

How to Setup a Successful E-Learning System for E-Business[†]

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Abstract

E-Learning is burgeoning now, it develops a new way to enhance corporate competence effectiveness. Why should corporations investigate in an e-Learning system for e-Business ? Because it provides a real-time and supporting learning environment for e-Business. In addition to be a profitable learning system, it can also be connected to ERP and CRM systems to generate an integrated solution for e-Business.

It lists the differences and barriers between traditional training and e-Learning. Although there are barriers, corporations still get their own reasons for setting it up. It lists the learning needs from different stakeholders. It introduces an example of LMS-LCMS integration in a learning ecosystem from IDC, and is followed by procedures to be taken to construct it.

Strategies should be correctly set and e-Learning project plans should be well defined and implemented. Success and challenge factors are also discussed to advise project leaders motivation and shortcoming elements of an e-Learning system. By calculating the e-Learning ROI, corporations can adjust their e-Learning strategies in order to keep a flexible management.

Keywords: e-Learning, LCMS, LMS, ROI

1. Introduction[†]

People are used to learn in the classrooms, they sat down by one another and the instructors were in front of them. They read from the blackboards and wrote down what the instructors had told and written to them. But today, the learning revolution has changed the above situations. Instructors and learners are connected via the Internet. That is so called e-Learning. In the autumn of the year 2000, the HR World is being battered by a storm. It has had many different names over the years, but today it is mainly known as e-Learning. E-Learning will not replace traditional classroom training. Frankly speaking, they are complements each of the other.

Are there relationships between traditional training and e-Learning ? In fact, they will help each other with their own specific advantages. To have a more clear description,

for example, traditional training is taken place at a specific place and a scheduled time, while e-Learning happens at any place and anytime. Moreover, there are many differences between them. Corporations can choose the training approaches that can best fulfill their needs. If their learning environments are not ready for e-Learning only training. they can also choose a blended learning which combine traditional training and e-Learning approaches. This paper compares six different items between traditional training and e-Learning. E-Learning system shows clear that it is suitable in knowledge economic era via the Internet. They are shown in table 1.

Table 1 : Comparisons between traditional training and e-Learning

Item	Traditional training	E-Learning
Function	⊙ Training for new skills and knowledge	⊙ Training for new skills and knowledge ⊙ Strategic business tool
Training place	⊙ Physical classroom ⊙ Limited scale ⊙ Fixed location	⊙ Virtual classroom ⊙ Global wide scale ⊙ Any place
Content	⊙ PowerPoint slides ⊙ Textbooks	⊙ Animation ⊙ Simulation ⊙ Online resources
Learning schedule & time	⊙ Instructors control the topics and schedules ⊙ Instructor-Led ⊙ Fixed time	⊙ Learners control the topics and schedules ⊙ Self-Paced ⊙ Any time (24 x 7)
Problem solving	⊙ Ask instructors for help ⊙ More interactive	⊙ Ask online instructors for help (synchronous) ⊙ Message boards, chatrooms, and e-mail (asynchronous)
Evaluation	⊙ Level I to Level IV evaluations	⊙ Level I to Level V (ROI) evaluations

[†] This work was partially supported by the National Science Council in Taiwan, Republic of China, under Grant NSC90-2623-7-009-017, NSC 91-2623-7-009-016, and NSC91-2416-H009-012.

First, their functions are different. Although they are all trainings for new skills and knowledge, more than that, e-Learning is also a strategic business tool which can be integrated into an e-Business system and be used to achieve the business objectives. Their training places are also different - from physical to virtual classroom, limited to global wide scale, and fixed location to any place. Powerpoint slides and textbooks will be replaced by animations, simulations, online resources, and so forth.

Instructors no longer have to assign learning topics or schedules. Instead, learners have to be more active to their learning topics or schedules. They should decide what and when they want to learn. They can access online training courses 24 hours a day, 7 days a week. When learners get any questions during the online training courses, they will use different ways to communicate with instructors. They must “talk” to e-Learning instructors via the Internet by using their computers. Message boards, chatrooms, and e-mail will also help them to find someone to solve problems.

Finally, when comparing their ways of measuring training results, traditional training can only do Level I to Level IV evaluations, but e-Learning can do Level I to Level V – Return on Investment (ROI) evaluations. They are discussed in more details in the last section of this paper.

2. Points of Research

An e-Learning system will be a strategic business tool to increase business speed, flexibility, retention, and employee satisfaction. As projected by IDC, the market for e-Learning services, content and technology will be over \$11 billion, growing at a nearly 100% compound annual growth rate by 2003 [4].

Although, e-Learning is now getting more popular, but there are still some critical points that corporations still feel confused. This research intends to give some general ideas on how to setup a successful e-Learning system for e-Business.

It first introduces the e-Learning marketplace - four barriers and SWOT analysis are discussed. With the above two analysis results, corporations will get their own e-Learning readiness situations in their minds. Different stakeholders will have different reasons for setting up the system. One environment of e-Learning system from IDC is also introduced.

