

The Construction of an Integrated Learning System for Accumulation of Learning Outcomes and Performance Evaluations¹

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Abstract: Otemae University developed a revolutionary educational program and introduced an innovative system, which is designed to accelerate a structural reform from knowledge-based education to problem-solving-ability-based education. All the courses in our university have been converted to self-motivating, ability-building education. The most difficult challenge in an ability-building program is the visualization of learning outcomes and performance evaluations. In order to follow the progress of each student in his or her study, our university established an e-portfolio system as a prop-up measure for our LMS “el-Campus”. This system enabled us to record and store all educational outcomes; papers, reports and presentation videos by every student from freshman to senior year in our original cloud web system. We also introduced a multi-evaluation system: (1) self-evaluations by students, (2) evaluations by teachers, (3) evaluations by external assessors (educational volunteer system). With these reforms we revolutionized the system of visualization and evaluation. This pioneering system is gaining gratifying results. Our survey shows that students feel their abilities increasing.

Keywords: Learning system, video portfolio, performance evaluations

要約

学修成果の蓄積とパフォーマンス評価を実現した学修システム群の構築を目指し、大手前大学は全ての授業を学生の能動的な学修による能力開発型教育に変換し、知識偏重型教育から問題解決能力開発型教育への革新的な教育プログラムを構築し実践している。能力開発型教育の実践において困難な課題は学修成果の可視化と評価手法である。本学はその課題を克服するために、独自に開発したLMSである“el-Campus”に学生の学修成果を蓄積するeポートフォリオ機能を組み込むことにより、学生個々の能力の伸長度を可視化して評価する仕組みを構築した。

更には、このポートフォリオ機能を利用して単にレポートや論文などの著述物や製作物の蓄積だけではなく、全ての学生の入学時から卒業迄の毎年のプレゼンテーション発表をビデオ撮影した映像ポートフォリオを蓄積している。それらの可視化されて蓄積された学修成果物を多面的に、即ち①学生の自己評価、②教員評価、③外部評価（教育ボランティア制度）の三つの手法により能力の伸長度を評価している。この教育改革は学生の能力の伸長感が高まるなどの目覚ましい成果を生んでいる。

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1. Introduction

Our university has been working on drastic educational reform, moving from knowledge-based education to problem-solving-ability-based education, and we developed “C-PLATS,” an ability-building program to provide students with the crucial skills they need in society. C-PLATS is designed to enhance three basic abilities and ten competencies in order to foster problem-solving ability, as we believe these skills to be the most important and indispensable for success in society. “Problem-solving” requires various skills, most of which are difficult to evaluate in a clear and fair manner. With the aim of solving this problem, we reorganized our LMS system, “el-Campus,” to enable us to record and store all presentation videos, reports, and papers by each student from their freshman to their senior year. This allows us to follow the progress of each student, while it also serves as evidence of the quality of the education they receive at Otemae University. Most importantly, it helps students to understand the whole picture of their ability development process as they work to achieve their goals. Our rubric is effectively applied in both the syllabus and in class questionnaires. In addition, we introduced a multi-evaluation system, in which each student’s performance is evaluated by three assessors: students themselves, their teachers, and finally, external assessors (educational volunteers). With these reforms we revolutionized the system of visualization and evaluation as quality evidence of our education.

2. The Structure of the original Learning Management System (LMS), el-Campus

Our university initiated drastic reform in its LMS in 2011. Focusing on active use of Information and Communication Technology (ICT), we abolished and consolidated existing systems, improved our Information Technology (IT) support system, and constructed a wireless network to strengthen our three pillars of an IT environment: system, service, and infrastructure. El-Campus is our on-campus cloud web system, functionally loaded with LMS, a portfolio system and portal system. It utilizes technologies and know-hows accumulated at our university through our management of our e-learning system for correspondence courses. El-campus as a revolutionary system is in full operation as a learning platform both on and off campus, as well as being an integral part of our correspondence courses.

