

# Personal Project Management Education using Knowledge Management

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## Abstract

The purpose of this research is to examine an educational technique known as Personal Project Management (PPM) by incorporating the knowledge creation process in Knowledge Management (KM) and the PDCA (Plan, Do, Check and Action) cycle. The PPM method faces challenges as to how to promote the creativity of students across all ages, from elementary education to higher education. The development of an effective PPM educational technique incorporating KM is expected to promote student's creativity. In this research, the practical educational technique of PPM incorporating the PDCA cycle and the educational knowledge base are described. The success of foreign students on the Japanese Language Proficiency Test is presented as an example of the effectiveness of the PPM method.

## Introduction

Institutions of higher education have been making efforts, by devising new methods and techniques, to train students to develop their basic academic skills, abilities to apply their basic knowledge, and mental capacity. However, because of the growing share of high school students going to college alongside changes in college admission processes, not necessarily many students are sufficiently learning basic knowledge or developing their application skills or creativity once college life starts. Though it is important to attain educational goals by improving curricula and educational processes, a significant educational effect may also be gained if students can improve self-management skills for their studies. A transition from passive to active education can be anticipated if personal project management (PPM) to self-studying and a refinement of the so-called PDCA (plan, do, check/control, and action) cycle is introduced.<sup>1</sup> Such action may also lead to the development of knowledge.<sup>2</sup>

This paper examines an education method based on PPM which incorporates knowledge creation techniques from knowledge management (KM) and the PDCA cycle.<sup>3</sup> The results reveal concrete PPM-based educational methods incorporating the PDCA cycle as well as KM for creating educational knowledge. This paper also contrasts the proposed PPM-based education method with the performance of international students on the Japanese Language Proficiency Test and confirms the validity of the proposed method.

## Research Purpose

The purpose of this research is as follows.

- (1) To examine a PPM-based educational method which incorporates the PDCA cycle and a knowledge creation process from knowledge management (KM).
- (2) To investigate the educational effect of the PPM-based educational method using data from the Japanese Language Proficiency Test.

## Examination and Analysis of Higher Education

An important proposal concerning issues in higher education and the essence of authored by Yoko Horn Kawashima, states that it is not the transfer of knowledge, but the development of skills for analyzing existing knowledge, making constructive criticism, and participating in the creation process of new knowledge that are important in developing one’s ability to think. The process of reading and writing provides exposure to new ideas and to the development of abilities for analyzing such ideas. Discussions offer opportunities to express one’s own opinions and respect those of others. Training in these areas helps one to move away from a passive and inactive learning environment, gain a sense of self-existence and self-confidence, and be considerate and responsible to others. However, no clear proposal has been offered regarding a concrete management method of self-studying for the development of one’s ability to think.

This paper takes into account methods of PPM and proposes a concrete educational method which introduces KM to the Plan, Do, Check and Action phases in self-studying. A method of creating educational knowledge through the SECI (Socialization, Externalization, Combination, and Internalization) process is also considered.

### PPM-Based Education for Developing the Ability to Think

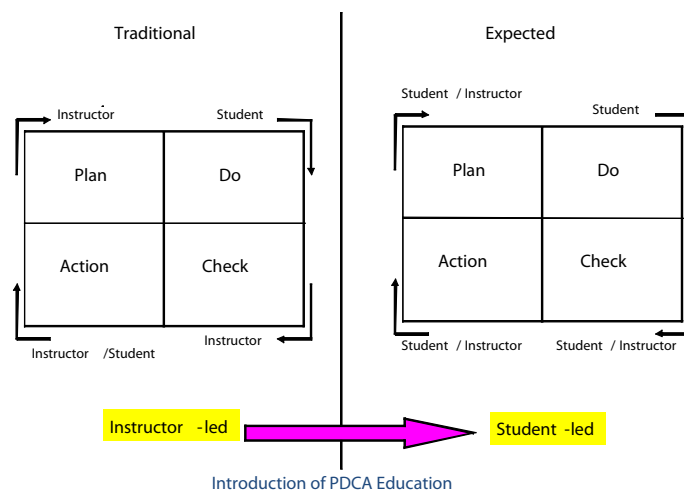
It is anticipated that the use of project management (PM) techniques will lead to efficient management of learning since education involves setting clear goals and achieving them within a given time frame using a limited amount of resources. Project management can be classified generally into social PM, enterprise PM, organized PM, and PPM.<sup>4</sup> This paper proposes a PPM method for developing one’s ability to think, which incorporates the PDCA and SECI cycles, and examines its validity.

