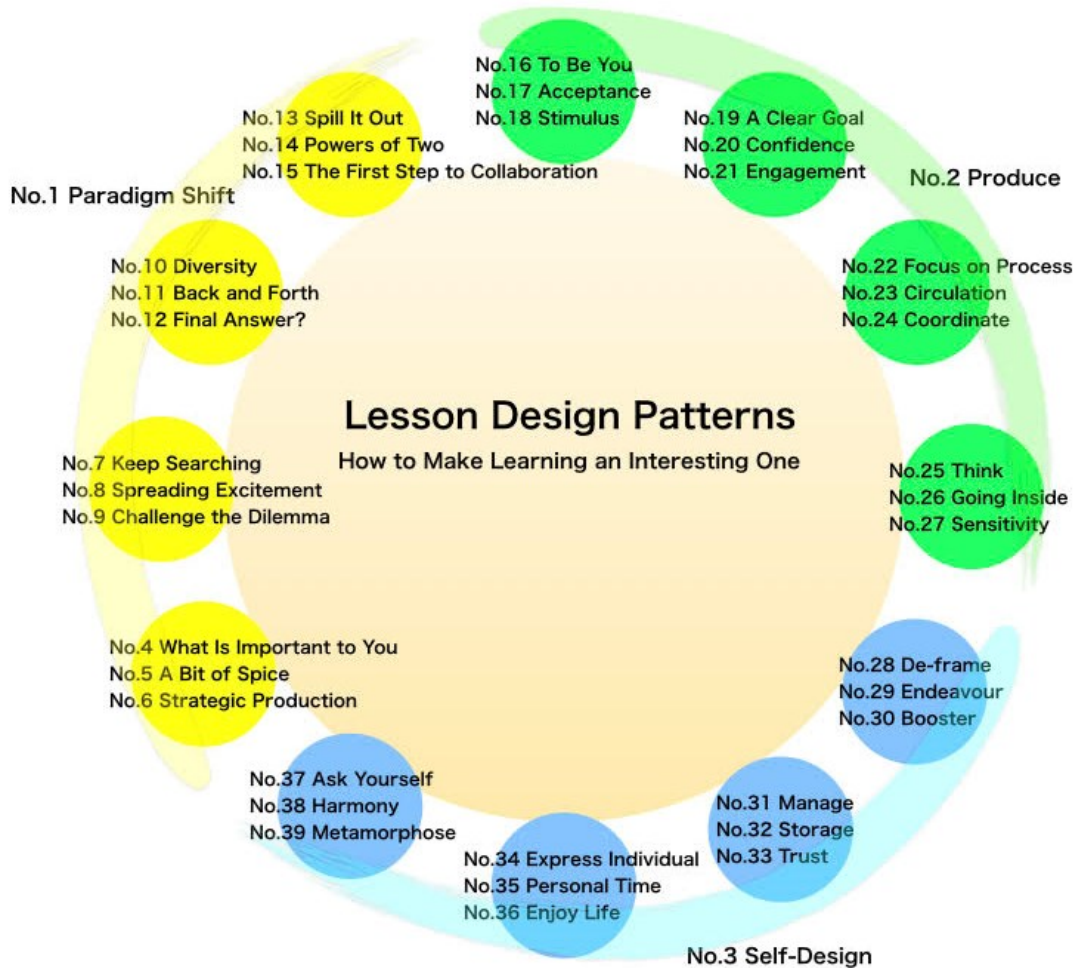


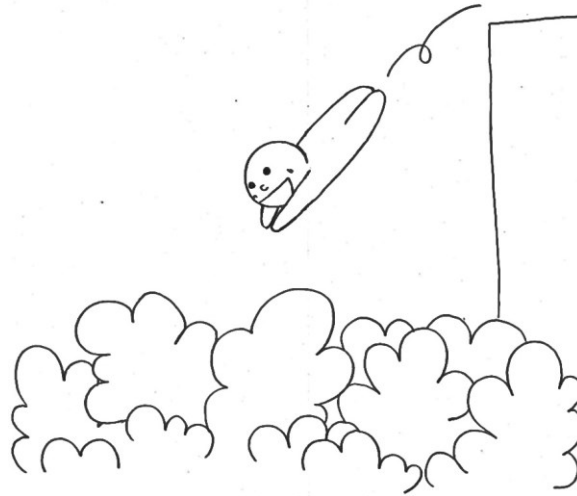
Figure 5 (Lesson Design Patterns)

4.2 Six Examples of the Lesson Design Patterns

In this section we introduce the following 6 patterns: Challenge the Dilemma, Powers of Two, To Be You, Focus on Process, Express Individual, and Metamorphose.