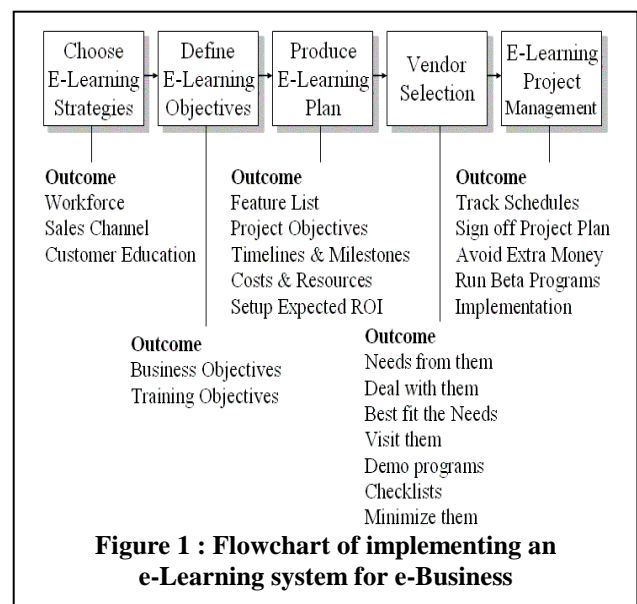
Steps that are needed to implement an e-Learning system for e-Business are proposed. They will provide general procedures which will be practical. They include strategies, objectives, plan, vendor selection, and project management. Success and challenge factors will suggest motivation and challenging powers towards the system. Corporations can improve their e-Learning system day after day by applying the factors. Finally, five ways to measure the performance of e-Learning system – level I to level V, are suggested. The paper intends to provide methodologies to setup a successful e-Learning system for e-Business by all the topics discussed.

3. Approaches

Related e-Learning papers are reviewed together to give general ideas and descriptions of the paper. “Analysis of e-Learning marketplace” introduces the e-Learning marketplace – it presents four barriers and SWOT to describe the e-Learning environments that corporations will be facing. “Corporate reasons for setting up an e-Learning system for e-Business” discusses the feelings of different stakeholders inside corporations about an e-Learning system despite the barriers. One e-Learning system model from IDC depicts related components – LMS, LCMS, delivery systems, and back end systems integration.

According to DigitalThink [4] and this research, there are five steps proposed as the approaches to setup an e-Learning system. Each of them is related to one another. Please refer to figure 1 for the flowchart.

“Choose e-Learning strategies” will need to know what corporations want from the e-Learning system first. According to DigitalThink researches [4], there are three categories of strategies : “workforce transformation”, “sales channel optimization”, and “customer education” strategies. “Workforce transformation strategy” will help to increase productivities and cause higher retention of employees. “Sales channel optimization strategy” will shorten time and knowledge to market, fasten delivery speed, and increase time spent on selling. “Customer education strategy” focuses on how to give customers related education and satisfactory services. “Define e-Learning objectives” will describe what corporations really want to get. There are business and training objectives. Business objectives focus on how to improve effectiveness of workforce transformation, sales channel optimization, and customer education. Training objectives are concerned with learning plans, ability to access training resources, integrations of coursewares, and so forth.



“Produce e-Learning plan” provides steps to produce an e-Learning plan. It lists all tasks that must be undertaken, together with related stakeholders involved. Every key milestone is well defined and scheduled. LMS / LCMS, LAN installation, coursewares offerings and authoring are good examples of key milestones. Also, resources and costs needed have to be well arranged and calculated. Please provide predefined ROI before the performances of e-Learning system is evaluated. It will become the criteria for measuring success of e-Learning system.

“Vendor selection” helps to find suitable vendors to be corporate with. It lists seven steps needed to be taken. By following them, corporations will choose correct vendors and solutions that are best to fulfill their needs.

“E-Learning project management” suggests ways to manage an e-Learning project. It tracks project schedules, assures signing off the project plan, avoids spending extra money, runs beta programs, and implements a successful e-Learning system.

Finally, “success factors” suggests the motivation power to make the e-Learning system grow up and run smoothly. “Challenge factors” suggests the challenging power to threaten the normal behaviors of an e-Learning system. “Evaluation and ROI” lists the ways to measure the e-Learning performance using four levels (Level I ~ IV) developed by Donald Kirkpatrick and Level V enhanced by Jack Phillips. Level V will calculate corporate return on investment (ROI) [7].

4. Analysis of E-Learning Marketplace

Although the market is still growing, there are many barriers needed to be overcome when planning to setup an e-Learning system for e-Business [10]. In this paper, four barriers are proposed to explain what should be conquered by most corporations. Figure 2 below depicts the four general barriers to e-Learning.

The first barrier is “budgetary considerations”. It will consider e-Learning budgets. It is expensive to setup an e-Learning system for e-Business. There are very few successful e-Learning implementation stories, so they will not spend a lot of money on it now. In fact, corporations will cut e-Learning budgets very often.

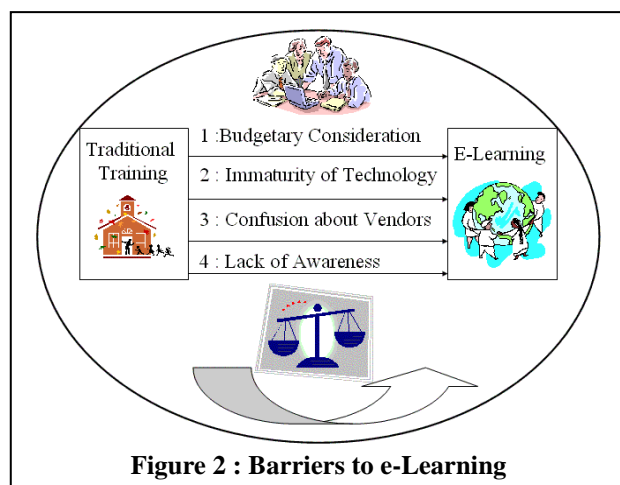


Figure 2 : Barriers to e-Learning

The second barrier is “immaturity of e-Learning technology”. The technologies are still young and new. The average life cycles of them are about two years which are too short to motivate corporations to adopt them. If corporations adopt immature e-Learning technologies, they will soon regret.

The third barrier is “confusion about the vendors”. Because the e-Learning markets are still fragmented and lacking of integrated solutions, so most vendors will have to develop the contents, technologies and services on their own. Few vendors finish developing complete solutions, they are still having experiments and researches.

