

Acceptance Criteria for the Introduction of E-learning in a Work Environment

Bert Brijs

Director Lingua Franca Benelux

Bergstraat 14a B-9190 Stekene, Belgium

Telephone: +32(0)3 790 10 90, Fax +32(0)3 790 10 99

e-mail: bert@linguafrancaconsulting.eu

Pierre Lecomte

Director Lingua Franca Luxembourg

W.B.C. rue d'Arlon, 2

L-8399 Windhof

Telephone : +352 26 43 17 15

e-mail : pierre@linguafrancaconsulting.eu

Introduction

We are practitioners, not academic professionals. With this paper we are looking for interaction and discussion with other best practices in order to build a body of knowledge in a bottom-up approach. Where questions become too urgent to wait for another project, we investigate, probe and inquire in a more structured way to gain time. The results of this combination of empirical evidence and probing are presented in this paper. Some of them may appear as common sense, while other parts may challenge your thinking on e-learning in a work environment.

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Bert Brijs
Author

Pierre Lecomte
Co-Author

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Rationale

E-learning methodologies have been the exclusive realm of educational practitioners. For too long, business organisations have used an approach close to document management systems to store all kinds of electronic file formats on an Intranet or an e-learning application and considered the job done. It left them with unwilling students. Especially in Europe, where workers are better organised than in the rest of the world, reluctance to work with e-learning applications is high. With our experience acquired in Customer Relationship Management, a process-based approach to marketing, we knew user motivation is quintessential in systems that need interaction based on freedom of choice:

- It is a salesman's choice to produce a full report on a sales call or not
- Equally it is a student's choice to contribute to discussions, group work and forums or not

That is were the analogy stops. We have many successful CRM implementations with proven ROI to convince users of the concept and the necessary change in their working habits and behaviour. In the training world there is little scientific evidence of positive training effects on job performance let alone proof of e-learning performing better than classical training. Our practitioner's mind tells us we need a workaround.

Our research reports on organisational and managerial issues in the introduction of e-learning in the organisation. Since the main argument for the introduction of e-learning is not available we have to combine logic, working hypotheses and empirical evidence to further the acceptance of e-learning.

By “e-learning” we mean a complete curriculum leading to a well defined competence related to a function in the organisation, not a course of a few hours or a nice flash animation to convey some bits of information. We use the following definition for e-learning:

E-learning is a methodology for the transfer and exchange of knowledge, attitudes and performance via an interactive electronic platform which can be used online or offline.

This definition is short, easy to grasp and includes many ICT buzz words: CBT (computer-based training), blended learning (a mix of classroom training and e-learning), distance learning and even correspondence courses. It links to knowledge management issues, corporate performance management issues, includes organisational learning and the use of multimedia, Internet and Intranet.

The paper presents a process model for further user acceptance reflecting on aspects related to:

- the e-learning products (i.e. the e-learning platform, the course design, the interface, etc...)
- the teaching styles used in the organisation (tutors, monitors, ...)
- the learning styles based on the Grasha-Riechmann model
- the marketing of the new system
- the management support: level of integration, applied management tools, leadership and vision

A first version of the model was tried out in a project for the European Union in collaboration with the Province of Zeeland (Neth.), Zeeland University, the technology provider Advanced Projects and Products, and the author Bert Brijs.

The paper reports on the cumulative experiences acquired by the authors and their consultants during and after the project.

The paper consists of two parts. The first part formulates the hypotheses based on the authors' experience, an Internet survey, the findings of telephone interviews and two focus groups of managers who have been involved in the introduction of e-learning.

The second part presents the results from these exercises. Our findings indicate that the introduction of e-learning is a linear process, based on the "do it right the first time" principle, contrary to the iterative approach used in business intelligence, customer relationship management and knowledge management.

The process steps need to be executed in a well-defined order, allowing only limited slack and degrees of freedom within each process step.



