

## eLearning Return on Investment

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# eLearning ROI

## Introduction

In these days of tight budgets training is one of the first areas to come under pressure for cost cutting. Often this is a short term view as good training often contributes to the bottom line. In some industries training is mandated so companies are looking at getting the "Best Value" out of training. We must persuade senior management that training is value for money, and to look at the best method of achieving a training goal we must look at the Return on Investment or ROI.

For some items, working out ROI is simple, for example, for mandated training is it more cost effective to use Instructor Led Training (ILT) or online eLearning?

Unfortunately often we need to justify new training and measuring the return on this investment may be difficult, for example how do you give a monetary value to customer satisfaction?

In this paper we look at how to build a ROI case and suggestions on what, and how we can measure benefits for training.

But before we can start looking at ROI we must look at how we can evaluate training.

A regional airline gave access to the aircraft initial tech course to all pilots online for them to take as they wished. The airlines AOG\* fell by 33% in the next six months with crews mentioning how their tech knowledge had improved due to having access to the material.

## Why evaluate training?

Let's summarise the main arguments for better evaluation of training:

### To validate training as a business tool

Training is one of many actions that an organisation can take to improve its performance and profitability. Only if training is properly evaluated can it be compared against other methods and expected, to be selected either in preference to or in combination with other methods of achieving a company's goals.

### To justify the costs incurred in training

As we have already mentioned, when money is tight, training budgets are amongst the first to be sacrificed, even in Aviation where much of the training is regulatory, often training is an area that comes under pressure, generally this is the non-regulatory or "nice to have" training which may in the long to medium term save money. But only by thorough, quantitative analysis can training departments make the case necessary to resist these cuts.

### To help improve the design of training

Training programmes should be continuously improved to provide better value and increased benefits for an organisation. We need to reevaluate our training at regular intervals, without formal evaluation, the basis for changes can only be subjective.

### To help in selecting training methods

There are many alternative approaches to training available to training departments, including a variety of classroom, on-job and self-study methods. Using comparative evaluation techniques, organisations can make rational decisions about what methods to employ.

Kirkpatrick's Feedback Model for Learning. This is a highly influential model for training evaluation, designed by Professor Donald Kirkpatrick and consists of four levels of learning evaluation. Kirkpatrick's ideas were first published in 1959, in a series of articles in the US Training and Development Journal but are better known from a book he published in 1975 entitled, "Evaluating Training Programs".

\* AOG is Aircraft on the Ground. This is a term used by airlines when an aircraft is unserviceable and awaiting parts or maintenance to enable it to re-enter service.

## Training success measurement criteria

Like many things, the form of evaluation that we undertake is determined by the criteria that we choose, to measure success, some of these criteria are:

### Direct cost

These are the costs that are incurred directly as a result of a training programme, and include:

- design and development,
- SME fees,
- travel expenses
- Infrastructure

If the programme did not take place, these costs would not be incurred. Many organisations only ever take direct costs into consideration when measuring training costs, however there are others, including Lost Opportunity.

### Indirect cost

Indirect costs are costs that may or may not be directly associated with a training event, but which would have been incurred anyway, whether or not the training took place. Examples are salaries of in-house trainers and students and the costs of rooms and equipment. Any analysis of the true costs of training will include both direct and indirect costs.

### Efficiency

Efficiency is a measure of the amount of learning achieved relative to the amount of effort put in. In practical terms this means the amount of time it takes to complete a piece of training. Efficiency has a direct relation to cost – the more efficient a training method is, the less it will cost.

But to measure a course we must do it objectively. The use of pre attendance quizzes is one method, but this must be done realistically.

One company set a pre attendance quiz asking crew what the onboard product was before even announcing the product internally. The course then ran through the new product. The department stated that the training was successful because all the students, unsurprisingly, failed the pre attendance quiz and they all passed the post attendance quiz – this was obviously not a good measure of training effectiveness and it demoralised the crew as they had been set up to fail, and most people hate failing.

A more realistic measurement of training success would be to measure a gap in knowledge for a subject that they have a realistic chance of at least having some pre knowledge. A company checks the students knowledge of security before the course and again at the end. The majority of the students score well in the pre test but even better in the post assessment, thus showing a closing of the gap.

One of the flaws in this method is that to get a realistic measurement, the questions should be the same in the pre and post assessment, but most students know this and thus during the courses are listening and watching for the key words that were in the pre exam, thus slewing the results.