The fourth barrier is “lack of awareness”. People do not know very well in which way e-Learning will really change their training models. They already get used to traditional trainings and do not feel like to accept new ways to be trained. It will take time for learners to establish new styles of habits before it gets popular.

SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis of e-Learning will help corporations to know the characteristics of their e-Learning system when being applied. Figure 3 shows SWOT analysis of e-Learning. It includes the descriptive functions of SWOT to help corporations transforming from traditional trainings to e-Learning.

The strengths of e-Learning will be its advantages to get supports from top managements. It shows that e-Learning will overcome time and place barriers that traditional trainings are used to have. Instead, learners can access it whenever and wherever they want. It will not need to pay traveling costs, so the costs will be lower.

The weaknesses of e-Learning are shortages to make people feel disappointed. Especially the technology to setup an e-Learning system is new. Not many people know it very well. Also, learners may not be used to this kind of learning. They cannot see each other. They can only use computers to talk to other learners and instructors. They may need some helps from experts even more.

The opportunities of e-Learning will provide some possible ways for corporations to adopt e-Learning as their new training approach. They are the chances to be succeed or fail. Although e-Learning may have weaknesses and threats, there are still opportunities which will attract

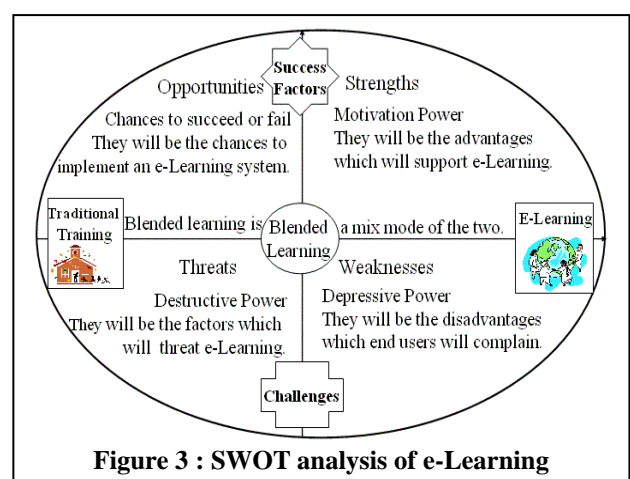


Figure 3 : SWOT analysis of e-Learning

corporations get involved with the implementation of e-Learning system. It will provide the best and quickest way to communicate with one another all over the world. It provides a new approach to reach news and knowledge of any desired place on the earth.

The threats of e-Learning will be destructive power to threaten e-Learning solutions. Since e-Learning is less interactive, learners may not have much interest on it for a long time. Technologies and requirements of e-Learning will also limit the development. If corporations know the threats of e-Learning in advance, they can be prepared to reduce the impacts.

5. Reasons for Setting up an E-Learning System for E-Business

Why do corporations want to setup an e-Learning system for e-Business despite the barriers ? Because it will provide an effective way for corporations to learn and gain knowledge easily. Besides, it will support a real-time, supporting, and profitable learning environment for e-Business. It will be integrated with ERP and CRM systems to give a total e-Business solution.

Why are there so many corporations interested in having an e-Learning system for e-Business right now ? Because the time has come. Traditional trainings can no longer cover all corporate trainings. Instead, e-Learning system will help to provide a more efficient way of delivering information and knowledge needed. Especially now many corporations adjust their paces to become learning organizations, what will most benefit them are knowledge and information. The ones who win will need to have good controls on their corporate intellectual capitals. In fact, the technology of e-Learning will support them successfully.

An e-Learning system will provide an online learning system to connect stakeholders via the Internet. Most of them will get what they want in a quicker time. They get different ideas of what an e-Learning system can help them with their daily works. Figure 4 below shows the relationships between different viewpoints towards an e-Learning system for e-Business.

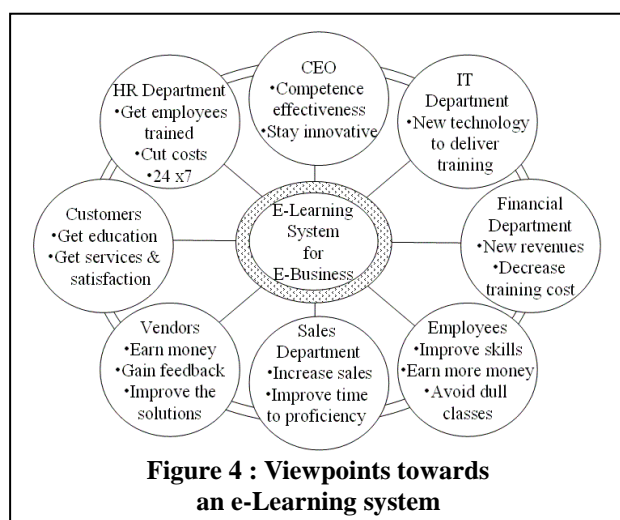


Figure 4 : Viewpoints towards an e-Learning system

CEO may view it as ways to increase competence effectiveness, reduce cycle time, and stay creative and innovative. They should have the courage to adopt an e-Learning system. Human resource departments may view it as ways to get employees trained, cut training costs, and a 24 x 7, on target training system. They should know very well that e-Learning system will improve training processes. IT departments may view it as a new kind of technology to deliver effective training courses. They should come out with the needs of e-Learning system infrastructure. Financial departments may view it as ways for a new revenue resource and decreasing training costs. Sales departments may view it as ways to increase sales, improve time to proficiency, and reduce turnover. They should provide what kinds of e-Learning strategies that will improve their selling processes. Employees may view it as ways to improve skills, earn more money, and avoid dull classes. They should learn how to use the e-Learning system. Finally, customers may view it as ways to get education, good services, and satisfaction. They will benefit from the e-Learning system and feedback to corporations.