Tominaga discusses methods and motivation in PPM.<sup>4</sup> In case of PPM in education, the project manager is one person—the learner—and stakeholders are those who engage in education. The goal is clear: the development of skills or the acquisition of a license or certification. The resource is the learner’s time needed to acquire skills or a license. This paper proposes an educational method based on self-management, namely PPM-based education which incorporates the two processes of SECI and PDCA from KM.

A problem arising from introducing the PDCA cycle to PPM is shown on the left side of Figure 1. In traditional education with the PDCA cycle, the instructor often plays the major role in Plan, Check, and part of Action. However, this paper examines a concrete educational method incorporating PPM in which all phases of the PDCA cycle are led by students, as depicted in the right side of Figure 1.

In traditional education with the PDCA cycle, the Plan and Check phases are led by the instructor and therefore students rarely learn how to apply the acquired knowledge.

Figure 1: Expected Effect of Introducing the PDCA Educational Method

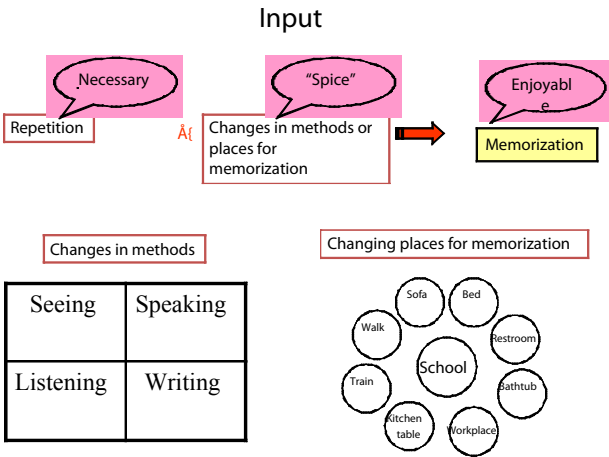


Students receive a considerable amount of knowledge (“input”); however, they do not have many opportunities to use it (“output”). Thus, they rarely become masterful at taking advantage of their knowledge or capable of creat-

ing new knowledge. That is, if a student learns 10 “pieces” of information, exactly the same amount of information remains in his or her brain, but if the student voluntarily proceeds to further stages of the PDCA cycle and increases the “output” activities, those 10 “pieces” of information can grow to 100 “pieces”. This is the process of knowledge creation. People study a language—whether English or Japanese—in order to use the learned knowledge. Knowledge becomes valuable only if it is used. Only when the “input” and “output” processes are balanced is knowledge created.

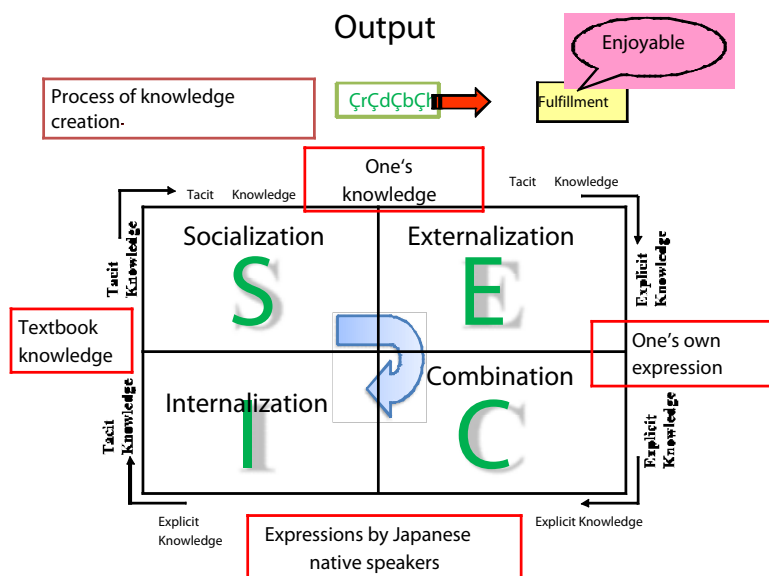
The “input” process involves memorization and cerebration, or thinking. Repeated studying is typically used for memorizing information; however, it is often a monotonous process and students tend to give up mid-way through the process. If study method or places for studying could be modified, the stimuli that students receive would change, making memorization more enjoyable. For example, as shown in Figure 2, the use of different parts of body, such as the eyes for seeing, the mouth for speaking, the ears for listening, and the hand for writing, would make repetitions for memorization less painful. In addition to memorization, training for cerebration is also necessary. Cerebration involves a rapid mental simulation of cause and effect, for example, “If A is true, then B must occur.”<sup>5</sup> Mapping relationships in a mind map that organizes thoughts would make the training of cerebration processes enjoyable. The “output” process involves fulfillment and confirmation. This paper proposes an educational method incorporating the PDCA cycle into each phase of the SECI process as a method of knowledge creation in PPM-based education.

