Brandon Hall
—GROUP—

Taiwan's NACS Collects Data to Compare eLearning to Blended Learning

National Academy of Civil Service
Best Use of Blended Learning
February 2018

Company Background

Company At-a-Glance	
Headquarters	Taipei, Taiwan
Year Founded	1999
Revenue	US $9,682,000
Employees	66
Global Scale	Taiwan
Customers/Output, etc.	15,000 civil servants
Industry	Government
Website	[http://www.nacs.gov.tw/ https://ecollege.nacs.gov.tw insert text here]

Budget and Timeframe

Budget and Timeframe	
Overall budget	US$ 100,000
Number of (HR, Learning, Talent) employees involved with the implementation?	80

Number of Operations or Subject Matter Expert employees involved with the implementation?	4 content experts, 2 training planners, 2 online consultants
Timeframe to implement	2 years
Start date of the program	January 2015

Business Conditions & Business Needs

As an institute offering training for public departments, the National Academy of Civil Service is responsible for providing an orientation program for new staff, elementary- to junior promotion training and junior- to-senior promotion training. Each year, the academy trains ≃15,000 people.

The course content covers government policy, attitude, public administration, law, and service. The total number of instruction hours for each trainee is 120 hours, and there are about 30 courses. Each lasts 3 to 6 hours. It is really a considerable challenge for a trainee to take so many courses within such a short time and fully apply the knowledge to their future careers.

The academy developed the Competency-based Testing/Assessment System in 2011 as a tool for civil servants to self-examine themselves to learn the strengths and weaknesses in their core competencies, including career planning (growth potential), problem-solving (crisis management), teamwork (ability to work with others), interpersonal relationship (sociability), coordination and communication (communication ability), compliance to laws and regulations (civility), resource integration (management ability), policy planning (planning ability), vision and leadership (leadership), and strategic analysis (analytical ability).

The academy collected data on about 40,000 civil servants who took the test from 2011 to 2014 and analyzed the diversified background of the participants. The results showed that teamwork was the competence that both institutions and individuals need to strengthen. In previous training, each teamwork course was only six hours, and the trainer had to spend more time on basic knowledge. Hence, there was short amount of time for the trainer to discuss problems with trainees.

Figure 1: Architecture of Self-Test on Competencies

Source: NACS 2018

As a result, the academy established the cycle training of teamwork in 2015 for senior staff. The training combined classroom learning and eLearning to enhance overall-learning effectiveness.

The cycle-training project lasted for six months and was divided into several stages. Aside from theories, it emphasized case practice to internalize the learning. In the first year of the project, eLearning was adopted. In 2016, the training courses of "teamwork" were implemented to explore the feasibility of the new blended-learning program.

Overview

With a focus on "forming a top-performing team," the learning program consisted of four knowledge dimensions: team thinking, team communication, team management, and team leadership. In the training process, the first step was to provide trainees with differential learning and to standardize their basic knowledge. The second step applied a five-stage learning mode with the following objectives:

- **Foundation.** Teaching and learning basic knowledge of teamwork.

- **Practice.** Classroom and online practice, with the former being a compulsory process and the latter being an option for an exclusive class.

- **Review.** Emphasized review of theories and practice.

- **Follow-up.** Application of knowledge was tracked.

- **Backflow**. Before this stage, the self-competence evaluation and the evaluation by others (direct supervisor) were conducted. The results were used to provide customized courses for further study in the stage of backflow.

Online learning modes such as interactive discussion, mutual evaluation among peers, online case study, assignment submission, online teaching assistance, and professional evaluation were integrated with classroom practice. Trainees were led to experience the new learning to enhance their teamwork, implementation and leadership.

