Establishing a Sustainable Learning Support Organization and the Practice of Peer Tutoring Centering on College Students*

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Recently, the severe disparity between the academic abilities demanded by higher education and the basic academic abilities that students actually possess has come to be regarded as a major problem. This situation is increasing the need for learning support for students outside of a formal classroom setting. As a result, both in Japan and abroad, the practice of peer tutoring has been garnering considerable attention. This study involved the establishment of a learning support organization, mainly managed by students themselves, called the "Meta Learning Lab." This space was to be devoted to peer tutoring activities geared towards meta-learning ("learning how to learn") by students. To that end, at the preparatory stage we implemented tutor training and designed the learning space, and then implemented the actual peer tutoring. The tutors were encouraged not to provide the answers to problems, but instead, by questioning the learners, seek to facilitate discovery by the learners of problems with their own methods of learning. The result of this tutoring, as the learners themselves testified, was heightened meta-cognition of their own learning methods on the part of the students, as well as enhancement of their desire to learn.

Key words: learning support organization, learner-centered, peer tutoring, meta learning, extracurricular education, higher education

1. INTRODUCTION

Japanese society today is increasingly characterized by a graying population with fewer children being born, as well as a decline in the overall national population. During the 2008 academic year, 55% of all graduating high school students went on to a university or junior college, reflecting the fact that in recent years the percentage of students going on to higher education has been rising. Consequently, higher education in Japan is moving towards the "universal stage" (Trow 1961) in which more than half the population of 18-year-olds is still in school. In addition, the rate of acceptance for aspirants who want to enter a university or junior college has increased to 92%, so that nearly all these aspirants are in fact accepted to a university. Indeed, an "era in which everyone can attend university" seems to be arriving (Central Council for Education 2008).

Accompanying such social conditions, institutions of higher education have witnessed a growing gap between the abilities required of learners at the college level and the basic abilities of their students. In response to this question of academic abilities, institutions of higher learning are being urged to take measures to maintain, enhance and ensure quality in higher education on a national level. The education being carried out today at institutions of higher learning should be able to provide quality learning opportunities that fit the individual needs of large numbers of students with diverse academic abilities.

Regarding institutions of higher learning in the United States, a country which reached the "universal stage" about 40 years prior to Japan, many universities have established learning centers as mechanisms for providing education outside of classes in order to supplement and promote understanding within formal classes. The United States saw the establishment of writing centers for assistance in text comprehension and report writing when rates of

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advancement to the college level broke the 50% mark in 1965. Then again, when the rate broke the 60% level in the 1990s, universities started establishing learning centers in order to provide assistance in understanding and skill acquisition related to science and mathematics, as well as learning methods (Mina 2011a).

Moreover, in the United States there are academic bodies, such as the CRLA (College Reading & Learning Association) and NCLCA (National College Learning Center Association), dedicated to enhancing the quality of the activities and organization of these centers. In order to improve the quality of the tutors who instruct the tutees who visit the centers, the CRLA has established a system which certifies that the tutor training carried out by various universities fulfills certain prerequisites. Some 850 institutions in five countries, primarily the United States, have received such certification (Suzuki et al. 2011).

Tutors are undergraduates or graduate students who function as learning coaches in certain subject areas. They are not intended to be simply the providers of knowledge who teach students the right answers, but instead hopefully their presence will serve to promote consciousness among learners concerning their own methods of learning. Furthermore, the tutee is a learner who receives individual guidance from a tutor. The NCLCA is the largest academic association in the United States involved with learning centers. Educators from around the country involved with operating learning centers every year participate in its annual conference.

The authors of this paper in 2010 observed at first hand the tutor system at the Student Learning Center (SLC) at Texas A&M University, which had received the NCLCA’s 2008 Outstanding Learning Center Award and is CRLA-certified. The tutor system there is an example of “peer tutoring” in which student tutors teach student tutees.

At the Language Learning Center of Meio University, the only CRLA-accredited learning center in Japan, tutoring is defined as “responding to student problems or questions by providing guidance on how to locate advice or answers.” (Tsukayama 2011)

A tutee who received this kind of tutoring characterized it as follows: She (authors’ note: the tutor) taught me how I learn and the best way to study,” and “The learning theories have helped in my other classes.” These opinions reveal that such tutoring was not confined to the scope of providing the right answers to problems in individual classes, but also involved learning about learning methods (Student Learning Center, Texas A&M University 2010).

Learning how to learn amounts to instilling in learners the consciousness of learning about learning (meta-learning) (Mina 2011b). The Student Learning Center at Texas A&M University, for example, is conducting lectures for new students so that they will be able to gain a deeper understanding of learning theories related to university learning, as well as their practical applications. Credits from these lectures are recognized by the university, while the text by Sellers et al. (2010) used in the course points out just how important learning how to learn really is.

On the other hand, although in Japan we can find works which provide detailed learning methods based on knowledge gained from the learning sciences (for example, Tamblin and Ward (2006), etc.), when it comes to learning how to learn in regards to instruction in regular university classes or texts about the subject, the opportunities are meager. Nevertheless, Japanese higher education too has been experimenting with peer learning both for regular classes and on an extracurricular basis.