This can in part be mitigated by two techniques, firstly rephrasing each in the post exam question so that it tests a very similar area of knowledge as the pre exam but not in the same phrasing, and secondly randomising the order of the questions so that they do not learn by rope.

### Branching Courses:

An effective way of building online courses and of checking knowledge is the branching course model, this is where the student is given a number of questions on an objectives, i.e. In a security course, 3 questions on what "Threat" is. If the student gets all three correct

Training impacts various areas of an organization. Performing a simple ROI is possible, but often ignores how training contributes to the more strategic goals of an organization. It is possible to state that "this course was taken by 'X' number of people, compared to not taking it, we saved 'X' amount of money."

This, however, is a very short-sighted view of training: Does the training program make you more responsive to your customers? Is your organization able to innovate more effectively? Do those who need information have greater access to it? Is the organization able to achieve core functions more effectively? Can you respond to external events more effectively?

then the course branches to the next question, alternatively if the student gets more than one answer wrong then they must complete the module on that objective. At the end of the module, the students knowledge is again checked ensuring that the gap has been closed. This form of course falls into the AQP or Competence Based Training model, rather than effectiveness being measured by how long someone attended a course, it measures the competence of the person in a knowledge or task.

This can ensure that training time is used effectively and students are kept engaged as they do not have to review areas where they have good knowledge.

The branching method of course deployment meets the training requirements of many areas and gives the student incentive to keep themselves informed and up to date in the subject area.

### Performance to schedule

Sometimes, 'time is of the essence' – a new regulation is published or a gap in general knowledge identified and the training needs to be completed by a given date. In these situations, the extent to which a training programme performs to schedule is a critical measure of success.

## Reactions (Kirkpatrick Level 1)

Reactions are what you measure with the 'happy sheet' and are important because, if students react negatively to your courses, they are less likely to transfer what they learned to their work and more likely to give bad reports to their peers, leading in turn to lower acceptance of the training.

## Learning (Kirkpatrick Level 2)

Learning, in terms of new or improved skills, knowledge and attitudes, is the primary aim of a training event. Learning can be measured objectively using a test or exam or some form of assessed exercise. If a student has to achieve a certain level of learning to obtain a 'pass mark', then the number of passes may be used as an evaluation measure.

To help this measurement if we use examinations as the method of measurement we must ensure that we "normalise" the examinations, ensuring that the questions and answers are valid, this is extremely important especially in multicultural, multi language environments. Although English is the Lingua Franca of Aviation, peoples levels of understanding particularly of written English varies vastly. A examination must be the check of a persons knowledge on a test of English.

If more than say 20% of people get a particular question wrong then that question – and answer must be checked for validity. Ask yourself some questions:

- Is the question in good simple English?
- Are the answers in good English?
- Are the answers valid?
- Is there only one correct answer in a multiple choice question?
- If the question is multiple answer, is this made clear to the student?

Ideally you should get a question checked by a person of each non native language that will be taking the examination.

If after evaluating the question and answers, you are happy with them then you have a gap in knowledge which may need to be closed, you now need to review the objectives and course.

- Did the course cover this area sufficiently?
- Was the course unambiguous?
- Did this get covered at all?
- Was the language of the objective correct?

Another important aspect of learning is the degree of retention – how much of the learning has stuck after the course is over, this may be measured by a examination some time after completion of the course, most practitioners recommend a delay of between 3 and six months between the end of the course and the new evaluation.

## Behaviour change (Kirkpatrick Level 3)

If a student has learned something from a course, you hope that this will be reflected in their behaviour on the job. If a student employs what they have learned appropriately, then their work behaviour will meet desired criteria. Behaviour can be measured through observation or, in some cases, through some automated means. To assess behaviour change requires that the measurements are taken before and after the training.

In Aviation this may be measurable, for example if a company has a number of switch miss selections and training is put in place to raise awareness to this problem, then after the course the frequency of miss selections can be monitored and the hopeful reduction measured giving a direct feedback on training effectiveness.

### Performance change

If, as a result of training, students are using appropriate behaviours on the job, then you would expect that to have a positive impact on performance. A wide variety of indicators can be employed to measure the impact of training on performance – numbers of complaints, customer satisfaction, safety reports per hour flown, AOG and so on.

Unfortunately it is hard to be sure that it is training that has made the difference without making comparisons to a control group – a group of employees who have not been through the training, this is not always possible when we want all our employees to go through the training.