Figure 2: Learning Process and Planning of Training
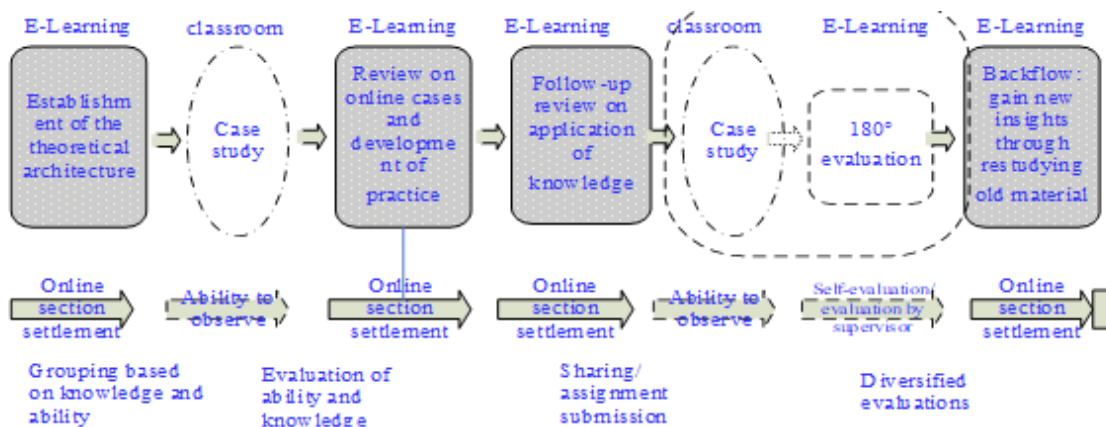
Figure 3: Training Architecture
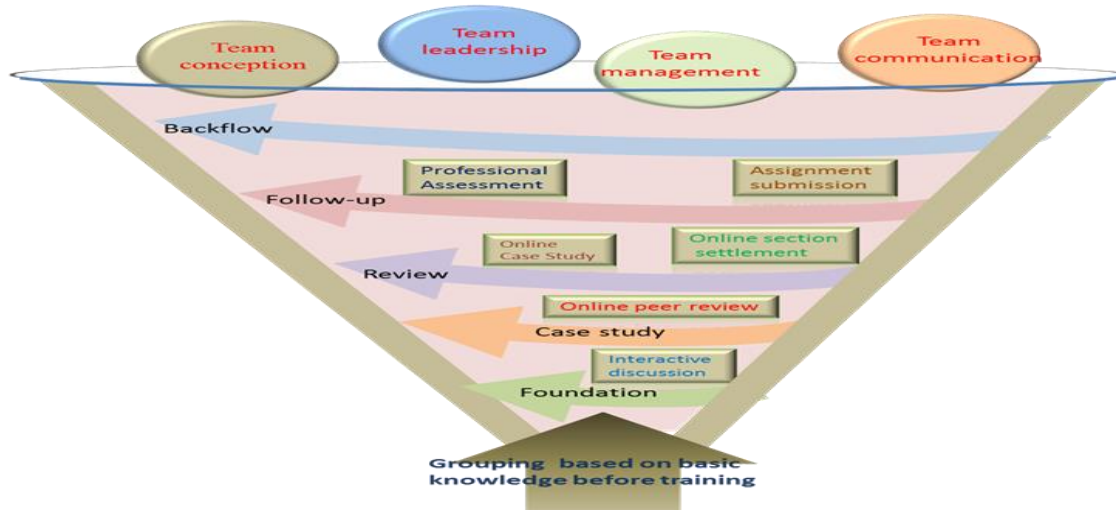
Source: NACS 2018

Effects on the Organization

The new program has:

- Changed the mode of traditional-training courses. The courses were no longer taught in the intensive, short-term training mode. Instead, the stepwise, blended-training C+E/Simulation+OJT+E is used. After classroom lecture, online materials and/or simulation software are provided for review and practice; after on-the-job training, classroom teaching is carried out again to ensure that learners can apply what they learned to their work, creating work effectiveness and contributing to organizational performance.

- Changed the curricular plan. By comparing the differences of the learning programs, the result was used to re-adjust the (C/E course) proportion of blended courses for the future.

- Facilitated the evaluation of learning effectiveness: Follow-up and review have been added into the training process. In the workplace, trainees were reviewed to find out whether they applied what they learned. Meanwhile, the learning achievements of trainees at ordinary times are reviewed to see if the they have shown high-learning performance. With the follow-up and review, the organization easily can evaluate learning effectiveness and the degree to which knowledge is internalized.