In regards to regular instruction, Sadoshima (2009), for example, developed a curriculum in which graduate tutors provide individual guidance to undergraduates in an academic writing class especially designed for freshmen. In addition, according to Sadoshima (2012), some of the tutors for the aforementioned instruction were simultaneously serving as tutors at the writing center affiliated with the university. Among other things, significantly it has also become clear that in terms of the effects from peer guidance in report writing, the learners were able to acquire the ability to critically evaluate texts (Oshima 2005). Furthermore, the evaluation marks that the learners received, in terms of compactness and precision, composition, content and overall marks, etc., increased significantly following the peer guidance as compared to before (Sadoshima et al. 2012).

As for extracurricular tutoring, Tsukayama (2012) describes how smooth collaboration between learning activities in official classes and outside these classes is being achieved by providing a curriculum design for language class assignments students work on at the learning center. In addition, we are witnessing great diversity in terms of the implementation paradigms
for tutoring at the higher education level, including experiments in recruiting local citizens in place of students (Morikoshi and Bannai 2009), practice with university students providing guidance to elementary school students (Maeshiro and Nishi 2009), practice with Japanese tutors providing guidance to foreign student tutees (Ito 2007), etc. Nevertheless, most of these attempts have focused on guidance for specified courses, assisting students adjust to school, etc., and there have been few instances in which the learning guidance has centered on learning methods for education outside of the classroom. In recent years, we have seen major changes in higher education not just in terms of learning methods, but also regarding learning spaces such as classrooms and libraries.

In particular, attracting considerable attention has been the shift from traditional-type segmented small spaces into learning commons that loosely link various constituent elements with diverse functions providing academic support, etc., including individual learning spaces, cooperative learning spaces, meeting spaces, learning centers, etc. (Kawanishi 2010).

At University A, based on knowledge gained from learning sciences research, efforts are being made to design learning environments geared to commonality and sociability in learning (Mima 2010), and consequently all of its school buildings have large open spaces designated as learning commons. Here, by setting aside an environment conducive to easy access among students and between students and teachers for learning and research activities, the university is attempting to promote collaborative learning and research. In recent years, due to the holding of many self-managed learning assistance activities involving small numbers, such as peer tutoring, (for example as described in Nemoto et al. 2011), the learning commons at University A has become quite active. Thus, it has become necessary to design learning assistance organizations which “make access easy for tutoring activities” and “instill a ‘learning how to learn’ consciousness in tutors and tutees.”

Taking all the above into account, we can say that learning how to learn as currently being sought in forums of higher learning will be difficult to achieve within the parameters of the existing regular curriculum within Japan. Furthermore, although responses need to be tailored to the circumstances of individual students, there are limits to the kinds of individual responses which can be made under a vertically-segmented model centered on classroom instruction and teachers (Takahashi and Oda 2012).

Consequently, in aiming for student-centered extracurricular learning assistance activities with learning environments to match, it is imperative to create and implement frameworks for such activities. With that in mind, for this research the authors have, under the auspices of University A and with the goal of putting to use knowledge and techniques related to “learning how to learn” for students, established a learning assistance organization and put into practice learning support. This does not imply the uncritical importation of actual examples from outside the university, including from overseas. Rather these borrowings must be in concert with the purpose, significance, mission, etc. of University A, as we attempt to adopt previously existing model cases through optimization.

Furthermore, for this research, in cases where a tutor brings to bear knowledge and techniques concerning “learning how to learn” and thereby resolve problems the tutee faces in learning, or in cases where carrying out learning assistance activities in an accessible environment yields meaningful results, we can say that the learning support organization has proven effective.

2. FORMATION OF LEARNING SUPPORT ORGANIZATIONS AND TRAINING OF PERSONNEL

2.1. Survey on the need for extra-curricular learning support organizations

University A is a regional public university which has two departments within its School of Information Sciences. Its entrance examination paradigm includes general selection (through the National Center Test for University Admissions followed by an individual university’s exam), recommendations (designated schools, regional framework, national framework), AO (Admissions Office applications), etc., which results in diversity in terms of university entrance goals and circumstances regarding readiness to learn. (Benesse Corporation 2012). The deviation value for University A is 48 according to the difficulty level of the Shinken Cram School mock test, which indicates a 60% probability for passing its entrance exam. In regards to the fostering of talent, since University A’s students are generally trying to learn about information sciences for application in the fields of the humanities, social sciences or the environment, the goal is to have them express and
share their thoughts not just in a conventional classroom lecture environment, but also in the community of their teachers and student peers.

For that reason, in addition to studying mathematics and computer science, they also need to study cognitive psychology and other liberal arts courses. In addition, the university has established distinctive educational programs in the areas of English communications, academic writing, project learning, etc. Among them, project learning has been selected by the Ministry of Education, Culture, Sports, Science and Technology as a Support Program for Distinctive University Education (for years 2006 to 2008). In addition, the university has established distinctive educational programs in the areas of English communications, project learning, etc.