Challenge the Dilemma

Uncertainty can become the source for learning.



You want to design an active lesson.

▼ In this context

The lesson only contains plain message because of one-sided and undebatable design.

Some themes seem inappropriate for lessons so you choose ones that are harmless and inoffensive. In addition, although the content could have more than one answer, you tend to only push the thought and opinion that is considered right, even if that is not your opinion.

▼Therefore

Realize the dilemma that you are caught in and start creating your lessons from sharing that.

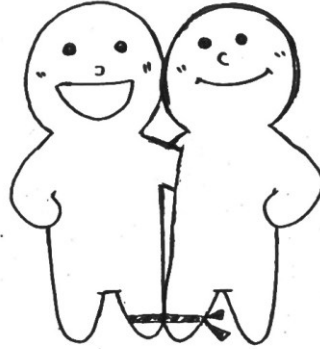
Not having a clear idea can lead to a study that catches real interests. When teachers and students are open about their dilemmas, you can make a lesson out of it. By working on a question with various answers, teachers and students can come up with great ideas. To realize this, it is important for both teachers and students <<To Be You>>(no.16) and sharing what they are really feeling.

▼Consequently

Students become more active and engaged because the motivation of wanting to know increases and spreads the <<Spreading Excitement>>(no.8) around. Teachers and students can both be learners in the classroom and lessons won't end up with one way learning. Also by confronting with the things that make you uncomfortable, you can become more resilient and persistent.

Powers of Two

Working together is the simple way to achieve your goal.



You want to focus on facilitating the lesson.

▼ In this context

You can't get across the most important points because you get caught up on keeping track of all the students.

If you are concerned about students who are not concentrating and students who cannot keep up with the progress of the lesson, you cannot concentrate on the facilitation of the lesson. Also, when you feel like you don't have enough knowledge in a certain field, you struggle to see how you can deepen the students' understanding of it. Furthermore, you feel that you are taking up their time when asking other teachers to help you, and end up doing it by yourself.

▼Therefore

Share your thoughts and develop the lesson with someone who supports you.

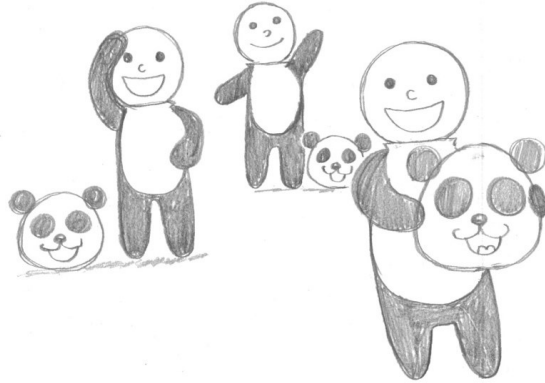
You don't need to do the lesson all by yourself. When no collaboration arises by just <<Spill It Out>>(no.13), take action on your own. Find someone who is free on that period and ask him/her to support you after sharing the aim of the class.

▼Consequently

You will be able to make the point of the lesson clearer by running the lesson smoothly and giving support to the students who need it. Through collaboration, it becomes easier for teachers to support each other. Also, by not having to do everything by yourself, you feel relaxed and will be able to enjoy the lesson itself.

To Be You

Feeling secure gives you the power to create.



You want to create an atmosphere where students can learn being their true self.

▼ In this context

Both teachers and students unconsciously build a wall to avoid saying what they are really thinking or what they really want to do.

When 'being the same as other people' is considered good, you come to an agreement with others without considering your own thoughts. Also, you hide your true feelings because you are afraid of what others might think of you. Even if there is something you don't agree with, you just let it go and you keep yourself behind the wall that you've built.

▼Therefore

Accept the way things are and design a class where everyone can be open with others.