The cycle training of teamwork for senior staff was implemented to fulfill the following objectives:

1. Seek the best training model through eLearning and blending learning.
2. Enhance the overall training effectiveness through the circular-blended learning.
3. Enhance trainees' learning transfer and obtain feedback on the efficacy of knowledge application in the organization.

Because different organizations have different requirements of learning, the National Academy of Civil Service made a training plan to meet various requirements on new civil servants, who have a year or less in the role; senior staff, who are special case managers; and managers. When designing the blended-learning program on teamwork, the academy attempted to find out the difference in learning effectiveness between eLearning and blended learning.

Design of the Program

This program probed into the learning effectiveness of 80 senior staff members. Forty of them received eLearning, and the other 40 had blended-learning. The training lasted for seven months and consisted of five learning stages – foundation, practice, review, follow-up, and backflow.

In the process, Kirkpatrick's four-level evaluation model was adopted to analyze the change in learning effectiveness of the trainees: reaction, learning, behavior, and results. There were two features in the design of the blended courses of the cycle training of teamwork for senior staff: the first was the five-stage cycle learning and the other involved the four evaluation points. The overall design focused on content, evaluation, and learning models.

Learning Content

To have a better understanding of trainees' knowledge about teamwork, the academy team analyzed teaching materials from the classroom course, literature reviews of teamwork, civil affairs cases, lecture notes of lecturers, and focus groups. It classified the teamwork into four dimensions and 13 sub-dimensions shown below.

Figure 4: Dimensions of Teamwork
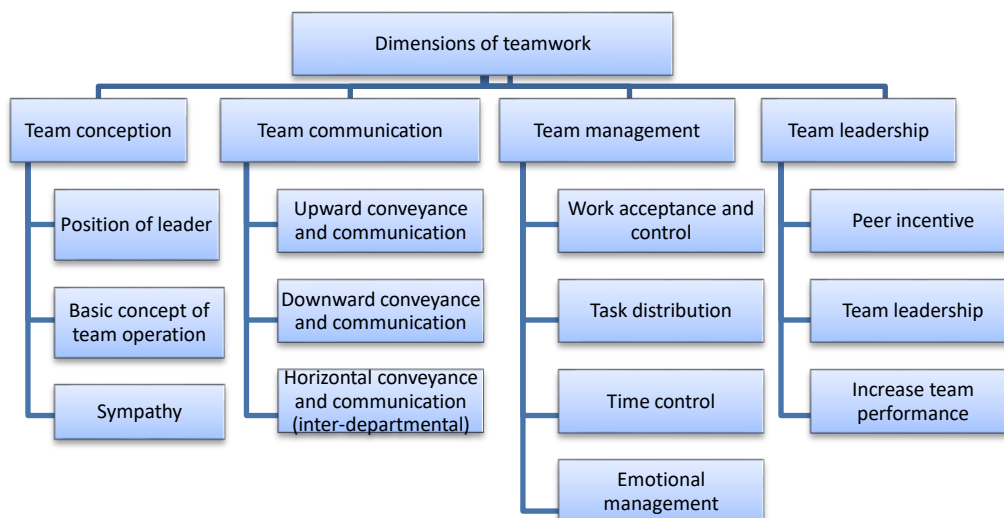
Source: NACS 2018

Because there are so many dimensions of teamwork, the academy team designed the blended courses after discussions with experts and HR staff. The blending-learning

courses in the foundation stage focused on the importance of teams and interpretation of that knowledge; in the practice stage, scenario cases were discussed among the trainees; in the review stage, there were knowledge-oriented test questions and cases; in the follow-up stage, courses combined the knowledge-oriented tests and cases with self-evaluation and external evaluation of teamwork to link the learning with work situations; in the backflow stage, courses summarized what had been taught and offered new knowledge to deepen the trainees' understanding of teamwork.

Team communication was gradually added to the stages of review, follow-up, and backflow. Team management also was highlighted in the review stage. Advanced knowledge of team management and team leadership was added to courses in the backflow stage.