University A believes that in order to put in place the constituent elements for the type of education required to prepare students to become the truly talented individuals it envisages students must acquire five kinds of literacy. These are Japanese, English, mathematics, computer programming and information design (Mima 2011b). They have been stipulated by the Meta-Learning Center, a faculty organization, the goal of which is educational improvement and promotion at University A.

Along with the establishment of an extracurricular learning support organization, the university conducted a survey on the things needed in extra-curricular education to foster Japanese language ability—one of the five kinds of literacy. It is intended for students taking the course “Science and Technology Literacy,” a compulsory course for freshmen in order to foster their talents for comprehending and producing texts.

This survey was conducted among 236 undergraduate students (234 freshmen and 2 sophomores) in July 2011 (236 valid responses). Respondents chose one of the four following answers: 1. completely disagree, 2. somewhat disagree, 3. somewhat agree, or 4. very much agree. The results showed that 192 of the students surveyed (81%) would take advantage of an extracurricular program if it was available (students who chose response 3 or response 4).

These results admittedly apply only to one of the five kinds of literacy in question, namely the Japanese language. Students at University A clearly feel that instruction in the regular curriculum alone does not provide them with the skill set they need to accomplish what is required of them in this area. The authors have routinely heard in reports and discussions from teachers responsible for instruction in the other four areas of literacy that their situation is comparable to these results. Consequently, the learning support organizations established through this research aim to implement extracurricular educational programs related to these five areas of literacy.

2.2. Meta Learning Lab

2.2.1. Student-centered learning support organizations

The Meta Learning Lab (hereafter “MLL”) is the name for a student-centered learning support organization and its activities center. The Meta Learning Center, a faculty organization, manages and operates the MLL. As of February 2012, the MLL team consisted of 13 student tutors, three Meta Learning Center teachers, and one staff member. The teachers there monitor the tutoring activities, conduct training for the tutors, select the students who have come looking for a tutor, and formulate and support MLL operational policies. The staff member is responsible for making salary payments to the tutors, purchasing supplies, etc., maintaining records of tutoring activities and so on. Furthermore, since the tutors are publicly recruited from the overall student body, including graduate students, the previously mentioned teachers also selected the tutors on the basis of essays and oral exams.

Along with tutors who are at the undergraduate senior class level or above and are engaged in tutoring, “junior tutors” from the ranks of first through third year undergraduates have also been hired. Junior tutors are expected to engage in legitimate peripheral participation (LPP), including MLL operations and tutoring activities by the tutor, and they must acquire the necessary knowledge, technical skills and attitude.
A distinctive characteristic of the MLL is the comfortable collaboration involving not just the students and teachers, but also multiple departments of the university’s Secretariat (Library, Facilities, Student Services). In this regard, Oyama (2003) proposed that since universities are meant to be collaborative bodies for learning, the forms of student assistance they should adopt in the future should “organically connect the three areas of teaching activities, welfare and guidance activities, and student activities, so that there will be an integrated extracurricular university education system.” Referencing Oyama (2003), the conceptual figure below for the university education system illustrates MLL’s status and functions (Fig. 2).

In addition, Oyama (2003) argued as follows: “University education should be conceptualized in such a way that these activities which exist in overlapping or intermediary areas should rather be at the core.” (Authors’ note: The overlapping section in (b) includes learning support at MLL.)

### 2.2.2. Learning assistance spaces

At University A an entire five-story school building has been allotted for use as a mammoth learning commons. Within this freely accessible learning commons, in one corner MLL has established a learning spot for students known as the “Studio.” (Photo 1) The Studio is intended as a learning locus for undergraduate students, and MLL activities conducted in the Studio are readily visible to students and teachers who traverse the Studio space.

Concerning the theoretical background to this kind of learning space, Mima (2008) proposed a “Collaborative Meta Cognition Model,” representing expansion of the conventional Meta Cognition Model that consists of monitoring and controls by and for individuals (Fig. 3). A collaborative meta cognition model would have the monitoring and control handled by others, so that there would inevitably arise a need for communication between the individual and other persons, thereby further promoting monitoring and control. Within open spaces such as are found at University A, interaction is daily on “display,” not just for tutors and tutees engaged in MLL learning support practice, but also for other students and teachers. This, in turn, hopefully will serve to provide constant cooperative monitoring and cooperative control for MLL activities, as it serves as a practice collaborative body within University A.

Moreover, access difficulties arising from the access paradigm and transparency for the practice community will undoubtedly affect the reproduction and continuity of the community (Lave and Wenger 1991). For that reason, it is believed that the establishment of the MLL within the Studio might facilitate deeper understanding and analysis of practice content among students and faculty members, and reduce psychological...
barriers when individuals access MLL.

In addition, even when MLL activities are not being carried out, the content of the post-its, whiteboards, etc. used during the tutoring will be available for "viewing" as externalized thought products (inscriptions, Latour 1987). The upshot is that their viewing may not be limited to the "moment in time" of the tutoring, and their vestiges and historicity may remain for "viewing." As far as inscriptions are concerned, Mima (2010) has pointed out: "These play an important role as resources for collaborative monitoring and collaborative control within collaborative meta cognition."

