An Effective Educational System for Facilitators in VA/VE/FA workshops

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Biography

Hisaya Yokota is a Certified Value Specialist both by the SAVE International, USA and by the Society of Japanese Value Engineering and also is a Professional Engineer, Japan (P.E.Jp), certified by the Institution of Professional Engineers, Japan. He has been a leading VE Consultant over the past 20 years, having promoted the application of Design-phased VE to public works projects for the Ministry of Land, Infrastructure, Transport and Tourism, the Urban Renaissance Agency, Prefectures, Cities, Towns, and Villages, etc. He has conducted approximately 90 Design-phased VE Studies, creating a total savings of about 200 billion JPY in cost reductions. In 2010, after having worked as Director of the Value Engineering Center at Pacific Consultants Company Limited, he started the Functional Approach Institute Company Limited in Tokyo where as President and Chief Executive Officer, he offers business management strategies, project consulting services, and VE education.

Abstract

This paper presents how businesses should train their own facilitators most effectively, when they apply VE to their organization. Through his broad experience in training facilitators for a great many big businesses in Japan, the author systematically describes necessary elements in such training, including it planning, implementation, and evaluation. To this end, he describes an exemplary training program out of his numerous successful cases.

It is a fact that the "minds" and "techniques" of Value Engineering are extremely effective in solving virtually any problem. The VE Study is a workshop to maximize the effect of VE. Therefore, the role of facilitators is vital for a greater effect: The higher skills the facilitator has, the more effective alternatives they can make through their VE Study with less time.

In many cases, the facilitator should be the one with CVS qualifications. The CVS possesses a wide range of knowledge and experience. However, the absolute number of CVSs is relatively small, and in the real world, many "trained" facilitators take their place.

For their VE application, businesses – whether public or private – depend on how effectively they can develop highly skilled facilitators. More and more businesses wish to produce more highly skilled facilitators with fewer training hours and costs. Even in this, they also should consider the "V=F/C" of such training.

Those businesses are facing a difficult issue as to whether they should prioritize the training itself or its results. If they become training-oriented, they cannot gain satisfactory results. Or if they become result-oriented, they cannot expect satisfactory training. The training and its results are in a trade-off relationship.

Through his consulting, the author has so far trained a great number of facilitators for businesses. However, each business has its own culture and employees. Therefore, they should train their facilitators on their own. This paper shows how businesses should appropriately balance such a trade-off relationship in their own ways.

Key words: Education system, Human resources, Facilitator, Functional approach

Introduction

The author has conducted VE training for more than 25,000 people through over 700 seminars in Japan, producing many VE specialists. He founded "Academy," an institution of VE education, and since its inception he has been deeply committed to VE education and studies. During the course of his VE training, the author has found that much of it turned out successful, but some did not. Among such successful cases there are several things in common, and he extracted elements of success and has developed effective, short-term programs for developing human resources.

Extract elements necessary for education

Clarify functions necessary for facilitators

There are four main skills required for any facilitators at VE workshops: management skills, coordination skills, execution skills, and communication skills. Only those at or over the required levels of these four main skills can solve problems and complete tasks as facilitators. Each of the four main skills is divided further into three skills, totaling twelve skills (Figure 1). A key to success in education is to make programs for developing human resources through acquiring these twelve skills.
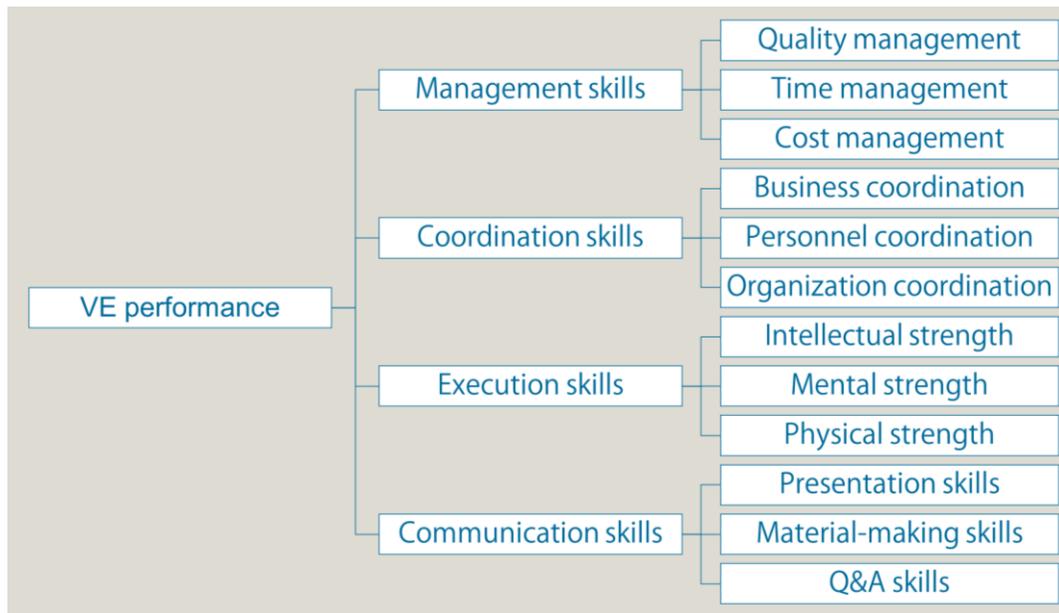