Figure 2: Study Methods and Study Environment



The SECI process consists of four phases—Socialization, Externalization, Combination, and Internalization. Figure 3 shows an example of applying the SECI process to Japanese language learning. The Socialization phase corresponds to the acquisition of textbook knowledge as tacit knowledge. In the Externalization phase, acquired knowledge is used to convey ideas to others in one’s own way, and tacit knowledge becomes explicit knowledge. The Combination phase goes beyond conveying one’s ideas and involves learning expressions used by the Japanese, and explicit knowledge is converted to another explicit knowledge. Internalization is a phase in which one converts explicit knowledge to tacit knowledge by confirming, with textbooks, mistakes in expressions made by the Japanese and learning correct Japanese language in a scientific manner.

Figure 3: Application of the SECI process to Japanese Language Learning



### Present Simulation of the Japanese Language Proficiency Test

Passing rates of the Japanese Language Proficiency Test are shown in Table 1.6 The passing rate for Level1 (the most difficult grade) is the lowest, at 33.4% for test takers in Japan and 25.7% for those residing in other countries. An investigation of the data reveals that test takers in Japan, on average, have a higher passing rate than those in other countries. Also, test takers in Japan outperform test takers in other countries with respect to the average score for the listening comprehension section, especially at Levels 1 and 2. While recognizing differences in the ability to learn a language at the individual level, this paper assumes that the cause of the differences in the passing rate or average score in the Japanese Language Proficiency Test is found in the process of language learning or knowledge creation and performs an analysis on the basis of this assumption.

Table1: Passing Rates on the Japanese Language Proficiency Test6

Test takers are considered to have passed if:  
 Level 1 total score is 70 % or higher  
 Levels 2 through 4 total score is 60% or higher.

	Level	Japan	Other countries
Passing rate (%)	Level 1	33.4	25.7
	Level 2	37.4	26.9
	Level 3	55.1	47.4
	Level 4	68.9	51.9
	All	39.7	35.1

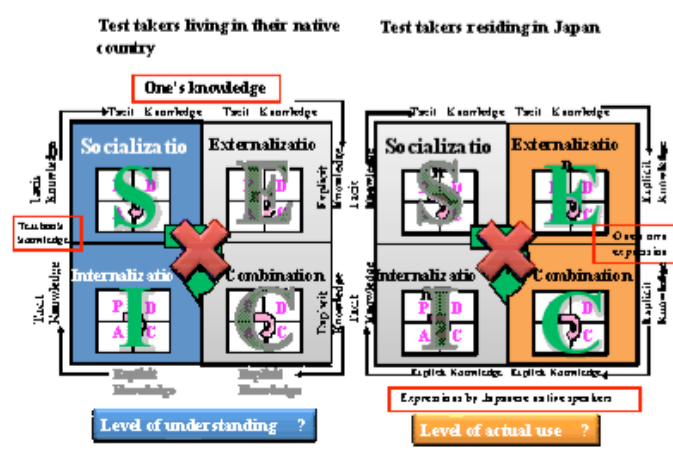
Passing rate Japan > Other countries

## Investigation of Education Based on PPM Incorporating KM

This section investigates the effectiveness of education based on PPM, using the results of the Japanese Language Proficiency Test and a survey of Japanese language learners based in Japan as well as those based in their native country.

