Abstract

The National Institute of Technology, Anan College (NIT, Anan College) was selected for the Acceleration Program for University Education Rebuilding subsidies in 2014 by the Ministry of Education, Culture, Sports, Science and Technology. Many institutions of higher education in Japan applied for this project, and after strict evaluation, the effort of NIT, Anan College was highly evaluated. Especially, in Theme II (Visualization of Learning Outcome), NIT, Anan College was the unique College of Technology designated. Our college promotes an environment where students can study thoroughly and unsupervised. Of great benefit for students is the evaluation of academic results by the monitoring their daily learning processes, encouraging them to make a habit of studying voluntarily, visualizing their competence as acceptable members of society and fully utilizing their own capacity for career design.

The core of the approach consists of four programs: (1) Ensure the time spent learning is accumulated in the Learning Portfolio. (2) Evaluation of creative skills. (3) Implementation of student surveys to evaluate the actual learning situation. (4) Creation of an Academic Portfolio for instructors focused on improving education and developing their skills. We describe these challenges in FY2015, FY2016 and FY2017. All students set goals in three categories consisting of career, academic study and co-curricular activities at the beginning of the fiscal year and then evaluated themselves at both the middle and end of the fiscal year. Trial evaluations of competency in about forty regular curriculums throughout the first semester of FY2017 using a newly developed rubric was conducted. The student surveys confirmed that the study hours outside the classroom increased gradually over several years. One of the reasons is the use of the Learning Management System utilized by faculty since its introduction at the college-wide level in FY2014. Our college hosts a workshop for creating Academic Portfolios as a part of faculty development and we also host a workshop with reduced hours to ensure the convenience of faculty attendance.

In this paper, the detailed achievements and results addressed up to now are described, and the future plan of competence development within the visualization of learning outcomes is reported.

Keywords: Visualization of Learning Outcome, Management of Teaching and Learning, Career Design, Learning Portfolio, Competence, Student Survey, Academic Portfolio

Introduction

The August, 2012 report released by the Central Council for Education, emphasized quality assurance. The keywords listed were: active learning and visualization of learning outcomes. The second Basic Plan for Promoting Education released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) was approved in a Cabinet meeting in June, 2013. One of the basic policies is to promote university reform to increase the overall study hours of students. They have to acquire skills to continue studying by themselves throughout their career. Therefore, we ought to improve our educational methods in order to support students in achieving their goals.

In 2014, MEXT selected our educational program as the Acceleration Program for University Education Rebuilding (AP). Our program is classified in Theme II which is aimed at visualizing learning outcomes and is characterised by focusing on competence. We were able to gain insight into the educational improvement system based on the proven worth of the activities.

Proven performance

Creating a teaching portfolio within the National Colleges of Technology has prevailed more-so than at universities and colleges. Twenty workshops have been held both on and off campus with cooperation.
between the Colleges of Technology so far. More than 80% of NIT, Anan College faculty members created portfolios.

NIT, Anan College has implemented the use of IR for teaching and learning since 2010. We have compiled surveys targeted at first grade students as well as student body surveys and graduation surveys, all of which share the importance and the methods of using IR in professional development workshops for faculty, and in which almost all faculty participate.

Using these means, NIT, Anan College has a fundamental commitment to improve teaching and learning. Quality assurance and teaching improvement using IR and TP at Anan College started from 2010.

Reconstructed program of visualization of learning outcomes

The overview of the reconstructed AP program at NIT, Anan College is shown in Figure 1. Our aim is to prepare educational circumstances which provide students the ability to study by themselves. Then we improve the educational management with an emphasis on the knowledge students have to visualize the learning outcomes. We think it is better to put more value on the learning process in order to achieve an attainable target for students. The cloud-based Learning Management System (LMS) is one of the solutions. It can offer e-learning, so students are able to study anywhere at any time. All students can access the LMS from anywhere that can connect to a network. Faculty can take care to maintain a connection with students through the network at anytime and anywhere.

Students have to learn practical expertise necessary in society. Recently, the competency to adapt socially and to get through life is also required. Therefore, we prepare the visualization of competence which allows students to get through their student life in our college and supports their career formation. Students acquire competence of various types throughout their student life in our college including curriculum and cocurricular activities. Since active learning-style classes have allowed students to gain competence easily, we added the promotion of active learning in class in this program from FY2017.