Figure 1: Chart of the skills for facilitators

Management skills

According to their needs, management skills are divided into three classifications: quality management, time management, and cost management. For each of the three – quality, time, and cost, facilitators should be able to understand its current status, predict its future, and promote/control it. To understand their current status, one needs to manage up-to-date performance, used resources, current progress, and processing speed. In the example of idea generation, one should understand how many ideas have been generated and at what pace ideas are being generated. To make predictions for idea generation, one needs to predict it by using the current status and considering risk: time necessary for a certain number of ideas generated, and time errors in contingency. In the case where quality, time, and cost fall short based on their predictions, one should promote them. Conversely, when they are excessive, one should control them. One needs skills for managing quality, time, and cost.

Coordination skills

Coordination skills are divided further into three classifications: business coordination, personnel coordination, and organization coordination. To conduct good VE workshops, one should negotiate with

and persuade their counterparts regarding each of the three. To coordinate business, personnel, and organizations, one needs to well understand the position or situation of their counterparts through investigation and observation. With this in mind, one should look into areas that can be coordinated. Further, one shows and explains his/her ends and means to their counterparts, and conveys merits and demerits for them. Only through this process, one can negotiate with and persuade any counterparts.

Execution skills

Execution skills are divided further into three classifications: intellectual abilities, mental abilities, and physical abilities. One needs to receive proper training of each and possess experience to execute these three abilities through practice. To gain intellectual abilities, one needs wide knowledge – through not only word definitions, but also experience. Knowledge and experience complement each other. One can experience knowledge through practice, and gain new knowledge from that experience. Mental abilities require passion and patience. It is important to have mental strength – never give up and carry out one's tasks. One cannot serve as a facilitator if he/she gives up or becomes discouraged. Physical abilities require vocal and physical strengths. One should keep vocal and physical strengths while conducting long-hour workshops. One cannot lead other members if he/she gets tired or runs out of breath.

Communication skills

Communication skills are divided further into presentation skills, material-making skills, and Q&A skills. Without causing misunderstanding, one needs to express or convey his/her or his/her team's opinions and ideas. One's expressions include language, emotional, visual, and audio expressions. Insufficient expressions often cause misunderstanding. Thus, one should communicate in a comprehensible way or in multiple ways. Communication requires that its amount and quality be controlled, depending on who the audience is. For audiences with a higher understanding, one should increase his/her communication speed and amount. Contrarily, for audiences with a lower understanding, one should simplify the contents and communicate with them in a simpler way.

How to plan education programs

Understand education systematically

People grow through their experiences. To develop human resources, one should make a framework in which they are required to experience things that they need to learn. Above all, it is important for education planners to systematically understand what elements lead to education. The author has educated many people, and through his teaching experience he has realized that the following six elements make people grow: training, self-learning, self-improvement, practice, study, and leadership (Figure 2).