Evaluation model

Knowledge-oriented evaluations of the different stages showed trainees' knowledge retention after the training. Ability-oriented evaluations measured whether trainees' abilities were consistent with the training objectives.

Figure 5: Process of Evaluation Models

Source: NACS 2018

Learning Model

Courses in the foundation stage must be finished and the assignment submitted within the month following the grouping into classes. Then, Class 2 participated in classroom

practice with team activities and discussions on civil-service cases based on the lectures. In the review stage, courses must be finished and the assignment submitted within the month following the foundation stage. Courses in the follow-up stage must be finished and the assignment submitted at least five weeks after the review stage. The assignment in the review stage was correlated with the one in the follow-up stage, therefore, the interval could not be too short. After finishing the courses in the follow-up stage, trainees could watch the courses in the backflow stage without following a designated schedule.

Delivery of the Program

During program implementation in 2016, priority was given to senior staff members who had experience implementing special cases, were not in managerial positions, and were recommended by civil servants of central and local governments. There were 80 participants, half of them doing eLearning and the others taking blended learning. Both classes had almost the same learning process.

Evaluations of teamwork training for senior staff were based on Kirkpatrick's four levels, which has at its core the knowledge level of trainees, knowledge-generating explicit behaviors, and participation in learning. Therefore, evaluation needed to be integrated into the teaching.

- **Stage 1.** Based on the results of the knowledge-oriented tests, trainees were classified as Level A, Level B, or Level C. Level A indicated that a trainee had a deep understanding of teamwork; Level B implied that a trainee had a general understanding of teamwork; Level C meant that a trainee had less understanding of teamwork. The program suggested that trainees at Levels A and I start the courses in the foundation stage while those at Level C watch "courses of basic knowledge of team building" and then start learning in the foundation stage.

- **Stage 2**. Tested trainees' understanding of the teaching materials with a knowledge-oriented test where questions were aligned to the 13 sub-items under teamwork to ensure that all dimensions were tested. Trainees answered questions randomly selected by the system, and the correct answers were converted into an absolute score. The test checked trainee's learning and showed their short-term memory.

Figure 6: Training Course Process and Schedule

Item	Stage	Learning	Schedule of learning	Period of learning	Contents of learning
1	Grouping	Level 1 evaluation	2016/03/01~2016/03/15	1 hour	Sign-up & group-based evals
2	Foundation	Foundation courses	2016/03/01~2016/03/31	2 hours	Watch eLearning course: "foundation" based on results of the grouping; Level C: Build teamwork: foundation + Build team action: foundation. Level B: Build team action: foundation Level A: Build team action: foundation
Item	Stage	Learning	Schedule of learning	Period of learning	Contents of learning
3		Level 2 evaluation	2016/03/15~2016/03/31	30 minutes	Conduct knowledge-oriented evaluation (1st) after watching "eLearning course: foundation"
4		Practice	2016/03/20~2016/03/31	1 hour	Submit assignment – discuss scenario cases
5			2016/04/07	6 hours	Classroom Course
6	Review	Review courses	2016/04/10~2016/05/10	1 hour	Watch "eLearning course: review" 5 weeks after watching "eLearning course: foundation"
7		Practice	2016/05/01~2016/05/10	1 hour	Write down team problems in the workplace and submit assignment after watching "eLearning course: review"
8		Level 3 evaluation	2016/04/25~2016/05/10	1 hour	Take the knowledge-oriented (2nd) + ability-oriented (self-evaluation) (1st) tests after watching "eLearning course: "review"
9	Follow-up	Follow-up courses	2016/06/10~2016/07/10	1 hour	Watch "eLearning course: follow-up" 5 weeks after watching " eLearning "review"
10		Practice	2016/06/20~2016/07/10	1 hour	Propose the solutions to the work problems mentioned in the previous assignment and submit assignment after watching "eLearning course: follow-up"
11		Level 4 evaluation	2016/10/10~2016/10/20	30 minutes	Conduct the ability-oriented (self-evaluation) (2nd) + ability-oriented (evaluation by supervisor) (1st) within a week following the watching of "eLearning course: follow-up"
12	Backflow	Backflow courses	2016/10/20~2016/11/20	2 hours	Watch "eLearning course: backflow" at any time to enhance knowledge of teamwork after watching "eLearning course: follow-up"