2.2.3. Activity period and budget

As MLL’s scheduled start of full-scale operations in April 2012 approached, trial activities commenced from November 2011. The budget for these trials was secured from competitive funds within the school and used for that purpose. Most of the budget went for office furnishings (movable tables, chairs, bookcases, lockers, etc.), supplies (reference books, software, etc. for tutoring use), and compensation for the tutors.

2.3. Content and methodology of tutor training

The fostering of tutors requires professional training in tutoring. This training amounts to verification that before tutors are actually sent out to tutor they have understood the meaning and significance, techniques, theoretical background, etc. of tutoring. As part of this research, we conducted workshop-type practical training of tutors. The hands-on training in experiential learning these workshops provided was premised on the belief that simply providing knowledge in a classroom setting about the activities required of a tutor would prove inadequate. Eleven tutors participated in the workshop, including one freshman, two sophomores, five juniors, one senior and two first-year graduate students.

In accordance with the basic plan, the workshops consisted of an orientation, multiple working sessions, and a general review. It was designed so that individual reviews were also held for each of the working sessions, and a great deal of reflection was encouraged. Below we show the dates for each of the workshop sessions (Training 1–3).

Training 1 included brainstorming as to behaviors expected of a tutor as well as those frowned upon; Training 2 involved role playing with case-by-case dialog practice involving tutors and tutees; and, Training 3 involved the designs of the various documents used in the tutoring (Table 1).

The training was primarily of a practical exercise type with three different teachers acting as facilitators for each of the sessions. In addition, at the start of the training educational practice research agreements were received from the tutors, and at the end they filled out a questionnaire. Below we explain the content of the training.

2.3.1. Orientation and ice-breaking

In the orientation, after the tutors and facilitators made self-introductions, they verified and shared concerning the flow of the training, its objectives and the ground rules. The ground rules are the participation rules that all the participants pledged to abide by when participating at the workshops.

During the training workshop, with the goals of

<table>
<thead>
<tr>
<th>Theme</th>
<th>Content</th>
<th>Tasks and Goals</th>
<th>Time (min)</th>
<th>Role (Teacher/Mentor)</th>
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<tbody>
<tr>
<td>Introduction</td>
<td>Understanding</td>
<td>Orientation, Controversial issues</td>
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<td>Preparing of agenda, VS rules, various versions of printed materials, which can be</td>
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<td>Introduction to brainstorming, Controversial issues</td>
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<td>2. Original content and methodology</td>
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enhancing a consciousness of solidarity among the tutors and heightening reciprocity, the following rules were adopted. Moreover, it was confirmed that all members were expected to abide by them. The ground rules were as stated below.

- Tutors will actively participate in the training.
- Tutors will consider each other as "colleagues." In order that in the future they might help each other while tutoring, during the training they will strive to cultivate a collegial spirit amongst themselves.
- Constructive criticism is vital. However, always speak with deliberation in the spirit of "for the good of the other fellow."
- The individual speaking and the individual spoken to should clearly differentiate between the opinion and the person’s status. We aim for an unrestrained exchange of ideas.
- Speak without considering the other person’s year in school. Speak your mind without worrying about what year the other person is in school.
- Be conscious that managing one’s time is the basis for self-control.

The ice-breaking process involved setting up the learning space which was to be the location for the tutoring activities (Photo 2). Since this was first occasion in which the tutors would have an activity together, it was hoped that by engaging in physical activity involving the moving of objects as a form of ice-breaking, they would naturally engage in conversation, and the result would be the cultivation of a spirit of group solidarity.

Actually, through discussion among themselves the tutors decided where the desks, chairs, whiteboards, etc. they would use in their tutoring should be positioned, and thus designed the learning space. Incidentally, the furniture used at that time was just for temporary use during the training, and we have since purchased and are now using the new furniture shown in Photo 1.

2.3.2. Training 1: Brainstorming concerning the "dos" and "don’ts" for tutors

During Training 1 we used as a reference part of the training content used at Texas A&M University, a CRLA-accredited school, in order to get the tutors themselves to consider what things they needed to do and what things they would be prohibited from doing during tutoring (Suzuki et al. 2011).

First of all, a facilitator displayed two printed A4 sheets of paper on a whiteboard, respectively titled “Do’s” and “Don’ts” (Photo 3). The tutors then each wrote down on post-its their various thoughts considering the meaning and significance, questions, specific behaviors, remarks, etc., one to each post-it, until they could not think of any more comments. These were then pasted on the sheets with the key words on them. After they were pasted on, all of the participants gathered in front of the whiteboard, and while confirming and sharing the content concerning the keywords written on the post-its, discussed the points of similarities and differences in the views of the tutors.

These discussions produced some opinions based on deep observation, such as the comments that there should be some switching of items contained in the CRLA classifications of “dos” and “don’ts,” and that some things could not be simply labeled as “dos” or “don’ts.” Table 2 shows the key words and some of the comments the tutors made on the post-its.