Training resembles class in school: teachers teach students knowledge. Self-learning resembles homework in school: students do their assigned homework. Self-improvement means that through it, one can interact with other people, learn in depth, and improve his/her skills. Practice makes one use his/her abilities in actual tasks. Study makes one develop his/her skills or new abilities. Finally, leadership makes one enhance his/her abilities through teaching newcomers.
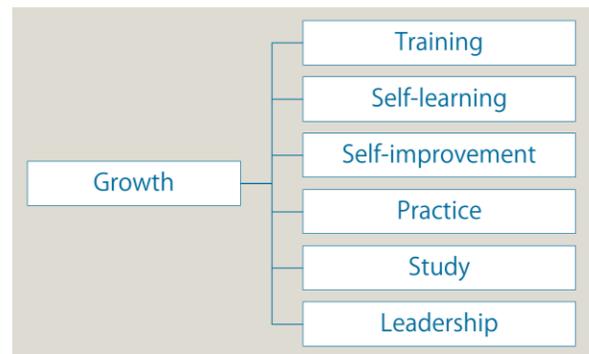
Figure 2: Chart of the elements of education

Divide education into multiple levels

Education planning should be divided into several levels. It should not provide trainees one-size-fits-all education from beginners' to expert level. One should make leveled curricula and set small goals at each level. To this end, it is useful to make learning plan maps (Figure 3). The example shows how to make learning plans at each level, when one educates trainees through four level curricula – Basic, Advanced 1, Advanced 2, and Professional.

VE performance		Education program	Basic	Advanced 1	Advanced 2	Professional	Total
	Management skills	Quality management			2	2	4
		Time management			2	2	4
		Cost management			2	2	4
	Coordination skills	Business coordination			2	2	4
		Personnel coordination			2	3	5
		Organization coordination			2	3	5
	Execution skills	Intellectual strength	20	10	10	5	45
		Mental strength	1	3	3	3	10
		Physical strength				1	1
	Communication skills	Presentation skills	1		3	2	6
		Material-making skills			2	1	3
		Q&A skills		1	3	5	9
Total			22	14	33	31	100

Figure 3: Learning plan map

Wherein, one should properly divide levels and allot time for each level. Cramming and sluggish education should be avoided. The proper education makes trainees feel their growth. To this end, it is useful to make learning graphs (Figure 4). The learning graph is a graph in which learning periods are plotted on its x-axis; and learning levels are plotted on its y-axis. When learning periods and levels are divided into four sections of each, each gradient of education effect becomes visible and easy to understand.

As the gradient of education effect becomes steeper, it means higher education effect. Also, trainees can feel how much they grow when they see it. However, when the gradient is too steep, it means cramming: it causes reverse effect on education and therefore should be avoided. The gradient of education effect is made, based on formula: $V = F / C$ wherein education effect equals education value.
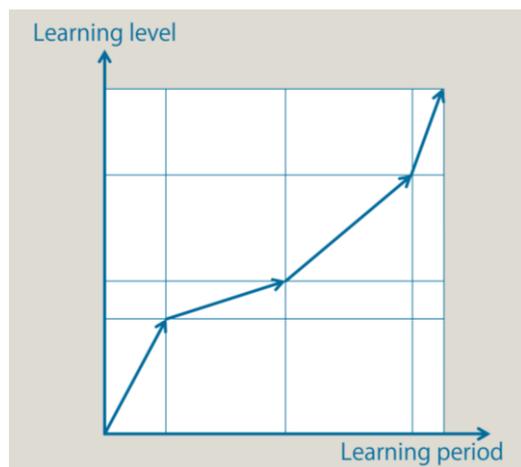

Figure 4: Learning graph

How to conduct training

Education through training

To receive the most basic education means to become a trainee at training. Through training, facilitators focus on teaching knowledge for execution skills. There are things to do before, during, and after training. Before training, facilitators should do the following four things: to document knowledge, to add relevant information, to systematize knowledge, and to compile knowledge as textbooks (Figure 5). The textbooks should include worksheet samples and space for

Figure 5: Textbooks

trainees to write in.

During training, facilitators should do the following four things: to lecture, to show examples, to assign exercises, and to provide Q&A sessions. One should allot proper time for each of the four. In the case of a three-day training, it is useful to make a training time schedule as follows (Figure 6).