Although, there are still some barriers between traditional trainings and e-Learning, the trends are now getting unstoppable. Clear understandings about the e-Learning system will give good profits if being used well. Since it will give different people what they want, why should there be any doubts for setting it up ? So, next step is to know the e-Learning system more, cross the barriers, and get started.

6. E-Learning System for E-Business

There are Learning Management Systems (LMS), Learning Content Management Systems (LCMS), content composition system, delivery system, and legacy system integration services which build up an e-Learning system for e-Business environment. Figure 5 depicts LMS-LCMS integration in a learning ecosystem from IDC [9].

The LMS is the operation system of an e-Learning system. It will manage registration, scheduling processes,

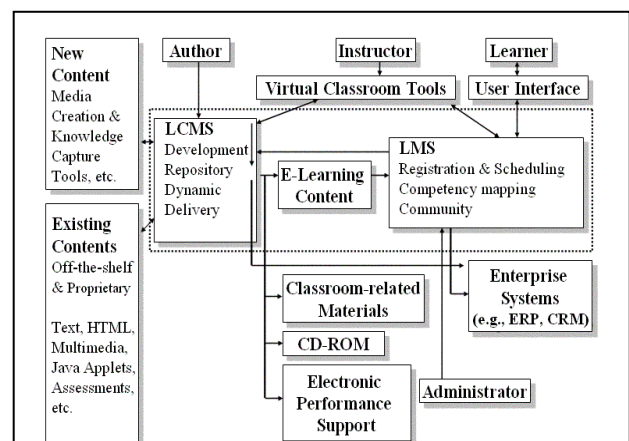


Figure 5 : LMS-LCMS integration in a learning ecosystem, source : IDC, 2001

and competency mapping community. Administer can track online, classroom-based learning events, and other training processes by using the LMS. Instructor can use virtual classroom tools to manage e-Learning courses, track learner progresses, record test scores, indicate course completions, and evaluate learners' performance. Learners can login to the LMS and access their profile from the database via users' interface. They review the course catalog and choose the courses they need. They can also search their desirable topics, and the LMS will dynamically find the courses in a repository of content for them.

The LCMS can manage the content which will be provided online, whether it is a customized content or off-the-shelf coursewares. It will provide a multi-user environment. In the environment, authors can use media creation or knowledge capture tools to create or capture e-Learning content from a central repository. Existing contents include off-the-shelf and proprietary courses. They may be text, html, multimedia, java applets, assessments formats, and so forth.

Delivery systems can provide a way for learners to interact and collaborate with instructors and other learners. It uses technologies such as voice over IP, video, whiteboard, feedback tools, breakout rooms, application sharing, and evaluation tools to create a classroom environment. The e-Learning system will be integrated to the traditional training management, performance support, ERP and CRM systems [6]. Major content vendors will support corporations with learning catalog from their content database and ERP system legacy applications. Moreover, it can also connect to customers' websites.

7. Choose E-Learning Strategies

Although the e-Learning system for e-Business can help corporations in many different ways, according to DigitalThink [4], the following three kinds of strategies – “workforce transformation”, “sales channel optimization”, and “customer education” strategies will best benefit corporations with highest Return on Investment (ROI). Each of them will be e-Learning enabler for setting up the system. If e-Learning project leaders need to figure out the ways e-Learning system can benefit them, please spend some time understanding the following statements and descriptions.

First, what will “workforce transformation strategy” benefit corporations ? It will increase productivity, reduce traveling time, reduce training unit costs, deliver more trainings with the same budgets, and cause higher retention of employees. It will help corporations to save more time and money to hold employees' training courses. It is also intended to improve skills, knowledge, and performance of employees.

Second, what is “sales channel optimization strategy” ? What services will the e-Learning system provide to sales departments ? It will increase time to market, updating flexibility, delivery speed and time spent on selling. The e-Learning system can allow corporations to upload the

latest product introduction files. Salesmen can download and present the files to customers. Whenever new product specs, information or open issues are posted on the e-Learning system, salesmen can get them from any place and any time when needed.

Third, “customer education strategy” will be discussed. What will the e-Learning system support for customer education ? It will provide courses for customer education, improve customer services and satisfaction. It will be a new huge ongoing revenue source for corporations. In addition to classroom trainings, e-Learning system will also give fee-based online classes to customers. It will be more effective and time independent. Also, it will attract new customers and business.

The above reasons just give some guides for strategies that will benefit corporations. It will help to get strategies needed. After corporations have viewed the explanations, please choose the one that best fits into the corporate needs. If the strategies have already been chosen, please go to define e-Learning objectives for next step procedure.

8. Define E-Learning Objectives

There are two types of objectives mentioned below, “business” and “training” objectives [4]. As mentioned in the last section, corporations will choose e-Learning strategies first, then related e-Learning objectives which meet the chosen strategies have to be setup. Please define e-Learning objectives that best fit into corporate needs by using the following information. Figure 6 illustrates “two types of e-Learning objectives”.

What are “business objectives” ? They include three kinds of objectives according to DigitalThink [4]. They are defined especially for business reasons and requirements. What are they ? They are “workforce transformation objectives”, “sales channel optimization objectives”, and “customer education objectives”. What are “training objectives” ? They are the objectives to provide learning plans, improve ability to access training resources, and off-the-shelf courseware integrations. It will also setup the high availability and performance web infrastructure of e-Learning system for e-Business.