2.3.3. Training 2: Role playing responding to the tutee

During Training 2, tutors were encouraged to pay attention to methods for responding to various forms of tutee behavior. In order to give this more thought, groups composed of two to three members engaged in role playing. Here the
Table 2. Post-it comments concerning keywords

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Post-it comments</th>
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<tbody>
<tr>
<td>Silence permitted.</td>
<td><em>Dos</em></td>
</tr>
<tr>
<td>&quot;Dos&quot;</td>
<td>- Take time to think. Sometimes a ready answer won’t come.</td>
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<tr>
<td></td>
<td>- You should permit silence while thinking.</td>
</tr>
<tr>
<td></td>
<td><em>Don’ts</em></td>
</tr>
<tr>
<td></td>
<td>When tutee is not concentrating, silence should not be permitted.</td>
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<tr>
<td>Judging abilities by external appearance [Don’ts]</td>
<td><em>Don’ts</em></td>
</tr>
<tr>
<td></td>
<td>You can’t judge a person by his/her exterior, but have to discern what’s inside.</td>
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<tr>
<td>Honesty &quot;Dos&quot;</td>
<td><em>Dos</em></td>
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<tr>
<td></td>
<td>If you don’t know, admit it. Then say, &quot;Let’s consider this together.&quot;</td>
</tr>
<tr>
<td>Substituting for the teacher [Don’ts]</td>
<td><em>Don’ts</em></td>
</tr>
<tr>
<td></td>
<td>Always remember: A tutor is not a teacher; he/she is a student.</td>
</tr>
<tr>
<td>Introduction of resolution strategies learned in high-level classes</td>
<td><em>Dos</em></td>
</tr>
<tr>
<td>[Don’ts]</td>
<td>- You can utilize such strategies if the tutee so desires or if they can really be taught.</td>
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<td></td>
<td>- If taught these concepts, a tutee should be capable of understanding them.</td>
</tr>
<tr>
<td></td>
<td><em>Don’ts</em></td>
</tr>
<tr>
<td></td>
<td>- Do not attempt to force feed something the tutee has not yet learned. (e.g. A freshmen will not have a clue if told, &quot;A Laplace transform will work here.&quot;)</td>
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<tr>
<td></td>
<td>- Even though the tutee does not understand, you might think, “I could successfully teach him/her.”</td>
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<tr>
<td>Knowledge provider &quot;Don’ts&quot;</td>
<td><em>Dos</em></td>
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<td></td>
<td>- It is necessary for you to provide the methods and ways of thinking which will lead to a solution.</td>
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<tr>
<td></td>
<td><em>Don’ts</em></td>
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<tr>
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<td>- Don’t try to provide the knowledge you possess yourself as is. Instead, show methods for knowing it.</td>
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<tr>
<td></td>
<td>- You shouldn’t teach the tutee answers, answer without making the tutee think for himself/herself, or provide him/her with copies of source codes.</td>
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</table>

facilitator established four distinctive cases the tutors had to be prepared to respond to (Fig. 4). Each of the four groups were told to choose at their own discretion one of the cases, decide on who would play the tutor and who would play the tutee, and then engage in role playing (Photo 4).

Since there were no pre-decided scenarios for the four cases, the ways that these issues were established in the training can be seen as requiring the same kind of instant judgments as would be required during actual tutoring. Furthermore, the participants would also be required to apply what they studied or became aware of in Training 1.

As a practical example, below we show the role-playing protocol for a case in which a "tutee who knows more than you do arrives." Still, since emphasis must be given to the tutors themselves reviewing the protocols and engaging in monitoring, here we are engaged in protocol analysis rather than conversation analysis. Photo 4 shows tutors engaged in actual role playing. On the far side right is the person playing the tutor (hereafter "K") and on the left is the person playing the tutee (F).

K : I am K, your tutor. Nice to meet you.
F : I’m F. Thank you for helping me.
F : Today I’d like to discuss databases a bit.
You see, I came because there are some things I don’t understand very well.
K : Fine.
F : To begin with, now I’m using MySQL, and...
K : Right.
F : Well, they’re two servers, but right now I’m having problems with the replication methods.
K: OK (jots down a memo while nodding)
F: Briefly, I ran into some trouble concerning
synchronization, ah, ... you see I was
worried about how many milliseconds to set
the data synchronization intervals between
the two servers. And, well with the two
servers on the same segment of the
network, communications was not very... [it
was] a bit... ah, unstable. Well the network
itself is TCP/IP, and the current socket is
entirely right, but...
K: (cutting in) If that's the case, well, it would
seem to require advice on things like the
relationship between a database or MySQL
and the server, wouldn't it? \(^1\)
F: Yes, it's getting into (discussion of course
content) my advanced course on information
networks.
K: Well then, when it comes to discussion of
databases, I'm a bit out of my league, since
I don't have enough knowledge in that
area \(^2\)
F: Ahh, you mean you're not familiar with this
stuff?
K: Well, that's an area I haven't studied
enough about. \(^3\)
F: I see... .
K: But, you see, among our tutors here we
have someone who is a bit more
knowledgeable about databases.
F: Good.
K: Since that guy is scheduled to come here on
Friday of next week during the fifth
period...
F: (Nods while jotting down a memo).
K: I think that perhaps the best thing to do
would be for you to ask this person, since
he can teach you a bit more about ways to
solve the problem. \(^4\)
F: No, that's a bit... You see the deadline for
the assignment is today at 6:00 p.m. !
K: (thinking about it) Well, if that's the case,
as for what we can do today, since there is
a lot that I don't understand in this area, if
you want to work with me, we could take a
look at things together, and perhaps we can
figure something out. \(^5\) Or perhaps, a
teacher, I could find a teacher who is
knowledgeable about databases, and you
could go to that teacher to ask about it. I
think that would probably make things
easier to understand. \(^6\) I'm sorry but will
that do for you? \(^7\)
F: OK, I see.