Contents	Lecture	Example	Exercise	Q&A	Total	Sum total	
1	1.5 h	—	—	0.5 h	2.0 h	2.0 h	Day 1
2	0.4 h	0.1 h	1.0 h	0.2 h	1.7 h	3.7 h	Day 1
3	0.4 h	0.3 h	2.0 h	0.5 h	3.2 h	6.9 h	Day 1
4	0.4 h	0.5 h	3.0 h	0.5 h	4.4 h	11.3 h	Day 1
5	0.3 h	0.2 h	0.5 h	0.3 h	1.3 h	12.6 h	Day 2
6	0.3 h	0.2 h	0.3 h	0.3 h	1.1 h	13.7 h	Day 2
7	0.3 h	0.1 h	0.2 h	0.3 h	0.9 h	14.6 h	Day 2
8	0.3 h	0.2 h	2.0 h	0.2 h	2.7 h	17.3 h	Day 2
9	0.2 h	0.1 h	0.5 h	0.2 h	1.0 h	18.3 h	Day 3
1 0	0.2 h	0.2 h	2.0 h	0.3 h	2.7 h	21.0 h	Day 3
1 1	0.2 h	0.1 h	0.5 h	0.2 h	1.0 h	22.0 h	Day 3
1 2	1.0 h	—	—	1.0 h	2.0 h	24.0 h	Day 3
Total	5.5 h	2.0 h	12.0 h	4.5 h	24.0 h		

Figure 6: Training time schedule

After training, facilitators should do the following two things: issue certificates and have trainees take questionnaires. Certificates may prove trainees' attendance, or their pass when tests are required: certificates of attendance or certificate of passing. Questionnaires are effective because trainees review their training and realize what skills they have not learned well. Education through training is shown as follows (Figure 7).
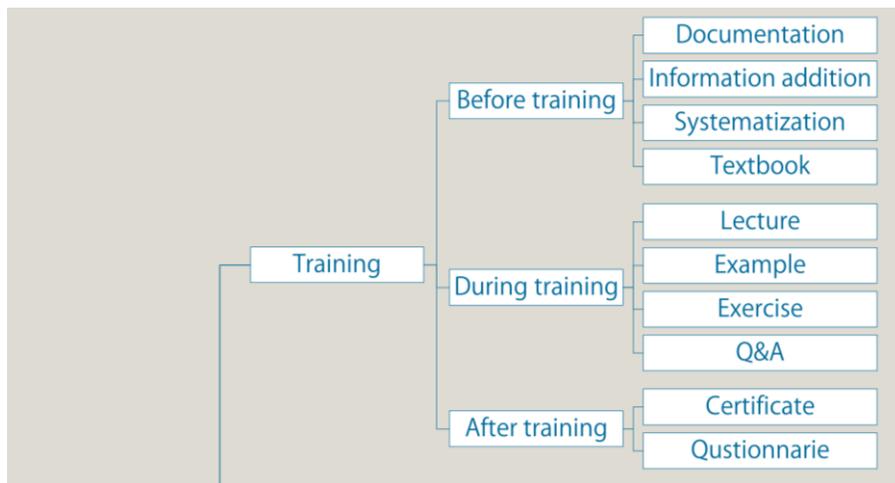

Figure 7: Facilitators' procedure for training

Education through self-learning

Training requires leaders. Even without leaders, trainees can learn through self-learning. Self-learning consists of homework and tests (Figure 8).
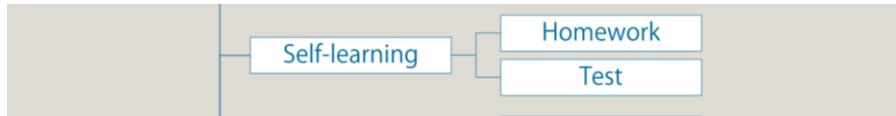
Figure 8: Procedure for self-learning

Homework serves as a means for trainees to review what they have learned through training. There are two types of homework. One is assigned during training – for example, between Day 1 and Day 2. The other is assigned after training. The former is easy for facilitators to give trainees feedback, but has less time for trainees to review. Tests are means to measure education effect. Trainees will study towards tests. Their study makes them review and exercise what they have learned, which leads to education effect on them.