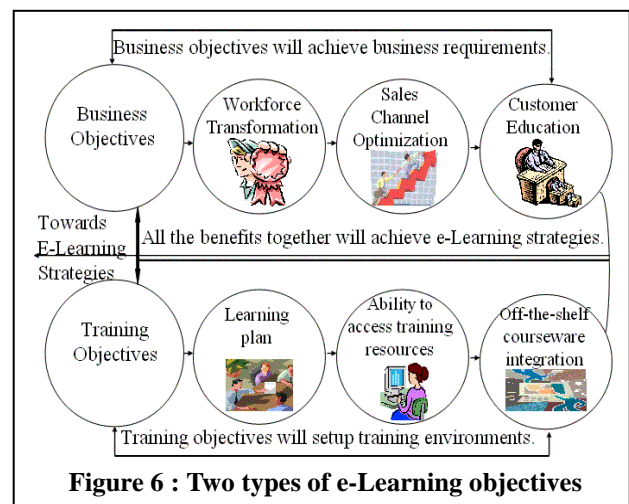


Figure 6 : Two types of e-Learning objectives

Table 2 : Business objectives			
No	Item	Duration	Objectives
Workforce transformation			
1	Course completion	10/01/02 ~ 12/31/02	Increase by 30%
2	Employee retention	10/01/02 ~ 12/31/02	Increase by 30%
3	Training costs	10/01/02 ~ 12/31/02	Decrease by 20%
4	Productivity	10/01/02 ~ 12/31/02	Increase by 20%
5	Travel time	10/01/02 ~ 12/31/02	Reduce by 30%
Sales channel optimization			
1	Time to market	01/01/03 ~ 03/31/03	Increase by 25%
2	Knowledge to market	01/01/03 ~ 03/31/03	Increase by 35%
3	Sales	01/01/03 ~ 03/31/03	Increase by 30%
Customer education			
1	Customer education revenues	04/01/03 ~ 06/30/03	Increase by 20%
2	Customer satisfaction	04/01/03 ~ 06/30/03	Increase by 50%

Table 3 : Training objectives			
No	Item	Duration	Objectives
1	Learning plan	10/01/02 ~ 10/31/02	Setup a good plan
2	Access to training resources	11/01/02 ~ 11/30/02	Improve access abilities
3	Off-the-shelf offerings integration	11/01/02 ~ 11/30/02	Make content better

Table 2 and 3 shows some examples of business and training objectives which can be chosen. Please review them and get more information about what they will be alike. Discuss with project teams and choose desirable business and training objectives. Make sure reasonable objectives are expected. After that, please find suitable vendors that can serve corporations with solutions for the implementation of e-Learning system.

9. Produce E-Learning Plan

A solid e-Learning project plan will help to keep the project on track. Also, it will be the primary means of communication for the project team. With combinations of DigitalThink [4] and this research, five steps are suggested and introduced. Figure 7 shows steps to produce an e-Learning plan.

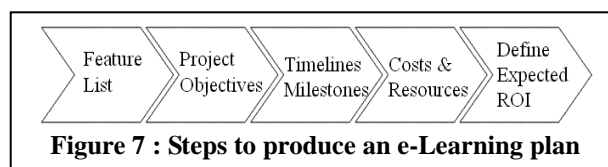


Figure 7 : Steps to produce an e-Learning plan

First, “a feature list” must be included from reduced business and training objectives before producing the business plan. It shall include web tool being used, target audience, technology limitations, delivery deadline, funding available, subject matter experts, vendors, elaborate breakdown structures, estimates of staff hours, and budgets, and so forth.

Second, “list project objectives for the e-Learning system”. There are business and training objectives. In order to achieve the chosen objectives, information that are needed to accomplish must be detailed. For examples, reasons for achieving objectives, persons who will be in charge, priorities, time to start and end, and money needed.

Third, “list timelines and milestones”. They must include the following items : current tasks due days, next week’s tasks , tasks accomplishments , meetings held and attended, additional issues and concerns. Each of the timelines and milestones shall be discussed. They must be set reasonably and carefully. They will be checkpoints of whether the project is on-time or delayed. If the project is delayed, please find out what the problem is and try to adjust the pace.

Fourth, “list costs needed and resources available”. Component costs include instructional design services, authoring software, training registration fees, and so forth. Please provide the realistic estimation of component costs. Resources will be budget, facility and technical engineers available for implementing the project.

Finally, “define expected ROI of e-Learning system”. It is the expected value of the e-Learning system. It will give some ideas about whether the e-Learning investment is worthy or not. Also, it will be a good project reason if the ROI is high enough for top managements to decide to have investments on e-Learning. It shall be adjusted when true e-Learning ROI is calculated.

10. Vendor Selection

It will suggest some general considerations on how to choose suitable vendors. IT departments may need new technologies to setup the e-Learning system. They can get them from e-Learning solution vendors. Vendors will provide what corporations need and gain feedback from them. Suitable vendors will shorten implementation time and help to guarantee a successful e-Learning system for e-Business.

There are three kinds of vendors : content, technology, and service [4]. Vendors of content will sell off-the-shelf coursewares. They can also work with corporate subject matter experts to produce customized courses. Vendors of technology will build e-Learning system infrastructures

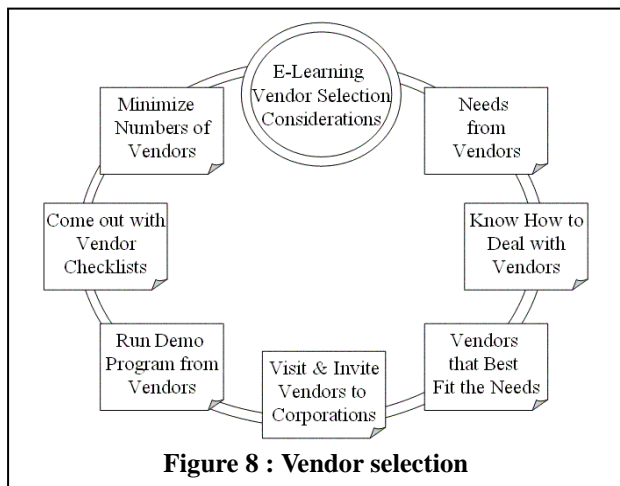


Figure 8 : Vendor selection

and provide related technologies, for examples, installation of LMS / LCMS and integration technology of chatrooms and virtual rooms. Vendors of service will support to train tutors, develop a custom portal, integrate back end systems, and so forth. Figure 8 shows seven considerations for selecting good vendors [8].