Source: NACS 2018

- **Stage 3**. Trainees completed the post-training self-evaluation of their abilities using a six-point scale. Three months later, a follow-up was completed to determine how much knowledge had been stored in trainees' long-term memory to check whether the program had long-term impact on them. The follow-up also showed whether the trainees' knowledge of teamwork had been expanded.

- **Stage 4**. The knowledge-oriented test was adopted to test the trainees' understanding of the teaching materials, and the second self-evaluation was used to show the trainees' self-evaluation of their competences and application of what they had learned in the training. Meanwhile, the external evaluation by the direct supervisor was conducted to see whether a trainee showed better-work performance. In addition, the second knowledge-oriented tracking test, ability-oriented tracking in the self-evaluation, and the external evaluation were conducted for the trainees three months after they returned to their workplaces.

Change Management Efforts

In implementing the teamwork training for senior staff, the academy team encountered the following challenges and obstacles in the process of transforming traditional training:

1. Because the training lasted seven months, participation decreased among trainees, in part because it was difficult for them to maintain their passion for the learning. Because they took the courses and worked at the same time, they often forgot to submit assignments. The academy team sent texts and made telephone calls to remind them and applied social networking by forming discussion groups to encourage each other to submit assignments on time. Additionally, participants who finished the training were rewarded.

2. Trainees were not active in online discussions. There were no immediate responses to the online discussions, and the discussions were not directed. Consequently, trainees were not enthusiastic about them. To address the problem, the academy team developed an online-discussion plan for the online- teaching assistant to respond to the trainees on the learning platform and required each trainee to participate in online discussions at least twice and respond to other trainees at least once. Moreover, the online-teaching assistant had to answer questions raised by trainees within three days and give feedback on the assignments submitted by trainees within 10 days. In addition, trainees who were active in discussions, raised the best questions, and offered the best answers were rewarded.

3. Lecturers were unfamiliar with the curriculum planning. The academy designed the curricula, but the instructors were hired from other organizations. To solve this problem, the academy hosted a workshop for instructors to help them understand the curricula.

4. Trainees faced a problem with job-substitutions. Most of the time, organizations did not allow trainees to participate because of the job-substitute problem. However, the academy team provided stronger communications with the organizations' leaders and provided results of analysis of the training data. Thus, most organizations allowed the trainees to continue the training in spare time.

Measurable Benefits

The ultimate objective of the training was to achieve Kirkpatrick's fourth-level evaluation – make specific contributions to the organizations. Nevertheless, it also was the level most difficult to achieve. Therefore, the learning program was designed to satisfy trainees, trigger their learning motivation, and help them make progress in knowledge, skills, attitude, and behavior and make contributions to the organization's performance.

For level 1, a standard knowledge-test was used to divide trainees into three groups (Group A, Group B and Group C), and different groups took different training courses.

At level 2, a standard knowledge-oriented test checked post-training performance. The test results could be regarded as the immediate-learning effectiveness from the training as well as trainees' short-term memory.

For level 3, a six-point scale was used for self-evaluation of competences, so trainees could measure their personal improvement in competence since the training.

To reach level 4, trainees' performance was tested six months after the program to measure long-term memory and learning impact. Meanwhile, the ability scale-based, follow-up evaluations and external evaluations showed trainees' and their colleagues' comments on the effects of the training after they applied what they had learned in their work.

In the analysis of learning effectiveness, the difference between the two classes was tested using the independent sample T-test before and after the training. The significance of the difference was used to judge if the two groups of trainees responded differently.

The scores of the trainees in the two groups were displayed in a bar chart where each bar represented 10 points. The comparison shows that both classes moved steadily to the

right, indicating that trainees constantly were moving towards a higher score and revealing that the training continuously promoted accumulation of knowledge.