3. Performance evaluation

Here we introduce an example of presentation performance in compulsory courses. In our university all students are expected to give 5 formal presentations in four years, twice in the first year, and once in the second, third and fourth years, respectively. Immediately after matriculation all students go to a recording room and make a one-minute self-introduction presentation. At the end of the first year, in the compulsory course Career Design Two, all students give a three-minute presentation on their career design plans, using Power Point, in the presence of approximately 20

classmates, their teacher and educational volunteers. This presentation is followed by a question-and-answer session. All presentations are recorded and stored in el-Campus and judged in a preliminary viewing for an all-campus presentation competition. Each presentation is graded by the student's classmates on a scale of 1 to 5, using the criteria given in Table 1. Based on their evaluations, each class chooses a representative, who proceeds to the second round. If they are successful in the second round, the student then moves into the final. Presentations that are given in the final round of the competition are posted on el-Campus and shown to all students as good example (for an example, see Figure 1) . Each student uses his or her presentation footage to review for self-assessment and to see how far he or she has achieved their goals on a rating scale within the e-portfolio function, as will be discussed below. Teachers and educational volunteers also make full use of materials stored on el-Campus for effective feedback.



Figure 1: Sample of video portfolio content

Table 1: Evaluation criteria for presentations

Competencies	Criteria	
<ul style="list-style-type: none"> ● Presentation ● Communication 	Attitude Manner	Visual Documents
<ul style="list-style-type: none"> ● Logical Thinking ● Planning ● Creativity 	Logicity	Originality Creativity
<ul style="list-style-type: none"> ● Communication ● Social Responsibility 	Qs and As	Punctuality

4. Competency-based learning system

For the purposes of performance evaluation and to make the process fair and precise, we developed a revolutionary educational system.

(1) The C-PLATS system

We developed the C-PLATS system to enhance problem-solving ability in our students and facilitate their evaluation. As stated above, C-PLATS is an acronym of abilities students need to acquire, which consist of 3 ability basis and 10 competencies: Society Basis (Social Responsibility, Teamwork), Thinking Basis (Logical Thinking, Analysis, Creativity, Planning), and Action Basis (Communication, Presentation, Leadership, Action). All faculty members take part in a “competency faculty” activity once a month and re-examine C-PLATS to keep improving upon it and integrating it into their curricula. Details of ability-building education, ability definition, objectives, evaluation criteria, educational methods, etc. are compiled in book form, in the OCD (OTEMAE COMPETENCY DICTIONARY) (Ashihara 2013).

(2) Evaluation system

We introduced an educational volunteer system to ensure the quality of our education and to get advice on our educational reforms from an external viewpoint. We invite volunteers to provide a real-world perspectives in performance evaluation, which makes a multi-angle evaluation possible. Progress of competencies is therefore evaluated from three perspectives: students themselves, teachers and external assessors.



Photo 1: Interviews by educational volunteers

At present, 261 volunteers, including graduates of our university, local intellectuals, and certified career counselors, among others, actively take part in our program, such as attending compulsory classes, giving career advice, and serving as judges in our all-campus presentation competition.

(3) Portfolio system

With the aim of securing an accumulation of evidence of ability-development and facilitating self-assessment, we prepared two portfolios, “C-PLATS” and “my note” in el-Campus.

“C-PLATS” is the core system in our work-ready, ability-building education, which helps students track their progress in their studies. By using this portfolio, each student sets yearly goals, long and short-term objectives in C-PLATS competencies, finds personal appeal points, and reflects upon their activities and performance as a means to guide himself or herself to a higher level (Figure 2). The contents put in “C-PLATS” by each student are shared with their teachers and educational volunteers, who also input comments, advice, or encouragement using el-Campus as an important communication channel (Figure 3). The presentation footage in Figure 1 above, for example, is placed in the personal appeal section of “C-PLATS” with comments from the student. Educational volunteers can come to class and advise students in person, or they can give advice from home by visiting the student’s portfolio and checking the contents on el-Campus. This system makes feedback easier and enables volunteers who cannot come to class, as is often the case with people working in society, to expand their participation and guidance activities.