K: Fine.
(Note: the parentheses within the protocol, as
well as the underlining and numbers are by the
authors.)

We give an overview of this protocol below. It
involves a case in which a tutee who has a problem
just before a deadline suddenly visits a tutor who
has less knowledge about networks and databases
than he does. In addition, the tutor acts
exaggeratedly surprised that he has less
knowledge than does the tutee.

However, as the underlining shows, the tutor
does not give up in his efforts at tutoring, nor
pretend he knows what he doesn't. Instead, we
can see that he takes the following steps, among
others, from a stance obviously replete with a
desire to assist the tutee in learning: (1) confirms
the question of the tutee; (2) confirms his own
level of knowledge; (3) proposes alternative
learning strategies; and, (4) confirms the strategy
to be pursued from here on out.

After the role playing was finished, rather than
making evaluation comments, the facilitator asked
the tutors about what had caught their attention
and what they had felt. The underlined and
numbered parts in the text above were positively
evaluated. In addition, through this role playing,
we were able to propose a tangible action plan
appropriate for tutoring, involving such things as:
"realizing in which area of study and for which
classes they could provide assistance" and
"grasping how they might jointly take turns."

2.3.4. Training 3: Designing tutoring documents

In Training 3, after clarifying which paperwork
would be required for tutoring records and
appointments use for each group, we let the tutors
carry out planning for the designs of those
documents. The reason for that is that we wanted
them to take into consideration information
regarding tutoring when deciding what kinds of
recording and sharing would be most effective for
tutoring. Consequently, while Training 3 was being
conducted, the teachers queried the tutors on
what kinds of information would be meaningful to
save, what was the significance of sharing
information among tutors or between tutors and
teachers, and so on. The tutors engaged in
discussion in response to these questions from the
teachers, and then produced their own prototypes
for the documents that they themselves would use.

For the designing of these documents, the
tutors used paper and color markers distributed by the teachers. There were three kinds of documents: a form for the tutor to report the results of the tutoring, a form for the tutee to report the results of the tutoring, and the appointments ledger. Photo 5 shows a draft of a results report written by a tutee.

2.3.5 General review and questionnaire
At the end of the training session, there was a general review of the training, and a questionnaire survey was administered to the tutors in order to gauge their feelings regarding the workshop.

Within the overall review, there were the following impressions concerning participation: "It was great to be able to talk with other tutors face-to-face" and "The training involving group work really gave me a vivid image of what tutoring is all about." In addition, there were also remarks directly concerning the participation-type learning methods of the workshops themselves, such as: "It was valuable to have the experience of the workshop method" and "I would like to see tutors themselves plan workshop-type training."

In other words, among other things, we could find observations about the learning methods themselves. Thereby, the tutors indicated that they had attained meta-recognition of their own activities. Furthermore, we also saw statements regarding continuity for the learning environment, including "It is important to continue the tutoring system during the next academic year."

The questionnaire had a multiple choice, five-option format (1. never true, 2. usually not true, 3. neither one nor the other, 4) usually true, 5. always true. There were ten respondents. Below we show the survey categories and the average values for the answers (within the parentheses).

"Did it become clear to you what kind of tutoring would be best to pursue?" (4.4)

"In the future, do you believe that you are likely to engage in tutoring in the capacity of a tutor or through related activities?" (4.5)

"In the future, do you believe that in the capacity of a tutor you will be able to cooperate with colleagues and teachers?" (4.5)

Considering that there are high average values for all of these categories, we can conclude that among the tutors the degree of understanding and feelings of self-efficacy increased. In addition, their free comments concerning the training included the following: "I got to know opinions and ways of thinking that I wouldn't have realized on my own." "The 'dos' and 'don'ts' were clarified, and I got to know about how to serve the tutees. And through the role playing I got to see ways of responding to various conditions."

Of course, it is not necessary to point out that this training at heart involves the acquisition of core knowledge and skills. However, since the training this time focused on group work and consultations among the tutors themselves, we believe that this resulted in readiness for acquiring these prerequisites for effective tutoring. Actually, this can be fully comprehended from the declaration of the overall review, as well as the results of the questionnaire.

Moreover, it seems fair to conclude that lessons about the meaning and significance, techniques, and theoretical background to tutoring were limited not just to the training, but were acquired in such a way as to be able to apply to tutoring activities actually carried out on a daily basis, co-study with tutor colleagues, continuous training, etc.