Comparison of the knowledge-oriented test results between the two classes showed significant differences between performance before and after the training, between performance after the training and in the follow-up, and between performance before the training and in the follow-up in Class 1.

The result indicated that trainees in Class 1 achieved significant progress in the knowledge-acquisition stages. The blended-learning class showed significant progress between performance before and after the training, but learning effectiveness remained unchanged from training completion to the follow up. As a whole, there was significant progress between performance before the training and the follow-up.

Figure 7: Comparison of Knowledge-Oriented Tests Before and After Training

T-TEST	Foundation/Review Stage	Review/Follow-up Stage	Foundation/Follow-up Stage
Class 1	0.008**	0.014*	0.000***
Class 2	0.000***	0.357	0.000***

Note: "*" refers to significant difference, indicating "<.05", "**<.01" and "***<.001"

Source: NACS 2018

As for the internal abilities of the classes, the comparison follows.

Post-Training Self-Evaluation/Follow-Up Self-Evaluation

Post-training evaluation and follow-up self-evaluation for Class 1 showed a significant increase in all items except task distribution, team incentive, and team performance. As for Class 2, there were significant differences in upward conveyance and communication, downward conveyance and communication, time control, team-member pressure re-adjustment, and team incentive and performance.

Figure 8: Comparison Between Self-evaluation Post-training and Follow Up

Post-training self-evaluation/Follow-up self-evaluation	Class 1	Class 2
Horizontal conveyance and communication	0.016*	0.101
Task distribution	0.061	0.140
Sympathy	0.000***	0.000***
Upward conveyance and communication	0.003**	0.024*
Downward conveyance and communication	0.003**	0.014*
Time control	0.043*	0.279
Team member pressure re-adjustment	0.003**	0.029*

Team leadership	0.029*	0.399
Team incentive	0.268	0.298
Team performance	0.340	0.465
Occupation acceptance and control	0.000***	0.000***

Note: * refers to significant difference, indicating "<.05", "**<.01" and "***<.001"

Source: NACS 2018

There were no significant differences in ability between the two classes in the current-work area between the self-evaluation and the external evaluation.

Figure 9: Comparison Between Follow-Up Self-Eval and Follow-up External Eval

Follow-up Self-evaluation/Follow-up External Evaluation	Class 1	Class 2
Horizontal conveyance and communication	0.274	0.415
Task distribution	0.440	0.418
Sympathy	0.482	0.283
Upward conveyance and communication	0.437	0.297
Downward conveyance and communication	0.490	0.423
Time control	0.437	0.206
Team member pressure re-adjustment	0.493	0.411
Team leadership	0.344	0.424
Team incentive	0.444	0.421
Team performance	0.433	0.497
Occupation acceptance and control	0.426	0.380

Source: NACS 2018

The comparison of the knowledge-oriented scores between the two classes (all eLearning and first blended/then eLearning) showed that Class 2 surpassed Class 1 in all indicators. The most significant difference was found in the post-training score, and it was obvious that trainees in Class 2 made significant progress in learning effectiveness during the training. The significance test was conducted for different test stages; the independent sample T-test was employed to check whether there was significant statistical difference between the two classes.

Figure 10: T-Test on the Scores of the Three Stages

Classes	Scores of Foundation Stage	Scores of Review Stage	Scores of Follow-up Stage
Class 1	54.23	64.74	73.50
Class 2	58.63	73.42	74.86

Source: NACS 2018

There was significant difference (0.021<0.05) in the review-stage score between the two classes. The result indicated that Class 2 significantly surpassed Class 1 in the review score and that the blended-learning generated significant immediate impact after the training. There were no significant differences in the pre-training score, which implied that the two classes shared similar basic knowledge before the training. There also was no significant difference in the follow-up scores. This data shows that the continual learning expanded the knowledge of the trainees in both classes.