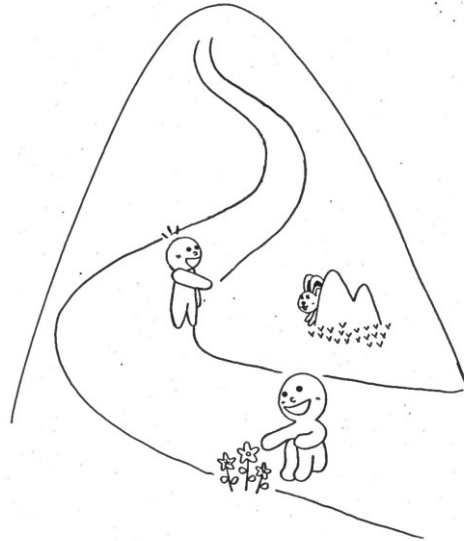
The first step is to create an atmosphere in which all students can be themselves. In order to do that, teachers must <<Express Individual>>(no.34) with the students as well, especially if they have something in mind which is hard to say. Avoid judging students too quickly. Just 'listen' and take in what they have to say.

▼Consequently

When students feel that they are being accepted as they are, they feel secured and therefore participate in the class positively. Self-esteem increases and they will begin to find more things that they want to try and become more motivated. In addition, a more creative atmosphere will be made where they can share their opinions more easily.

Focus on Process

The process is important, not only the results.



You want students to appreciate the process of growth, not just the results.

▼ In this context

You get caught up in the results and can't focus on the growth.

You can't stop worrying about the final results. You know that the process is important but you always want the results. You think that teachers' are assessed based on which universities the students enter. In situations when students fall behind, you tend to forget about bringing out their self-directing attitude and lead the way.

▼Therefore

Acknowledge the process, not only the results.

Draw more attention to the process so that the students can realize how much effort they need to put in to achieve the result. Praise the small steps that lead to progress, and make it clear how the task is going to be evaluated. Also, making worksheets or portfolios to make the process clear or giving time for reflection from time to time will help students to recognize the importance of the process. Finally, <<Trust>>(no.33) the students and being patient enough to wait for the students to grow up by themselves becomes important.

▼Consequently

You and the students will put emphasis not only in the results but also the process. They will realize their growth and their strengths even if they didn't succeed. They will appreciate the value of learning from failure so they won't be afraid of taking on new challenges in the future. They will embrace each step of the learning process.

Express Individual

It's OK to add your color.



You want to design a lesson in your colors.

▼ In this context

You get caught up with stereotype or peoples judgment and as a result, you carry out a general lesson.

You become obsessed over the things you think you "have" to do(e.g. Teachers should take a neutral position or Teachers shouldn't teach things that doesn't have an answer) or you worry too much about how people will judge your lesson. This makes you not realize or pretend that you don't have what you really want to teach in the lesson. Also you become too busy and you can't make some time to image or plan a lesson with what you really want to do.

▼Therefore

Set a time and think what you really want to do and give it a try.

First, make some <<Personal Time>>(no.35) for yourself to think over the lesson and <<Ask Yourself>>(no.37) what you really want from it. Try going to outside seminars or workshops and share your thoughts with others. Talking with someone outside of school can help you express your true feelings. When you find out what you want to do, give it a try. When you do so, you don't have to do anything drastic from the beginning. You just have to add <<A Bit of Spice>>(no.5) to something you already have.

▼Consequently

As you put things into practice, you can gradually get a better idea of what you really want to do. Then you can acknowledge and evaluate yourself and do a wider range of lessons without worrying about what others may say. When you are able to add a little of yourself to the lesson, it makes your work time more enjoyable.

Metamorphosis

Embrace change. Life is a series of opportunities for growth.



You feel the need for change in yourself.

▼ In this context

Daily duty is preventing you from updating yourself.

You know you have to change, but you don't know how. Somewhere inside, you begin to think there's no need to change and convince yourself that everything is okay as it is. You may even start using age as an excuse for not being able to change or try new things.

▼Therefore

Follow your instincts and just try something small at first.

We can change no matter how old we are. You can start with small things like reading a book that interests you, going to a seminar, or making opportunities to meet people from different industries outside of teaching. Try something you have never tried before. Get involved with something that excites you. It is also important to keep deepening your understanding of your own field of study.