3. TEST PRACTICE FOR PEER TUTORING

With full-scale operations scheduled to begin from April 2012, small-scale trial peer tutoring was carried out from November 2011 through January 2012. In this section we discuss the objectives, operational methods and actual results of this tutoring.

3.1 Hypothetical study

Peer tutoring engenders learning for the tutor who is on the teaching side, as well as for the tutee. We speculate below as to what can be learned from MLL tutoring. First of all, the tutees can acquire consciousness as to more effective and efficient learning methods regarding the content of what they learn in class, etc. In addition, due to the transparency and ease-of-access of the MLL learning space, it is easier for students to become aware of their need
for learning support. Next, through their give-and-take interaction with the tutees, the tutors can carry out collaborative monitoring and collaborative control concerning their own learning methods, and thereby discover better teaching methods as well as better learning methods for themselves. The case study shown in section 3.4 is a report concerning learning on the tutee side.

3.2. Tutoring procedures

One session of tutoring is expected to last 60 minutes, with the basic form being one tutor with one tutee. However, since the tutors concerned have nearly zero practical experience in tutoring, and because it was trial practice, we concluded that with the consent of both the tutor and the tutee, the tutoring paradigm should be modified to one flexible for adaptation to each session. Specifically, there might be cases in which there are multiple tutors assigned for one tutee, there are both multiple tutees and multiple tutors, and so on. Moreover, for all of the sessions one or two teachers participate as mentors, and when necessary can assist in the tutoring process. Actually, there were no instances in which a teacher actually instructed a tutee. The procedures for implementation of the tutoring are as described below.

1. Tutee makes appointment (by writing desired course name and time in appointment register at the entrance to the Lab, but in principle cannot select name of tutor).
2. Tutor and tutee arrive at the Lab.
3. Tutoring starts (lasts about 60 minutes).
4. After concluding the session, the tutor and tutee respectively fill in reports.
5. The tutor collates the documents, and submits them to the designated location.
6. Teachers verify the contents, and if there are any problems they confirm these directly with the tutor and tutee, and then retain the documentation.

3.3. Actual results of tutoring

Fig. 5 shows the actual results for the tutoring during the trial period. There were a total of 14 trial sessions, during this period 20 tutees participated (no repeats), and a total of 64 tutors took part in the sessions. There was one tutee per session and five tutors (both median values).

On the days when tutees visiting the Lab were seeking tutoring outside their areas of responsibility, the tutors created the study materials required for the sessions, created SNS accounts required for PR purposes, worked on plans for workshops to be solely managed by the tutors, etc., or engaged in activities aiming to bolster the framework for the tutoring or make its contents more complete. In regards to these too, there was a tutor-centered planning and implementation approach.

Next, Table 3 shows the results for classification of the contents of the reports from tutees by category. From Table 3 we can see there was a 95% rate of solving for tutee problems, including partial solving. Moreover, the range of majors among the tutors which qualified them to provide instruction covered all five of University A's five areas of basic literacy, namely mathematics (3 individuals), English (1), informational design (5), Japanese (5), [computer] programming (7) (some overlap). Nevertheless, due to the shortness of the trial period and factors related to the classroom instruction being conducted during this period, there was no tutoring conducted in the fields of English, Japanese and information design.
3.4. Case Studies
3.4.1. Effects of putting the learning support activities "on display"

On November 28, 2011, when one tutee and two tutors were engaged in a tutoring session concerning linear algebra (while four other participants were concurrently engaged in other tasks), Student A happened to pass through the studio where the MLL was set up and observed the MLL activities. The tutee in question and this student happened to be friends taking the same class, and the tutee was undergoing tutoring because of questions having to do with that particular class. Student A called out “What are you doing?” to her tutee friend, and when she found out that she was receiving tutoring, Student A said, “I too didn’t understand those points.” She then became a second tutee, joining into the tutoring already in progress. The coed on the left in Photo 6 was the initial tutee, and Student A is on the right side. Thus, a case of joint teaching of the fellow tutees arose, and while adapting the content, the tutor continued with the tutoring.

This case can be said to have been a byproduct of the transparency and ease of the access to the practice cooperative unit “MLL” (Lave and Wenger 1991). Due to these special characteristics of the MLL, the tutee in question became aware of the latent necessity for assistance in her own learning.

3.4.2. Tutoring which emphasizes “learning how to learn”

On January 30, 2012, one tutor and one tutee (with four other participants involved in other activities) were engaged in tutoring. The tutoring involved solving problems using the C (computer programming) language. The tutee was at that time receiving classroom instruction for C language, and had a certain degree of understanding concerning concepts and notation techniques for substitution and arrangement (sequencing). However, the situation was such that he could not judge the possibilities for applying this knowledge to the problems at hand.

First of all the tutor asked the tutee several questions, such as “Do you understand substitution?” In this way, he confirmed the tutee’s existing knowledge. After confirming that to his satisfaction, the tutor observed the tutee directly inputting the numerical values rather than using substitution. (Fig. 6 (1) Note: In Fig. s 6 (1)–(3) the tutee was allowed to use notes that he himself had made in reviewing tutoring sessions
[Fig.s 6 (1)–(3) were drawn by a tutee when he/she reviewed the sessions, and we use them with his/her permission.). After inputting, the tutee generated an error when executing the program.