Figure 11: T-Test on Score of Review

	Scores of Foundation Stage	Scores of Review Stage	Scores of Follow-up Stage
T-TEST	0.118	0.021*	0.355

Note: "*" refers to significant difference, indicating "<.05", "**<.01" and "***<.001"

Source: NACS 2018

In post-training, self-evaluation, Class 2 scored higher than Class 1 with a gap ranging from 0.03 to 0.29. The possible reason for the gap was that trainees in Class 2 had higher self-evaluations after the training or felt good about their progress during the training. This data also could indicate satisfaction with the curricula design: Class 2 was more satisfied with the curricular design than Class 1. The independent sample T test revealed that there was significant difference (0.024<0.05) only in sympathy, which means that the training had significant positive effects on the development of sympathy.

In the follow-up self-evaluation, scores of the blended-learning class and eLearning class varied in the self-evaluation of competencies with a gap ranging from -0.12 to 0.14. This data showed that trainees in the two classes had strengths and weaknesses during the continual eLearning in the workplace. The independent sample T-test reveals no significant difference in any item of competence in the follow-up self-evaluation.

In the external evaluation of competences, both classes shared similar comments and had their strengths and weaknesses in the indicators of competences with a gap ranging from -0.12 to 0.17. The result showed that supervisors and colleagues in the workplace had favorable comments about trainees in both classes. The independent sample T-test showed no significant-statistical difference in competence in the external evaluations.

Figure 12: Knowledge Scores Post-Training Self-eval vs. T-Test Post-training Self-eval

Post-training self-evaluation	Class 1	Class 2	Gap (Class 2-Class 1)	TTEST
Horizontal conveyance and communication	4.64	4.82	0.18	0.131
Task distribution	4.76	4.85	0.09	0.259
Sympathy	4.18	4.38	0.20	0.024*
Upward conveyance and communication	4.50	4.80	0.29	0.075
Downward conveyance and communication	4.60	4.81	0.21	0.124
Time control	4.76	4.90	0.14	0.189
Team member pressure re-adjustment	4.41	4.59	0.17	0.181
Team leadership	4.75	4.92	0.17	0.137
Team incentive	4.92	5.01	0.09	0.290
Team performance	4.88	4.95	0.07	0.314
Occupation acceptance and control	4.41	4.44	0.03	0.403

Note: "*" refers to significant difference, indicating "$<.05$", "**$<.01$" and "***$<.001$"

Figure 13: Self-Evaluation Scores in Follow-up vs. T-Test of the Scores

Follow-up self-evaluation	Class 1	Class 2	Gap (Class 2-Class 1)	TTEST
Horizontal conveyance and communication	4.97	5.04	0.07	0.343
Task distribution	5.00	5.00	0.00	0.500
Sympathy	5.14	5.26	0.12	0.252
Upward conveyance and communication	5.03	5.15	0.12	0.224
Downward conveyance and communication	5.09	5.19	0.10	0.256
Time control	5.03	5.00	-0.03	0.434
Team member pressure re-adjustment	4.94	4.93	-0.02	0.461
Team leadership	5.09	4.96	-0.12	0.268
Team incentive	5.03	4.93	-0.10	0.283
Team performance	4.94	4.96	0.02	0.452

Figure 14: Competency Follow-up Self-eval Scores vs. T-Test Follow-up External Evals

External evaluation	Class 1	Class 2	Gap (Class 2-Class 1)	T-TEST
Horizontal conveyance and communication	5.09	5.08	-0.01	0.482
Task distribution	4.97	4.96	-0.01	0.491
Sympathy	5.15	5.15	0.00	0.461
Upward conveyance and communication	5.06	5.23	0.17	0.265
Downward conveyance and communication	5.09	5.15	0.06	0.334
Time control	5.06	5.15	0.09	0.328
Team member pressure re-adjustment	4.94	4.88	-0.05	0.492
Team leadership	5.00	4.92	-0.08	0.449
Team incentive	5.00	4.88	-0.12	0.410
Team performance	4.91	4.96	0.05	0.491
Occupation acceptance and control	5.15	5.31	0.16	0.293

Source: NACS 2018

According to analysis of the scores, the training could accelerate knowledge acquisition constantly. The significant differences reflected the enhancement of competencies of the trainees after the training. The post-training self-evaluation of competences showed that the training had significant positive effects on the development of sympathy. In the final highest-level evaluation, data from external evaluations showed scores were all higher in the follow-up than in the post-training self-evaluations. The result demonstrated that supervisors believe trainees had strengthened their abilities since returning to the workplace.