Education through self-improvement

Education effect by training and self-learning decreases as time passes. To keep or improve trainees' abilities, they need self-improvement. Education through self-improvement consists of the following four: interaction, audit, presentation, and literature (Figure 9).
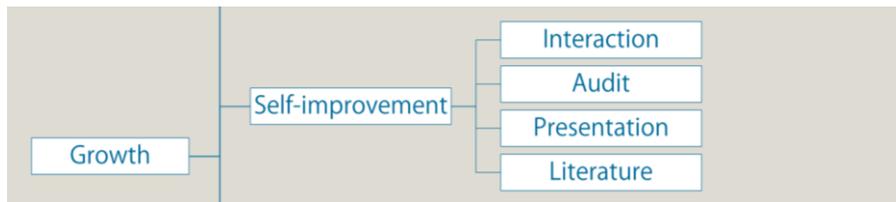

Figure 9: Procedure for self-improvement

Trainees can interact with facilitators and exchange their knowledge and experience. Through teaching and learning, they can enhance their skills. Also, trainees can audit conferences to learn various cases and research results. Through gaining new knowledge, they can enhance their skills. Meanwhile, trainees can present their cases or research results at conferences. Through preparing their presentations, they can document their knowledge and experience, which leads to high education effect. Speaking in public help trainees improve their communication skills. Finally, through reading literature, trainees can deepen their skills. It contains many thoughts and cases.

Education through practice

Education through training, self-learning, and self-improvement is not practical. Trainees need education through practice. They can join actual workshops with themes to improve. There, they will practice their execution, management, coordination, and communication skills. According to their levels, trainees can join workshops as observers, members, subleaders, or leaders (Figure 10). Ultimately, they will gain their abilities as facilitators.
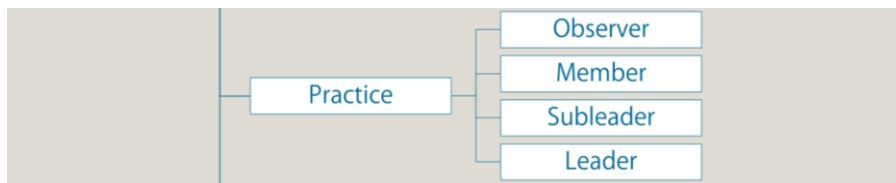

Figure 10: Procedure for practice

As observers, trainees can feel a unique atmosphere or tension at workshops. Though they cannot participate, they can gain new practical knowledge. When they have questions, they can ask skilled people and deepen their understanding. Meanwhile, when they join workshops as members, trainees can gain experience as concerned parties. They can use knowledge that they have learned. When they have been unable to use knowledge well, they can strengthen it by reviewing or asking skilled people later. Further, trainees can participate in workshops as subleaders, and gain management skills from a leader's

viewpoint. They can also gain experience as leaders while assisting their leaders. Finally, trainees can feel tension as leaders at workshops. By repeatedly becoming leaders, they can steadily gain skills as facilitators. Note that when they serve as leaders for the first time, those with high skills should be their observers or subleaders to avoid failure.

Education through study

Through practice, trainees can accumulate skills as facilitators. To become better professionals, they are required to not only make use of the existing technologies, but also improve and develop their own technologies. Therefore, trainees should educate themselves through study. Education through study consists of the following three: voluntary study, project study, and specified study (Figure 11).
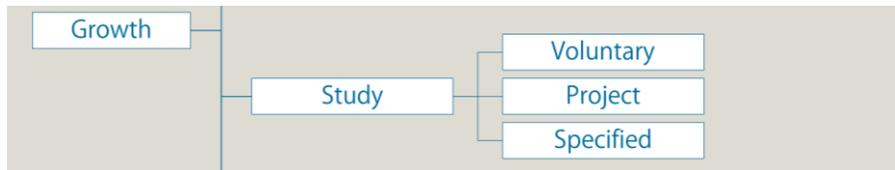

Figure 11: Procedure for study

Voluntary study is conducted on trainees' own and therefore is not required. Meanwhile, project study is required but trainees can choose their own themes. However, specified study is required and trainees must conduct it with themes specified by their leaders. For any of these studies, trainees should decide it, plan it, execute it, and summarize it, according to its theme. Afterwards, they will receive supports from their leaders. They will save their study results in theses, publish them, or present them at conferences. They may conduct seminars on their study results as new training curricula. Through these and with their enhanced skills, they can become better professionals.