▼Consequently

Learning becomes fun and leads you to <<Enjoy Life>>(no.36). By continuing your learning, you build more confidence and self-esteem, you develop new pools of experience and expertise to draw from, and you can create more room for creative pursuits.

5. PATTERN APPLICATION

We have conducted a study workshop for teachers using the Lesson Design Patterns. The workshop had three purposes. They were to confirm the effectiveness of each patterns, to enhance the relation between teachers by sharing experiences and to become an opportunity to try something new by reviewing their own lesson experiences.



Figure 6 (workshop (1))



Figure 7 (workshop (3))

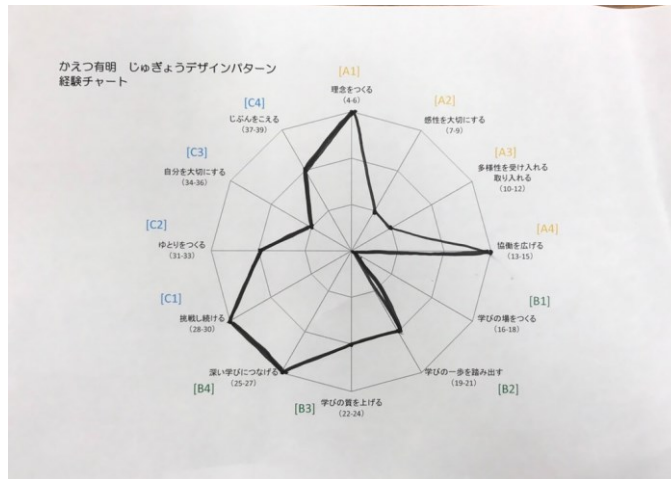


Figure 8 (workshop (4))

All figures above are from the workshop, 2017@Kaetsu Ariake Jr. & Senior High school

The workshop followed the procedures below.

- (1) Reading the patterns (Only the pattern name and solution) *as shown in Figure 6
- (2) Marking the patterns you have experienced
- (3) Sharing experiences within a group of three (about the experience they had before and the experience they want to have) *as shown in Figure 7
- (4) Making an experience chart from own marks *as shown in Figure 8
- (5) Introducing what you realized from seeing the chart
- (6) Reflect the workshop itself

As a result, the workshop mostly reached its initial goal. First of all, we were able to see the usefulness of each pattern from the Lesson Design Patterns. For all the patterns but one, more than 30% of the participants marked that they have experienced the patterns. The one pattern that had a

mark from only 9% of the participants was <<The First Step to Collaboration>>(no.15). This result shows the situation where teachers have made their lessons alone, as mentioned before in the "INTRODUCTION." Participants had a chance to realize the fact in the workshop so we hope collaboration will happen then on.

This workshop allowed teachers to open their minds to others and deepen their relations by sharing their experiences. As a matter of fact, many comments, such as "I want to share more with other teachers" or "I was able to realize things by sharing." were seen after the workshop. We assume that the pattern helped teachers talk with each other because they were able to share experiences easily based on a common idea on the pattern. Lastly, this workshop became a chance to review the participants' experiences. 70% of the participants answered that they discovered something new and became to think about using it for their next activities. In the reviewing sheet after the workshop, comments such as "I want to try some of the patterns" or "I was able to verbalize my experience and able to set a new goal." were seen.

In this workshop, we were able to learn that our Lesson Design Patterns can be effective in elevating the quality of relationships between teachers as well as a tool to support making an environment for learning.

6. CONCLUSION

Lesson Design Patterns is a good guide for the teachers who are motivated to make their lessons with many ideas. It is not a manual so it enables the teachers to be themselves when designing a new lesson.

Many people from outside of Japan have interest in Japan's various researches of improving lessons. Especially, the 'Lesson Study' which is the principle of teachers learning with each other is a particular Japanese way to train teachers. On the other hand, this research class is limited to looking at the way of teaching only through each lesson. There are less research classes that are connected with other subjects as the grade gets higher. It will be effective to interact using this Lesson Design Pattern and solve these problems utilizing the good part of research learning. This is because by discussing over these patterns, there will be a common recognition among each individuals' lessons of different subjects and will be able to share the tips of how to make one. It is thought that by doing this over and over, a strong connection between the teachers will build up.