Overall

According to the data on team training for senior staff, the blended-learning mode had great effects on trainees in the knowledge-oriented test in level 2 evaluations, and the effects were reflected in the knowledge scores. In level 3 evaluations, the blended-learning class again scored 74.86 in the knowledge-oriented test – close to the 73.42 in level 2.

The result demonstrated that the blended-learning mode was effective in helping trainees maintain memory of the knowledge gained. Level 3 evaluation surpassed level 2

evaluation in team-related competencies for both classes after trainees returned to their workplaces. The result showed that the blended-learning could strengthen the trainees' teamwork. Data from external evaluations showed that follow-up scores were all higher than those in the post-training self-evaluation.

Lessons Learned

- Introduce the concept of stepwise learning. This program explored learning effectiveness through the team-knowledge evaluation, the self-learning ability evaluation, and the 180° evaluation. Trainees played a dominant role in the process, and the test models were designed to offer them different evaluations in different stages. According to the evaluations, different contents of learning should be planned in the curricula arrangement, the process should consist of five stages (foundation, case study, review, follow-up and backflow), and different evaluations should be conducted in different stages.

- Learning effectiveness of the grouping model was high. This program promoted the grouping model to make the learning more active and flexible. Moreover, different modules can be integrated with different evaluations to create a deeper and more extensive evaluation of employees. Hence, evaluation results will be revealed to the trainees and contribute to targeted learning.

- It was hard to present content involving communication and coordination in the eLearning circular design and impossible to achieve effective interaction in the process. Therefore, this program first checked whether the contents were suitable for eLearning or classroom learning, and then the academy team began the design and development to achieve higher-learning effectiveness.

- Integrate technologies with the post-training follow up to achieve the efficacy of reflection. The courses in this program were developed with the hope that trainees would reflect actively in the process of problem solving. They were expected to re-interpret different experiences of their peers through personal experience and keep a written report in the system. The reflection report could reveal the benefits of blended learning. In the future, reflection reports will be added to the eLearning knowledge-management system as a learning resource for other trainees.

For the Future

1. **Develop the online trainer-trainee system.** Guidance from senior instructors is an important way to cultivate talent and spread knowledge. With trust at the core of a relationship between mentor and protégé, their interaction and discussion via online community, telephone, e-mail and instant messaging software means the mentor can help a trainee avoid making mistakes. Moreover, the trainee can acquire knowledge about management and communication, develop excellent attitude, grow leadership abilities, and put concepts and values into practice. The relationship not only promotes the personal improvement of trainers and trainees but also enhances the organization's commitment and employees' motivation.

2. **Integrate virtual reality.** Future courses will feature simulations in eLearning with emphasis on scenarios using virtual reality technology. For example, in simulated training of judgment (crisis handling), a trainee plays the role of a supervisor who learns to take appropriate actions in emergencies. In simulated training of procedure (themed communication and coordination), a trainee acts as a policy maker and learns how to use procedure to improve policy lobbying. Virtual reality will contribute to more vivid scenarios.

3. **Develop simulated-practice tools for mid-level supervisors.** Promotes technological transfer according to the learning, evaluation, and demonstration modes of the teamwork courses. Such practice tools for "target occupation of senior supervisor" as scenario-simulated interviews, team discussions, and work arrangements will be developed to evaluate occupational performance of senior supervisors in policy planning, teamwork, and leader-subordinate empowerment.

4. **Observer mode.** Teamwork highlights interaction, communication, and coordination. In the classroom, a lecturer faces many trainees and cannot keep a complete record of them on the four-teamwork dimensions – team concepts, team communication, team management, and leadership. Therefore, observers should be added to the courses. The observer will report on the behaviors of trainees and contribute to a more-complete evaluation of learning effectiveness.

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