Figure 2: Sample of the C-PLATS tab

“My note” is also a portfolio, where students save reports, presentation materials, papers, and other coursework. It allows students to organize and store all their educational output for review. “My note” is well coordinated with our LMS. All reports and writing assignments turned in electronically are automatically stored in “my note” with feedback from the teachers (Figure 4). Hand-written reports, as are often used in many classes, can be stored in “my note” electrically by putting a mark-sheet sticker on the handwritten paper and scanning it. Management of educational materials used to be left up to each student but this system was inadequate. However, our new system makes it easier and helps students to better organize and store all their materials in one place.



Figure 3: Sample of comments on a presentation



Figure 4: Sample from “My note”

(4) Video accumulating system

It is time- and energy-consuming to record and store presentation videos of more than 500 students per academic year. In order to minimize the labor, beginning in 2011, we utilized VCMaker, our original video report system. This system is designed to record and store presentation videos in real time without encoding or uploading data to the server, and it has been successfully used in correspondence courses. When there were fewer simultaneous users, the system worked smoothly. However, the increase of simultaneous users caused failure or delays in the system. In 2012, therefore, we started to use laptops with built-in cameras in every presentation room to record presentations. Although we need to encode and upload the videos afterwards, which used to be unnecessary with VCMaker, we have succeeded in smoothing the recording and storage process with less labor by using a batch process.

5. Results

Our survey, conducted in 2013, shows that many students think their abilities are growing (valid responses: 38,172). To the question “Do you think your C-PLATS abilities are improving?,” students on average graded themselves with a 3.35 (on scale of 1 to 4) in classes where all presentations are stored in e-portfolio. That is higher than 3.20, the average of all classes. To the question, “Which competencies do you think have been improved? (check all that apply),” as shown in Table 2, leadership and teamwork get higher points in Career Design One (first year, spring term) and Career Design Two (first year, autumn term), where group work is more integral than in other courses. In their graduation study seminar, where students tackle their graduation thesis or work, students gave themselves higher marks in analysis, planning, and logical thinking. In classes where presentations are stored in e-portfolio, presentation competency gets higher points when compared to other classes.

Comparing 2013 with 2012, on average in 2013 students graded themselves 2.8% higher, and significantly, they did so across all 10 competencies. We presume this result comes from the fact that performance activities, such as presentations, group work, and discussion, have become more common in specialized classes.

Table 2: Improved competencies (1)

Competencies	Thinking Basis				Action Basis				Society Basis		Averages
	Analysis	Creativity	Planning	Logical Thinking	resentation	Action	Communication	Leadership	Teamwork	Social Responsibility	
Average	50.6%	35.1%	31.1%	40.1%	33.1%	27.6%	24.8%	8.8%	19.5%	20.2%	29.1%
CD1 (1st year SP)	53.8%	25.9%	46.3%	58.1%	56.0%	43.7%	47.5%	28.4%	58.0%	30.4%	44.8%
CD2 (1st year AU)	46.8%	28.3%	51.4%	47.5%	57.4%	43.4%	48.1%	27.9%	59.6%	37.0%	44.7%
CD3 (2nd year SP)	52.5%	24.6%	43.0%	58.1%	51.9%	28.3%	31.1%	8.2%	16.7%	20.1%	33.5%
CD4 (2nd year AU)	37.0%	26.5%	53.7%	26.9%	56.2%	42.1%	38.1%	21.3%	51.4%	33.7%	38.7%
Seminar1 (3rd year SP)	59.0%	39.3%	45.9%	43.0%	51.9%	34.2%	33.7%	10.7%	26.1%	23.6%	36.7%
Seminar2 (3rd year AU)	54.0%	42.3%	41.0%	44.5%	44.3%	34.9%	38.6%	11.3%	31.1%	27.3%	36.9%
Graduation study (4th year SP)	57.3%	54.0%	57.4%	53.7%	39.8%	57.2%	37.3%	11.9%	19.4%	22.7%	41.1%
Graduation study (4th year AU)	81.3%	58.2%	65.3%	67.7%	51.2%	60.1%	46.2%	15.6%	21.9%	38.8%	50.6%