21st century is a knowledge based society, where new knowledge, information, and skills become much more important as the base of social activities of all fields. Vast changes in society such as computerization or globalization have exceeded our prediction. It is important for the people who live in such a condition to be positive towards changes, to demonstrate their possibility throughout the process and to be able to make the society and their lives better. The basis of this will be made through school education. Students will become to think how they are going to create the new future and how to make the society and lives better through the school education as they face many changes and to correspond with flexibility and to be sensitive. Also by trying and working with others, they are able to gain the ability of creating a new value (The Central Council for Education's report, 12.2016). It is one of the roles of a teacher to provide this learning environment. Lesson Design Patterns will be helpful both when designing a lesson and building up a team.

In the future, we want to evolve the patterns as we get the feedbacks from the users. As a bigger picture, we hope that this pattern will apply not only in Japan but also throughout the world.

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Appendix

The List of the 39 Patterns

No.1 Paradigm Shift: Step back and look at the bigger picture.

No.2 Produce: Create a time and space to let your curiosity run free.

No.3 Self-Design: Challenge yourself to try new things and communicate openly with yourself and others.

No.4 What Is Important to You: Move the focus from ‘what’ you need to teach and ‘how’, and remember ‘why’ you are teaching it.

No.5 A Bit of Spice: Try changing what you are doing now a little at a time.

No.6 Strategic Production: Organize the resources available to you and plan your lessons in detail.

No.7 Keep Searching: Find interest in everything from your everyday life and use it in your lesson.

No.8 Spreading Excitement: Add in some interesting things that will trigger motivation and have fun.

No.9 Challenge the Dilemma: Realize the dilemma that you are caught in and start creating your lessons from sharing that.

No.10 Diversity: Use a range of materials that approach problem from different perspectives.

No.11 Back and Forth: Step back from your thoughts for a while and try to look at yourself objectively.

No.12 Final Answer?: Ask yourself if this really is the ‘final answer’.

No.13 Spill It Out: Talk yourself through the problem so that people within a 5m radius can hear you.

No.14 Powers of Two: Share your thoughts and develop the lesson with someone who supports you.

No.15 The First Step to Collaboration: Start making a check box of what you need to do to collaborate effectively and try starting from the ones that are easy to do.

No.16 To Be You: Accept the way things are and design a class where everyone can be open with others.

No.17 Acceptance: Take the opportunity to listen without making and judgements.

No.18 Stimulus: Make changes; where to sit, group size and members, or add BGM connected to the class.

No.19 A Clear Goal: Share the purpose and goals of the lesson in detail.

No.20 Confidence: Set the goals lower so that the students will feel motivated.

- No.21 Engagement: Plan lessons that connected to the students' previous knowledge, experience, or interests.
- No.22 Focus on Process: Acknowledge the process, not only the results.
- No.23 Circulation: Design a program where you can do both input and output.
- No.24 Coordinate: Give them the right question.
- No.25 Think: Hand the information or reselect the information beforehand.
- No.26 Going Inside: Set a place to have a conversation as equals, in order for you and the others to express and accept them.
- No.27 Sensitivity: Have as many opportunities as possible for the students to express what they feel.
- No.28 De-frame: Step away from your former practice and try to design a lesson that you think is exciting.
- No.29 Endeavor: Keep your ideals and continue to try and fix towards it.
- No.30 Booster: Since you have little time, set the preparation time short and focus there.
- No.31 Manage: Take in the situation as it is and manage through. Do not forget to focus on your circumstance as you go on.
- No.32 Storage: Develop a number of different resources and ideas ready to address various situations.
- No.33 Trust: Trust your students. If your message is consistent, they will understand it in the end.
- No.34 Express Individual: Take time and think what you really want to do and give it a try.
- No.35 Personal Time: Take time to put aside the things you 'have to do' and make time for yourself.
- No.36 Enjoy Life: Prioritize some time to spend on yourself by taking a break from work or finishing earlier.
- No.37 Ask Yourself: Think "why" you do it, not "how" you do it.
- No.38 Harmony: Share your worries and concerns with each other and be sure to also listen openly to the concerns of others.
- No.39 Metamorphose: Follow your instincts and just try something small at first.