## Return on investment as a measure (Kirkpatrick Level 4)

Direct Return on investment (ROI) is a measure of the monetary benefits obtained by an organisation over a specified time period in return for a given investment in a training programme. Looking at it another way, ROI is the extent to which the benefits of training exceed the costs.

As we have mentioned ROI can be used both to justify a planned investment and to evaluate the extent to which the desired return was achieved. But as we have seen above, it cannot include the effectiveness of training and it can not measure all aspects of training success:

- Whether students liked the training or not
- The numbers of students participating in the training
- The extent to which students' personal objectives were achieved
- The effectiveness of the training

## The process of calculating ROI

To calculate ROI you must first make estimates or obtain measurements of the costs and benefits associated with a training programme, often this is difficult, by all measures estimates are just that, estimations. However the calculation of an ROI is then a relatively simple process.

Firstly costs.

A European airline with over 1,100 crew who are geographically dispersed around Europe, reduced the recurrent training travel requirements by one day by replacing face to face Instructor Led Training in the home base, to on-line training. This initiative saves 1,100 hotel nights and 1,100 days of per diem per year. The previous 1 day in the base was added to the crew roster as "Training at home". The crew were given access to the online courses 2 months prior to the course and were free to complete the training whenever they liked prior to attending the Instructor Led module. Crews found this added flexibility a great bonus as they could spread the training as they wished.

# Forecasting and measuring costs

## Design and development costs

The first category of cost to be considered is the design and development of the training programme, whether this comprises classroom events, self-study materials, simple coaching sessions or some combination. You will need to consider:

- Days of design and development
- Costs of internal or external designers and developers
- Other direct design and development costs;
  - Purchased images
  - Special software and hardware
  - Copyrights
  - Video
  - Travel
  - Other expenses.

## Administration costs

An allowance must be made for the time taken by the training department in administering the training programme. This will typically be a factor of the number of students:

- Hours of administration required per student
- Direct administration costs per student (joining materials for an Instructor Led Course, etc.)

## Faculty costs

The next category of costs relates to the delivery of the training, whether this is mediated by faculty (tutors, instructors, coaches, etc.) or is self-administered (workbooks, CBT, online training, etc.). Let's start with the information needed to calculate faculty costs:

- The number of students who will be going through the programme
- Hours of group training (whether classroom-based or delivered in real time, online)
- Hours of one-to-one training (although typically face-to-face, it could be conducted by telephone, video conferences link or in real-time, online)
- Hours of self-study training
- Additional faculty hours (preparation time, the time needed to review or mark submitted work or the time needed to correspond by email or bulletin boards with online students)
- Faculty expenses (travel, accommodation, subsistence, etc.).

## Materials

Then there's the cost of materials:

- Cost per student of training materials (books, manuals, consumables, etc.)
- License cost per student for use off-the-shelf materials

## Facilities

You will also need to allow for the cost of your training facilities, whether these are internal or external. Make sure to include the rental or notional internal cost of the following:

For Instructor Led Training, this includes

- Training rooms
- Training equipment, laptops, projectors etc.
- Open learning / self-study rooms
- Equipment used
- Drinks & Snacks

For online courses these costs could include:

- Server hardware and software - rental or purchase
- A Learning Management System (LMS)
- Open learning / self-study rooms, if applicable

## Student costs

Often this is the most significant delivery cost. It is only necessary to charge a student's cost against the training programme if training is undertaken in time that would otherwise be productive and paid for, so you only need to estimate the amount of travel and training that is undertaken in productive work time, i.e. not in off time, breaks or outside work hours.

When an employee goes through a training programme in work time, the organisation is not only having to pay that person's payroll costs, they are also losing the opportunity for that person to add value to the organisation. In Aviation, these days can count towards the already limited Crew Roster days.

If an employee can be easily replaced while they are undergoing training, then there is no lost opportunity – the cost is simply the employee's payroll costs. In many cases, however, it is simply not practical to obtain a suitable replacement, so the output that the employee would have generated in the time that they are receiving training will be lost. In this case, the true cost of the employee being trained is the lost opportunity – the 'opportunity cost'.

We must also not forget to include any direct student expenses, these include - travel, accommodation and subsistence, or per diem.