Education through leadership

Ideal education should produce leaders. If they only improve their own skills, it means that they can only gain results from their own activities. If they hand down their skills to other people, it will contribute several or a dozen times more to our society. Education through leadership consists of the following three: lecturers, trainers, and instructors (Figure 12).
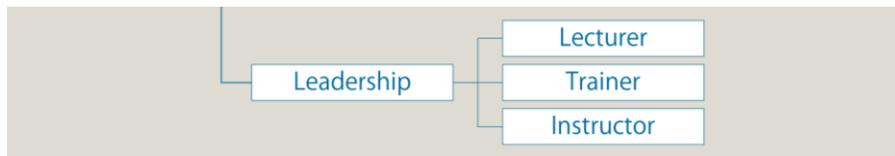

Figure 12: Procedure for leadership

Lecturers require specific communication skills for people with no VE knowledge. Trainees should not only speak about VE, but also increase audience's awareness and urge their actions. They may begin with short or partial lectures. Meanwhile, trainers require skills to coordinate training contents, according to participants' learning progress. Through exercises and Q&A sessions, they should provide additional explanations or cases. Until they can conduct training on their own, trainees should gain some experience as assistant lecturers. Finally, instructors requires skills to support learners' individual assignments and provide them with higher-level education. They should not only teach knowledge, but also have learners think and solve their assignments on their own. Trainees may begin to teach as assistant instructors.

How to evaluate trainees

Facilitators evaluate trainees in the final phase of developing human resources. They should evaluate trainees not from an educator's viewpoint, but from a user's or trainee's viewpoint. They should evaluate trainees as to how much they have grown – their growth. To do so, facilitators pay attention to trainees' management, coordination, execution, and communication skills, as mentioned in chart of the skills for facilitators. They should evaluate whether each skills has reached its required level. In other words, "When evaluating education effect, one should not confirm means for education, but should confirm effect by

education". To this end, it is useful to make a "matrix of education means and effects" – a matrix to combine education means and effects (Figure 13). In a case where he/she finds that education effects have been low, one can confirm what means have gone wrong and correct them.

Effect	Means	Training				Self-learning		Self-improvement				Practice				Study			Leadership		
		Lecture	Example	Exercise	Q&A	Homework	Test	Interaction	Audit	Presentation	Literature	Observer	Member	Subleader	Leader	Voluntary	Project	Specified	Lecturer	Trainer	Instructor
Management skills	Quality management			○		○	○			○		△	◎	◎	◎	○	○	○	○	○	○
Management skills	Time management			○		○	○			○		△	◎	◎	◎	○	○	○	○	○	○
Management skills	Cost management													◎	◎						
Coordination skills	Business coordination					○	○							◎	◎						
Coordination skills	Personal coordination			○				○				△	◎	◎	◎					○	○
Coordination skills	Organization coordination													◎	◎						
Execution skills	Intellectual strength	◎	◎	◎	◎	◎	◎	○	◎		◎	△				○	○	○	○	○	○
Execution skills	Mental strength			○		○	○			○		△	◎	◎	◎	○	○	○	○	○	○
Execution skills	Physical strength											△	○	○	○						
Communication skills	Presentation skills			○				○		◎		△	○	○	○				◎	◎	
Communication skills	Material-making skills			○		○	○			◎		△	○	○	○	◎	◎	◎	○	○	○
Communication skills	Q&A skills			○	○			○	○	○		△	○	○	○				○	◎	◎

Figure 13: Matrix of education means and effects

Conclusion

The author has systematized elements necessary for education and compiled how to effectively plan, execute, and evaluate education. He names his method "FA education system." Needless to say, various styles of education have been conducted all over the world. Some are effective and there are great leaders. There is no need to deny them. The author believes that education should be goal-oriented, but not means-oriented. With this thought in mind, he thinks that education can become more effective and produce more capable facilitators, thus enhancing VE improvement effect.

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