Step one is “needs from vendors”. Corporations must know their budgets and what kinds of supports they need from vendors. They must provide RFPs which list content, technology, or service requests clearly to vendors. They will receive proposals from vendors and review what are most appropriate and satisfactory.

Step two is “know how to deal with vendors”. If corporations already find some vendors that will satisfy their needs, please also be careful to deal with them. If they are dealing with big vendors, please be sure that vendors will assign the best professional experts to serve them until the implementation of e-Learning is finished.

Step three is “choose vendors that best fit the needs”. There are many vendors right now serving e-Learning solutions. Please choose the ones that best fit the needs. Spend some time to study vendors' solutions. Please check : Do they offer the latest technologies ? Do they earn money ? Do they offer good quality services ? The information will be helpful to find suitable vendors.

Step four is “visit vendors and invite them to corporations”. Visiting vendors helps to understand their real working environments. Do they have confidences with their products ? Do they understand their products clearly ? Also invite them to corporations to give some suggestions about corporate e-Learning situations. Listen to what they suggest and judge whether they understand the problems or not.

Step five is “run demo programs from vendors”. Please ask vendors to provide demonstration programs. Please let key users run them and give feedback to vendors. By doing so, corporations can choose the solutions that will of great helps. Never buy products that are never being tested under corporate environments.

Step six is “come out with vendor checklists”. After interviewing vendors, please come out with vendor

Table 4 : Vendor checklist

No	Check Item
1	How long have the vendors been in business?
2	Do the vendors get reliable e-Learning implementation experiences ?
3	Can they support the contents, services and technologies needed ?
4	How are their off-the-shelf courseware integration, content development and course delivery system look like ? Are they friendly and easy to use ?
5	Are the costs of their services reasonable ?
6	Will they transfer the e-Learning technologies to the corporation ?

checklists. It will give clear comparisons among different vendors. By viewing them, corporations can know which vendors best fit their needs. Table 4 shows a vendor checklist which contains six questions. By answering the questions, corporations can see which vendors are at the top of the checklist.

Step seven is “minimize numbers of vendors”. Choosing many vendors does not mean that all of them together will provide complete and satisfactory services. Choose the ones who will serve corporations with the best e-Learning solutions. Please have a stable and long-term relationship with them. Once corporations have finished choosing suitable vendors that will help them with the implementation of e-Learning system, please keep good communications with them.

11. E-Learning Project Management

There will be many elements needed to be controlled during the implementation, so please take a look at the following advices on how to manage a successful e-Learning project [2]. They are related to the e-Learning project plan which is proposed in this paper. Figure 9 depicts the chart of an e-Learning project management.

Step one is “track project schedule”. According to the e-Learning project plan, timelines and milestones are arranged. Please check whether the project is on-time or delayed. Regular meetings should be held to track project schedule. The following items should be checked : current tasks status and accomplishments, next tasks to be completed, issues and concerns. If the project is delayed, please find out the problems and try to solve them immediately.

Step two is “sign off project plan at each project milestone”. It will avoid scope creep and let the ones who complete the tasks to be responsible for the quality. When

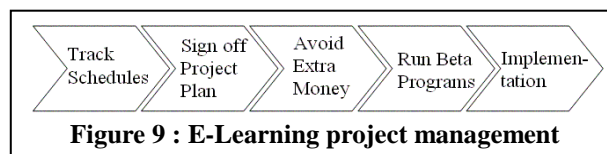


Figure 9 : E-Learning project management

project team members attend meetings at the end of each milestone, they should sign off the project plan before they can move forward. The milestones of e-Learning system may expand within each phase when things go wrong.

Step three is “avoid spending extra money”. In order to control the budgets, please request a fixed-bid contract from vendors. Any “cost-plus” phrase in contracts should be avoided. It will prevent vendors from asking for extra money when the e-Learning project is delayed.

Step four is “run beta programs”. Please run beta programs from vendors in real corporate environments. Check if there are any bugs, misunderstandings about workflows, lacking of functions needed, inconvenience of user interfaces, and so forth. Gather them and feedback to vendors in writing. Wait for final e-Learning programs and test until they are ok for corporations.

Step five is “implementation”. Make sure there are engineers who will be responsible for the maintenance and use of the e-Learning system. Also, confirm with vendors to give training courses of the e-Learning system. By doing so, end users may learn how to use it. After a period of time, collect evaluation results on how they feel about the system. Improve the weaknesses and make it a more excellent system day after day.

12. Success Factors

E-Learning is just two years old and people are still experimenting how it works best. If an e-Learning system wants to run smoothly, what should be considered ? The success factors will make the e-Learning system grow up and function properly. If corporations apply them, it will be easy for them to be successful. Figure 10 shows the e-Learning system with success factors [1] [3] [9].

The first one is “organizational support”. If top managements have fully supported on the e-Learning system usage, employees will have to practice more on how to use it. If it will be included in appraisal and salary review process, it will soon be one important part of employees' daily work.