## Evaluation costs

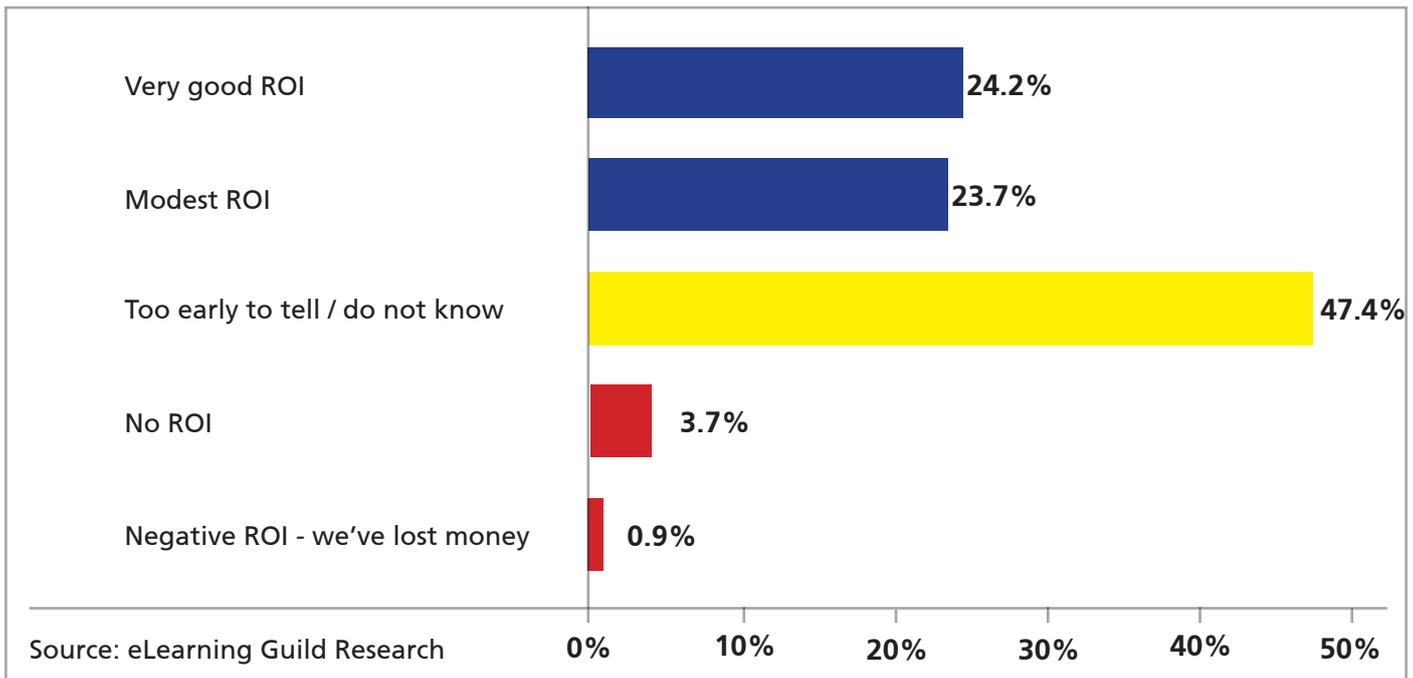
You also need to make an allowance for the time spent evaluating the training, whether this is an ROI analysis or some other method.

This may include a pilot program where we present the training to a sample of students to check the effectiveness of training.

An airline with long haul crews required bi-annual recurrent training. This was traditionally carried out over 2 days at the training base which required travel and 2 nights of hotel at the base.

The course was re written and put online, reducing the training to 8 hours, saving travel costs, 1 day per diem and 2 hotel nights per crew member as well as releasing 1 day to the roster.

An International Airline needed all its base managers and deputy managers to attend an Emergency Response course which was originally to be held at the airlines base. A course was developed from the original materials and distributed online via the Learning Management System. All the personnel undertook the course over a three month period online, this saved a substantial amount of time and money as well as not disrupting the work pattern.



## Forecasting and Measuring Benefits

Measuring the financial benefits of training is often very difficult and unfortunately the financial benefits of training cannot be measured in how effective training is, how many people attended and what the satisfaction rate is. Although these have an indirect effect on the return on investment, they cannot be used as primary measures.

### Labour savings

Labour savings occur where, as a result of the training, less effort is needed to achieve current levels of output. We have to assume that savings are realised by a reduction in the amount of labour applied to a particular job, not by utilising the newly available time to achieve further output on the same job.

Labour savings will only be realised if the labour applied to a job can really be reduced, whether this comes as a result of the need not to recruit whilst expanding the amount of work, transfers of staff to new positions or re-allocations of work. If the time savings simply result in more slack, then there is no saving.