The number within the parentheses for the mathematical formula was excessive because the parentheses had been wrongly positioned. The tutor then asked the following question imbued with "learning how to learn" consciousness: "What do you think you should do to avoid getting this error message again?" Since the tutee knew about the concept of substitution but could not get down the application timing, the tutor offered hints regarding "substitution, etc." and how to tie together the application aspects with this knowledge (Fig. 6 (2)).

By employing a tutoring method that did not reject out of hand the problem-solving method the tutee was using at present, and paying great attention to the tutee's thinking processes, the tutor sought to cause him to discover naturally other better approaches. Furthermore, the tutor allowed the tutee to feel that although there was nothing wrong with his own method, there were other better methods available (Fig. 6 (3)). Following the tutoring, the tutee was delighted with this discovery and said: "I feel really grateful to the tutor. It's only natural that I should say that."

After that when the tutee used substitution, he found that the amount of time it took to write code was reduced, and even if errors appeared, it was easier than before to debug them. In this case, the tutor did not right off the bat provide the tutee with a more efficient method for solving the problem in the form of substitution. Thanks to that strategy, the tutee was able to spontaneously become aware of issues regarding his own method.

As a result, the tutee is saying: "I came to think that if a different method (substitution) would make things easier, and the method I am currently using is a pain to apply, then I would want to give that different method a try." Although the tutee had up to that time felt that learning the C language was a headache, after the tutoring he felt that he would like to challenge other problems. We can see that now the tutee was eager to experiment with the smarter ways of writing code using sequences, etc. that another tutor had spoken about. The tutee expressed this change in sentiment in the following fashion: "I want to see how far I can go."

4. SUMMARY

4.1. Conclusions and knowledge gained from this research

This research involved the establishment of a Meta Learning Laboratory (MLL) at an actual institute of higher learning to function as a student-centered learning support organization, and the carrying out of trial practice of peer tutoring conducted by (student) tutors.

Among the results, those for Case 1 showed that tutoring activities conducted in an easily accessible learning support environment spurred the latent tutoring needs of learners, and made it possible to carry out tutoring regarding content really needed by learners. Furthermore, Case Study 2 showed the possibilities for inducing in tutees awareness concerning new learning methods when a tutor conducts tutoring based on the "learning how to learn" approach.

From the above stated results, we can say that the learning support organization established in this research delivered tangible learning support results.

The insights attained through this research are as follows:

- Concerning tutor training which referenced previous examples from CRLA, it was possible to have tutors learn the methods and significance of tutoring designed with the goal of "learning how to learn."
- It was demonstrated that by ensuring transparency for the learning support environment, it is possible to ensure opportunities for the participation in tutoring by tutees who need tutoring.
- It was also shown that tutoring focused on the "learning how to learn" approach had the effect of promoting meta-recognition by tutees concerning their own learning methods, and thus can have the effect of increasing the desire to learn.

4.2. Future topics for study

We can say that there are three issues that need to be addressed in order to be able to continue to provide effective tutoring. First, there is coordination between classroom teaching and the MLL. For example, when tutoring is being conducted concerning questions from class, the teacher(s) and teaching assistants (TA) responsible for that instruction might stop by MLL, etc.
Concerning collaboration between classroom and extracurricular learning, on a test basis instructors are being required to spend a part of their office hours at the learning commons, etc. (Nemoto et al. 2011). We can expect that as teachers and TAs familiarize themselves with the content and methodology of the support provided at MLL, and tutees realize what they don’t understand and why they don’t understand it, this will lead to improvements in the instruction provided by teachers and TAs as well as their learning guidance methods.

Second, there is “inheritance” of tutor knowledge and techniques. Just about the time when tutors have acquired knowledge and techniques, they graduate from school. Consequently, it would be desirable to have an apprentice framework in place so that before a current tutor had graduated, a new tutor could be waiting in the wings to take his/her place, and there could be continuity in terms of knowledge and techniques. In addition, among the ranks of currently serving tutors as well, we need to establish and maintain forums for the sharing of knowledge and techniques. Currently serving tutors are busy with research, etc., outside of MLL, so that they have little time and few opportunities for sharing their tutoring knowhow. Therefore, it is hoped that ePortfolios, etc. will be made use of in order to solve this problem.

Third, we need to train learning support specialists (Suzuki 2011). The term “learning support specialist” refers to individuals who train tutors, devise frameworks for linking learning centers, students and faculty, and provide assistance to learners who visit a learning center. At the 2010 NCLCA annual convention, many learning support specialists were able to exchange insights concerning their educational practices. They thereby strove to enhance the quality of their practical research.

In Japanese higher education the history of attempts to provide learning support through learning support organizations is admittedly still short. Nor can we declare that those involved in education have adequate knowledge of the standpoint or work content of learning support specialists. However, in the future, as learner-centered learning-support organizations become firmly established in higher education, the training of learning support specialists is certain to become a major issue.

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