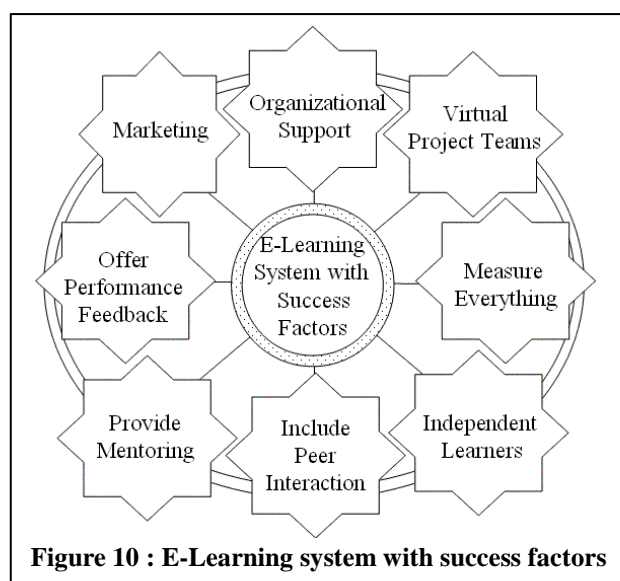


Figure 10 : E-Learning system with success factors

The second one is “virtual project teams”. Members from different departments will create the virtual project teams. They will be from CEO, HR, IT, financial, sales departments, customers and vendors. They will contribute their unique skills, knowledge, or technologies to help setup the e-Learning system. They will conquer barriers across departments and implement the e-Learning solutions.

The third one is “measure everything”. It will help corporations to know where the starting and balancing points are. It will help to find out what strategies and objectives should be included or improved. Different stakeholders must be assessed to know their abilities and expected growth from the e-Learning system. The expected ROI should be set to compare with the real ROI to see whether the learning results of the e-Learning system are effective or not.

The fourth one is “independent learners”. Although the e-Learning system will try its best to be friendly and interactive, learners still have to be independent. Because web environments are quite different from a physical classroom. No instructors will push them to learn, they must learn at the required period of time. Independent attitudes will help them to learn online courses by themselves.

The fifth one is “include peer interaction”. If learners can have peer interaction by using message boards, chatrooms, communities, and so forth, they will like to spend more time on the e-Learning system. They share their ideas, experiences, and knowledge to one another from the network. By using the collaborative environment, learners will return to the e-Learning portal often.

The sixth one is “provide mentoring”. With the help of instructor mentoring, learners can avoid confusion situations about learning topics or processes. When learners take self-paced courses, they sometimes will get some questions about the e-Learning system. Maybe they will feel stuck and do not know what to do. They can either ask online instructors or e-mail their problems for advanced help.

The seventh one is “offer performance feedback”. The pretest determines learners' strengths or weaknesses. It will assess the level of learners and suggest needed courses for them to take. More over, learners can answer review questions at the end of the lessons. Learners have to wait a period of time before they can get feedback in traditional trainings. But the e-Learning system can offer performance feedback to learners, they can know their learning results immediately.

The eighth one is “marketing”. Since the e-Learning system includes customer education and satisfaction, it will be valuable and important to know how they feel about the system. Corporations must know why people want to use the e-Learning site. They must setup customer education objectives to motivate customer to use the e-Learning system. By having a good marketing, the investment of e-Learning will be adjusted to the directions which customers need and prefer.

13. Challenge Factors

Poor project management, undefined scopes, or no guide and roadmap to follow during the project's life cycle will harm the e-Learning system. So it is very important to know what will be the challenge factors during the implementation of e-Learning system and to avoid them in advance. There are eight challenge factors listed and discussed after [4]. Please refer to Figure 11 for the chart. Each of them will threaten the normal behaviors of an e-Learning system. The e-Learning system will have to work harder to conquer the challenges or be very weak to serve the audiences well.

The first one is “correct target setup”. Different stakeholders should be together to setup correct targets. They must decide what the business requirements are – workforce, sales channel or customer education. Also, target audiences should be correctly set. It will give good results in case there is a good strategy and plan set in advance.

The second one is “LMS / LCMS configuration”. Be aware of how the portal and tracking system are built. If they can work successfully, they will be helpful to keep good tracking of the audiences. Thus the learning evaluation results of employees will be convenient for top managements to review.

The third is “tutors and subject matter experts (SMEs) integration”. They will give the e-Learning system good services and helpful courses. It will need IT departments to work with tutors and the subject matter experts. It will help the audiences to use the e-Learning system with great satisfaction.

The fourth one is “content creation”. Decide whether to build or buy the necessary content. Whether the content is friendly or not will impact learners' attitudes towards the e-Learning system. In order to keep attentions and interest, IT departments have to create interactive and attractive contents.

The fifth one is “multiple modes of learning”. Since the e-Learning system have to serve different kinds of

learners, like CEO, managers, employees, salesmen, and customers, it has to provide a flexible approach for them to use. It needs to be engaging to the audiences.

The sixth one is “back end systems integration”. There will be many data needed for the e-Learning system to process, some of them are coming from ERP and CRM systems. For example, customer education services may need data from CRM system. The seamless integration among them will help the e-Learning system to be more powerful and useful.

The seventh one is “web infrastructure”. The system needs to serve many audiences at the same time, it will be very important to implement a high availability and performance web infrastructure. It must provide a fast and truly interactive interface for learners to get the content they want quickly and easily.