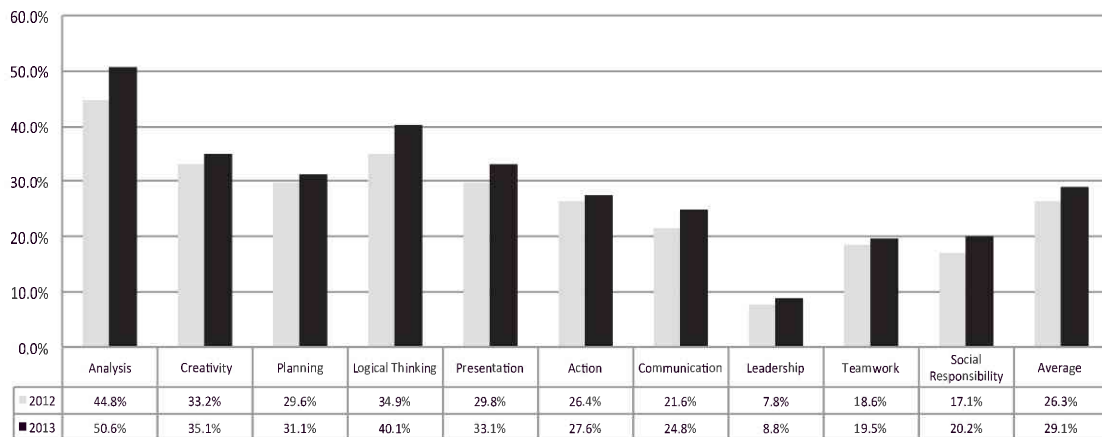


Figure 5: Improved competencies (2)

6. Findings and challenges

Our university created our original rubric, which facilitated performance ability evaluation, and we succeeded in the visualization of competency progress in performance. By introducing an innovative cloud web system, el-Campus, as a leading ICT, we created an optimal educational environment for students, as well as educational volunteers. Accumulation of all educational products from freshman to senior year enables easy yearly comparison, and moreover it serves as quality evidence of our education. Furthermore, we get encouraging feedback from our educational volunteers. Although their role is mainly performance evaluation, some show a willingness to make continuous contribution to students or enjoy the opportunity to exchange views with teachers. This network of communication is an invaluable part of student development and support. By providing ways for volunteers who cannot come to our university to get involved on the web, we find new potential in the external evaluation system.

We found presentation evaluation to be very effective as an indicator of the students' progress in competency development, because making a presentation involves many tasks, such as research, material preparation, the delivery of the presentation and a question and answer session. All of these tasks require various competencies that we believe are indispensable for ability development.

On the method of performance evaluations, we have sometimes heard contrary opinions. For example, some people have said, "There should be ways to perform other than presentations that depend on Power Point," or "Performance evaluation is too connected to the ten competencies of C-PLATS." Thus, in regard to feedback from educational volunteers to students, we find a very wide range of differences, which we think indicates there is room for improvement. To give an example, our systems el-Campus and VCMaker need improvement in user interface and smooth performance, respectively.

The most remarkable outcomes of our reform efforts are seen in study habits of our students. Our survey in the year 2013 shows that on average, a student spent 8.8 hours per week on studying outside class, a number that is far better than the national average for university students in Japan, which is 4.6. Furthermore, the number of books checked out from the university library per year has increased from 3.9 in 2009 to 7.0 in 2013, after the implementation of our educational reform efforts.

Japanese universities have been criticized for putting too much emphasis on academic knowledge. Many institutions are currently endeavoring to shift to a program where students enhance competencies required in society and acquire the ability to take action. However, the change from knowledge-based education to ability-based education is very slow, mainly because of difficulties in structuring a good system for performance ability-building and performance evaluation. Our university has addressed these difficulties by introducing a problem-solving ability-building program, "C-PLATS," and by developing an innovative performance evaluation system, "el-Campus." We have demonstrated great potential for change and revealed the great possibilities of the educational

effects of these systems. Most importantly, we are seeing concrete results through the improvement of students' study habits.

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