With regards to people living in their native country, the survey result reveals that learn Japanese mainly through self-studying using learning materials such as textbooks, magazines, and dictionaries. This result corresponds to the Socialization and Internalization phases of the SECI process, skipping the Externalization and Combination phases, as depicted in the left side of Figure 4. Since there are fewer opportunities to change tacit knowledge to explicit knowledge after absorbing information from textbooks, there are few chances to use the information acquired and create new knowledge, which would lead to little increase in overall knowledge. When learners have questions, they resolve the situation usually by looking up the answers in textbooks or dictionaries. Thus, the basics (e.g., words and grammar) are their strength, and they are better at reading and writing rather than speaking and listening. In addition, they could be considered to have better logical understanding.

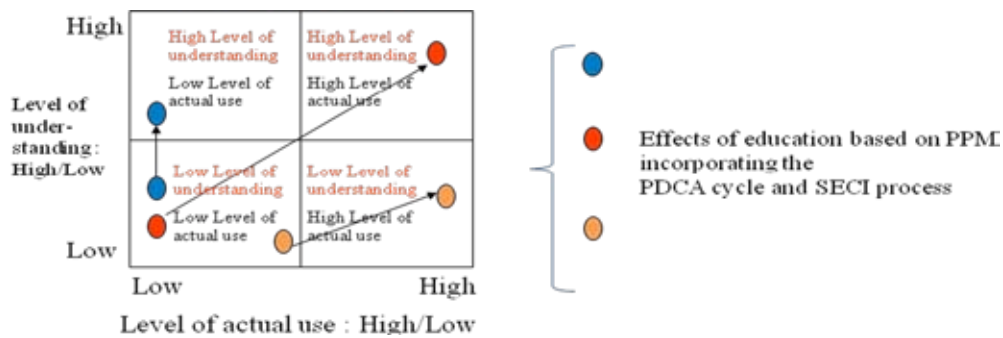
Figure 4: Comparison of the Survey Results



On the other hand, people living in Japan learn Japanese usually by taking advantage of practical learning opportunities in their daily lives such as conversations, shopping, and dealing with paperwork. As shown in the right side of Figure 4, in terms of the SECI process, they skip the two phases of Socialization and Internalization and mainly focus on the Externalization and Combination phases. They have less basic knowledge acquired from textbooks, and thus there are cases in which their tacit knowledge is not well externalized. In many cases explicit knowledge is exchanged with other explicit knowledge in daily conversations in which one starts with one's own expression and move it closer to expressions by native speakers through imitation. These learners certainly can improve their practical language skills and develop listening and speaking capabilities quicker than those who live in their country; however, the ability of those living in Japan to create new knowledge would be considered lower because they lack basic knowledge learned from textbooks. Moreover, they face difficulties in improving the quality of their knowledge because they cannot develop the ability to create new knowledge on their own through imitation.

The expected effect of PPM-based education discussed in this paper is shown in Figure 5. Self-studying aimed at acquiring knowledge improves the ability to understand but leads to less practicability. The creation of knowledge occurs mainly in the Socialization and Internalization processes. Conversely, studying that places more focus on practicability rather than the acquisition of knowledge leads to less understanding of knowledge, and knowledge creation mainly occurs in the Externalization and Combination phases. Utilizing the PDCA and SECI cycles well would lead to improvements in application skills and understanding, which would create superior knowledge in terms of both quality and quantity. In learning the Japanese language, if location advantages of studying in Japan and the study of basic knowledge were combined well, greater educational effects would be realized through PPM-based learning incorporating the PDCA cycle and SECI process.

Figure 5: Expected Effects of Education Based on PPM Incorporating KM



### Conclusions

This paper proposes a PPM-based learning method incorporating the PDCA cycle and the knowledge creation process from KM. An analysis of this method using data from the Japanese Language Proficiency Test as well as the result of a learner survey confirms the validity of the PPM-based learning method.

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