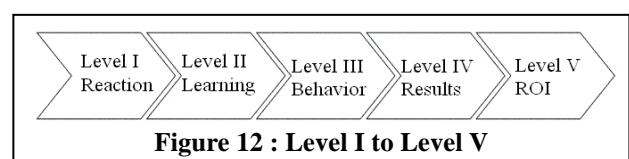
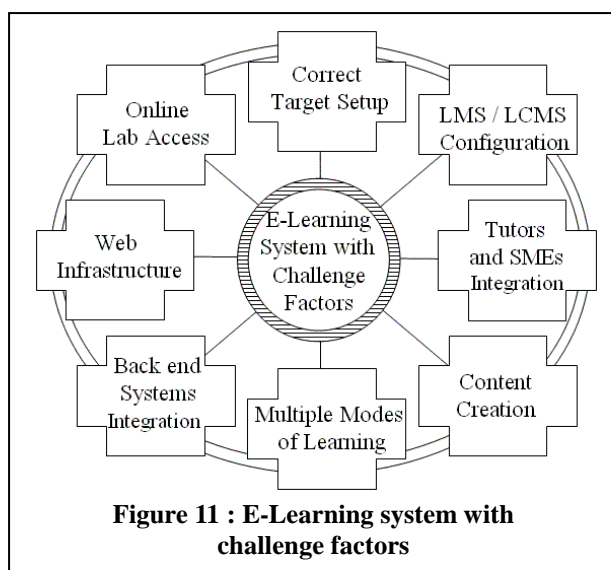
The eighth one is “online lab access”. It is necessary to help the audiences to do online access. Many of them need to be trained on the methods of using online lab. Please teach them well on how to use the system before they can have habits to do so.

14. Evaluation and ROI

Finally, the e-Learning system must include a systematic method to gather information about the impact and effectiveness of a learning event. The measurement results can be used to improve learning offerings, determine whether business or training objectives have been achieved, and assess the value of the learning event to corporations. Donald Kirkpatrick developed four levels which was laid out in “Evaluating Training Programs: The Four Levels.” Jack Phillips enhanced them and developed another level – Level V, to calculate corporate return on investment (ROI) [7].

Corporations can measure training effectiveness to know whether the investment in training is worthy or not. Corporations can get useful information when calculating the four factors or four levels. Each level of them cannot be used separately. There is a chain of effect among the five levels. Each level of measurement depends on the previous level, as well as the next. This paper introduces the meanings of them and gives three examples of ROI. Figure 12 depicts a Level I to Level V chart.

Level I measures “reaction”. It measures reaction of learners to training programs and whether they fit what they plan to learn from them. It will ask learners if they get useful skills and knowledge for their daily work. “Smile sheets”, which include surveys, questionnaire, or similar evaluation methods, are also provided to measure whether learning plans fit learners' expectation or not. The measurement can show that whether the training courses are meaningful or enjoyable to learners.



Level II measures “learning”. It will examine learners to see whether they achieve the skills or knowledge presented in the training programs by giving achievement tests, or whether the attitudes have been changed or acquired. It will compare “before” and “after” assessments and see to what extent have been improved after the training courses.

Level III measures “behavior”. When a training course is finished, changes of learners' working behavior will be observed. To observe learners in working environment will understand if they do what they have learned. This will calculate the training impact on learners' working.

Level IV measures “results”. It checks whether the on-the-job application does produce measurable results. If it is a sales training, it can be calculated by the increasing and decreasing of its revenues. It proposes the question of how many returns that corporations invest in trainings are gained.

Level V measures “return on investment” It checks whether the training return is greater than the investment or not. When performing the mathematical calculation of the ROI calculation, three data points are required : time period, investment, and return. According to “Calculating the Return On Your eLearning Investment” [5], there are three kinds of ROI evaluation : percentage, ratio and time to break-even. To have a more clear understanding, table 5 shows three ROI examples when fixed values : time period = 12 months, total investment = \$125,000 and return = \$500,000 are given. The ROI values will be : percentage is equal to 300%, ratio is equal to 4:1, and time to break-even is 3 months or 90 days.

15. Conclusion

This paper provides a good e-Learning guide and roadmap. There are useful approaches and considerations proposed to help corporations which are getting started with the implementation of e-Learning system. There are no doubts that all the topics in this paper help to setup a successful e-Learning system for e-Business.

Table 5 : Examples of different ROI

Three kinds of ROI	Formulation	Result
Percentage	$\frac{[(\text{Return}-\text{Investment})]}{\text{Investment}} * 100$ $= \frac{[(\$500,000-\$125,000)]}{\$125,000} * 100$	300%
Ratio	$\frac{\text{Return}}{\text{Investment}}$ $= \$500,000 / \$125,000$	4:1
Time to break-even	$\frac{(\text{Investment}/\text{Return})}{* \text{Time Period}}$ $= (\$125,000 / \$500,000)$ $* 12 \text{ months}$ $= (0.25) * 12 \text{ months}$	3 months or 90 days

Different stakeholders get their own responsibilities and jobs. CEO needs to give continuous supports. HRD and ITD will take advantages of the new training technology and provide a successful e-Learning system environment. Financial departments help to control investments and revenues. Employees improve job skills and knowledge. Salesmen improve performances on selling products. Customers can get educations and great satisfactions.

Clear understandings of inside and outside corporate environments will let corporations know where they stand. Correct strategies and objectives will setup successful directions. Suitable vendors will help to provide necessary contents, technologies, and services. Consistent project management will guarantee the quality of implementation. Success and challenge factors together to suggest overall notices for a better e-Learning system for e-Business.

If real ROI exceeds predefined ROI of the e-Learning system, the implementation of e-Learning system for e-Business can be proven to be successful. Otherwise, if predefined ROI exceeds real ROI, it means that the implementation is not as good as expected. Discuss with e-Learning project teams will help to find out what should be improved. Please adjust strategies, objectives, and ROI expectations of next year. Corporations can measure and gather different ROI year after year. They can compare what the improvements or changes are when comparing ROI of different years.

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