Examples of labour savings include:

- Reduced duplication of effort
- Less time spent correcting mistakes
- Faster access to information

### Productivity increases

Productivity increases occur where, as a result of training, additional output can be achieved with the same level of effort. This implies that the organisation requires or desires more output in this particular area. If it does not, then it might be better to express the benefit as a cost saving.

Examples of productivity increases include:

- Improved methodologies reducing the effort required
- Higher levels of skill leading to faster work
- Higher levels of motivation leading to increased effort

### Other cost savings

Cost savings can be achieved in a variety of ways, not just through savings in labour, and this category allows you to take account of these. Examples include:

- Fewer breakdowns, resulting in lower maintenance costs - less AOG
- Lower staff turnover, reflected in lower recruitment and training costs
- Reduced wastage

### Other income generation

In some job positions, it may be possible for new income to be generated as a direct result of training. Sometimes this can be satisfactorily recorded as a productivity increase, but there will be times when a more direct and specific analysis is required.

If you do this, you must make sure that you offset from the income any variable costs that are incurred as a result – it is the net contribution that you are looking for.

### Calculating return on investment

Return on investment tells you the percentage return you have made over a specified period as a result of investing in a training programme. On the assumption that benefits will continue to accrue some time after the training, then the period that you specify is critical to the ROI figure you will obtain. You may like to specify a period that fits in well with your organisation's planning cycle – perhaps a year or two years. On the other hand, you may wish to calculate the period to correspond to the lifetime of the benefit, in which case you will need to know how long the average student stays in a position in which they can continue to apply the knowledge and skills being taught.

It is relatively simple to calculate return on investment:

$$\% \text{ ROI} = (\text{benefits} / \text{costs}) \times 100$$

## Payback period

Another way at looking at ROI, is to calculate how many months it will take before the benefits of the training match the costs and the training pays for itself. This is called the payback period:

payback period = costs / monthly benefits

Payback period is a powerful measure. If the figure is relatively low – perhaps only a few months – then management will be that much more encouraged to make the training investment. As a measure, it also has the advantage of not requiring an arbitrary benefit period to be specified.

Here's an real case study for a ROI analysis:

An International Airline out-sources its Initial Pilot type rating course to a 3rd party. The airline estimates that it will need 50 pilots for each of the next five years, and this is the basis of the project to bring the training In House.

The 3rd party presently charges £10,000 per student.

To bring the training in house they will need to employ an instructor, purchase courseware and a number of training devices.

The course duration will be the same for the 3rd party course or in house training and in both cases the same amount of Travel, Hotel costs and per diem will be expended, so this is ignored.

### Benefits

Present cost	250 students @ £10,000ea	£2,500,000
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### Costs

Purchase / rental of courseware	250 students @ £500 ea	£ 125,000
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Employment of Instructor	5 years @ £50,000	
	x 1.4 employment cost	£ 350,000

Room hire for course - assumes 4 students per course, 11 training days		
	per course @ £250 per room per day	£ 171,875

Purchase of multimedia laptops for course 6 @ £850 ea		£ 5,100
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Cockpit training device		£ 250,000
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<b>Total Cost</b>		<b>£ 901,975</b>
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<b>Savings</b>		<b>£1,598,025</b>
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<b>ROI</b>	<b>277%</b>
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<b>Payback period</b>	<b>22 months</b>
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Note that many companies require both figures in a business case and guidance should be sought as which is the primary method.

Other benefits not included in the ROI are that the Instructor will be available to conduct recurrent course, freeing pilots time.

## Simplifying the process

If you've been following through all of these steps, then you'll have realised just how many calculations are involved in conducting a thorough analysis. What's more, when you start to look at areas such as opportunity costs and productivity benefits, then there are some quite tricky concepts involved.

To make this a little easier, we have developed, a 'Training ROI Calculator'. This provides, in spreadsheet form, a template that applies well to any training process, regardless of content or method. The primary purpose of this calculator is to support.

## Making ROI work for you

It has become a cliché for senior management to claim that 'people are our greatest asset'. Yet, much to the dismay of the employees, the effort they put in to developing this 'human capital' continues to be seen as an expense and not as an investment and often training is cut back to the legal minimum. It's time to turn this around. Start to analyse your training programmes as if they were capital investments - using techniques like ROI - and senior management may start to change their attitude to training. And at a time when there are so many exciting new developments in training - not least online learning - you're going to need their co-operation.

To help develop your training further, take a look at our handout “Training for Competence”, downloadable at [www.aviatas.com](http://www.aviatas.com)

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