On-going activities

Our program started from the second semester in 2014. The office for Excellence in Teaching and Learning was newly-organised to carry out our program. At first, we prepared the LMS as educational infrastructure and carried out a survey to understand the trend of competence for all current students using LMS. Actually, 97% of current students responded. Homeroom instructors returned the result report sheets to each student at a meeting and the students received the same result as a PDF file on LMS. After the students recognized their own competence, they set specific goals for achievement within the year using learning portfolios on LMS. We expect students to set goals by reflecting on themselves. Homeroom instructors have regular meetings to help them achieve success. We expect students to have a positive attitude toward achieving their goals and to make an effort toward achieving their aims. In order to realize our vision, we allow students to begin with a set of goals and to analyze their progress at the end of the fiscal year.

The use of LMS in our college has increased rapidly. We started to use LMS at a college-wide level from April, 2015. The ratio of faculty use was 76% and the ratio of lecture use was 47% in September, 2017. The one for lectures at the end of FY2014 was less than 10%. We laid the foundation for active learning using ICT education.

We determined six upper-level skills using the company survey regarding the competency in the Model Core Curriculum of National Institute of Technology, because it is difficult to develop, and to evaluate many skills at a time. These six skills are “communication”, “group skill”, “independence”, “sense of responsibility”, “discovering problems”, “logical thinking”. We also created a rubric for each skill and used them to evaluate student skills. In the trial evaluation, self-evaluation and mutual evaluation of students, faculty evaluation were carried out. From these results, self-evaluation of students is found to be effective as a real sustainable evaluation while avoiding an excessive burden increase.

We also revised the evaluation rubric we developed. In addition, students self-evaluated the level of competency acquired from regular lessons, cocurricular activities, and other activities using this rubric at the end of FY2017. The results and feedback were shown to each student via LMS as a radar chart shown in Fig. 2.

We studied the improvement of student competency by self-evaluation before and after the "cooperative education,” which is a PBL type compulsory subject. Students cooperated in a group composed of different course students of the 4th grade and we implemented the new curriculum along with the reorganization for one department and the new course system in FY2014.

Results and Discussion
After finishing the cooperative education, we asked the students about the feeling of improving related to competences.

The results of each skill show that there are many students who provided an overall evaluation of a feeling of improvement. For all skills, we estimate that more than 80% of students have evaluated "successful", and they can infer through the practical training that they were able to capture the opportunities for success using competences.

Figure 2 Sample of a radar chart of self-evaluated competency (in Japanese).

(c) Information gathering utilization
(d) Independence and sense of responsibility
(e) Communication

From the results of each skill, it turns out that there are many students who make an overall evaluation of feeling of improvement. For all skills, we estimate that more than 85% of students have evaluated "improve", and they can infer through the practical training that they were able to capture the opportunities to improve using competences.

Figure 3 Results of self-evaluation regarding achievement of skills.

Figure 4 Results of self-evaluation regarding improvement of skills.
The results of self-evaluation of competences are shown before and after collaborative education. The results of each skill show that there were many students who selected "They could do it completely" or "They could do it better than they thought". It can be seen that the ratio of negative evaluation decreases as an overall trend, and each cluster is shifting to an upper cluster. Although there is an individual difference in the absolute evaluation which should be considered, the results in which the feeling of improvement individually was realized for each student were obtained. On the other hand, there is little change in the proportion of students who answered "not much" or "not at all". For students who have difficulty participating in practical training, which requires advanced communication skills such as cooperative education, it became clear that it is necessary to implement some special support.

Based on the results of the student survey regarding the method of implementing cooperative education, 70% or more of the students have positive opinions concerning cooperation with other courses, and it is considered that training on a mixed team is effective.

Conclusions

The students self-evaluated their level of competency acquired from regular lessons, cocurricular activities, and other activities using the rubric at the end of FY2017. The results and feedback were shown to each student via LMS as a radar chart. In the future, we plan to continue checking their strengths, weaknesses and improvement levels while adding additional radar charts.

Prior to the start of the project, neither faculty members nor students were conscious of competency acquisition, development and visualization, but they gradually became conscious of it through using the rubric. It can be expected that this kind of change in the atmosphere will be accelerated secondarily as an improvement of new lessons and efforts toward cocurricular activities.

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References