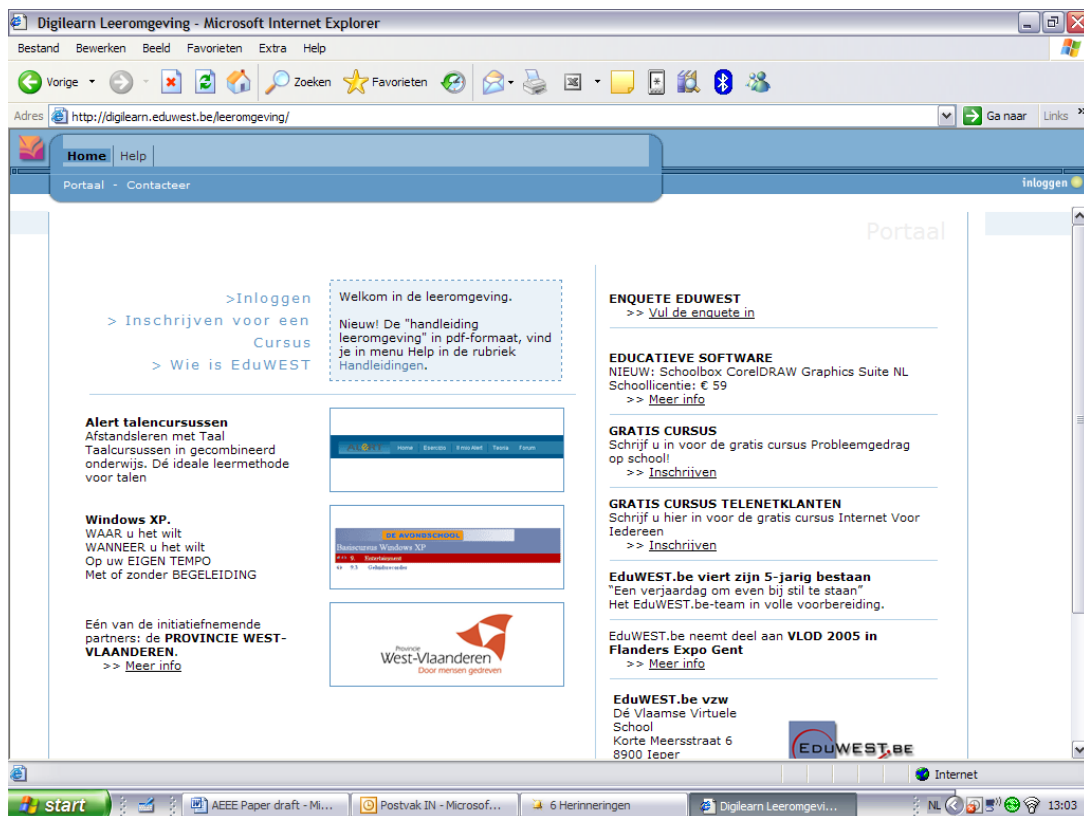
Methods Used

Observation: in everyday practice we observe how and why students interact with an e-learning application.

The development of the user interface and the ensuing usability testing and comparisons between the effects of the e-learning version compared to classroom based instruction deliver interesting observations.

Debriefing sessions: after every project stage we analyse with the user(s), the project owner and the course designer what has room for improvement.

Internet inquiry: all students of an e-learning environment, open to both students and workers, have been asked to fill out a small and unambiguous questionnaire in Dutch or English as Eduwest (www.eduwest.be) reaches Dutch speaking and non-Dutch speaking students. The inquiry has been posted on <http://www.eduwest.be/enquete>, and the questionnaire is a simple choice list of ten questions probing for the reasons why they are taking an online course and what aspects (freedom, social contacts, competition) are important.



The e-learning portal used by Eduwest serves more than 30 complete courses to thousands of students in Belgium and abroad. The underlying LMS is Digilearn².

Telephone interviews with job students who used an e-learning course to get the basics of the job before they were introduced on the site, helped us to acquire very interesting information on their learning styles and how their expectations were met.

Two focus groups with managers provided us with input on managerial issues on e-learning.

Subject of the research

Can we define a generic approach and a methodology to maximise acceptance of e-learning in a work environment? What are the generic key issues from a learner's and management point of view?

Results

Based on observations and debriefing sessions

Eight issues consistently come up when observing students and talking to customers:

1. Technology is not an issue
2. Course design for e-learning differs greatly from classroom based courses
3. The differences between “regular” courses and professional or work-related courses are further enlarged
4. Student acceptance is a key success factor
5. Problem based education combined with tutoring on the job yields the best results
6. Every learner’s ICT knowledge has to meet some minimum requirements
7. Peer tutoring can be a strong enabler for e-learning
8. Available best practices for course effectiveness testing have to be observed

Technology is not an issue

It is striking how new technologies -while serving the business- always avert the discussion from the business issues in an early stage. The main reason is that early technology adopters are not very much interested in a long term business vision and how this new technology may further affect the business goals. These “tech junkies” are interested because of the novelty aspects, and they will move heaven and earth (and also budgets) to test the new technology. In a more mature market, the technology discussion moves to the background. Our finding is that e-learning as a methodology does not have to worry about technology. Let technology worry about the customer’s demands. Then we clearly see few technologies that really cater to the customer’s needs and others that only pay lip service to e-learning.

Course design for e-learning

This is the hardest task for teachers or trainers who develop an e-learning course or curriculum: how to let go the old ideas and paradigms. In a classical environment the course is static, supported by the dynamic approach of the teacher or trainer. In an e-learning environment the content has to be dynamic. This poses heavy demands on the course design. We have observed increases in workload of up to 15 times for the development of an e-learning course compared to a classical course.

Greater differences between school and job environment

The differences between a school and a job environment are enlarged in an e-learning environment:

- Workers care more about directly applicable knowledge. Theoretic concepts belong to the “nice to know” area.
- Workers relate their knowledge to that of their colleagues and expect “interfaces” with other functions and knowledge areas; the translation of “Tacit Knowledge” to “Explicit Knowledge” (see “The knowledge-Creating Company” from I. Nonaka & H. Takeuchi).

Student acceptance is a key success factor

Nothing is harder than changing your habits. If workers are used to spending a day off-site (on a nice location, with a nice lunch,) it can be a challenge to convince them that a PC is now their training venue. What’s more, in larger organisations trade unions and other representative committees have a say in organisational issues.

Problem based education combined with tutoring on the job

In a work environment, e-learning can close the loop between job performance, the competences needed and the specific job-related problems. It is easier to stimulate

intrinsic motivational factors when e-learning provides the worker with a theoretic background, combined with simulation and/or gaming followed by tutoring on the job.

Minimum ICT requirements for every learner

Never consider the basic ICT knowledge as a given. Don't be surprised to find young people with a higher education tripping over a browser's security settings or lacking the Netiquette to contribute to a chat or forum. Open University Netherlands provides every student with a brochure "Studeren met de muis" (How to study with a mouse-click) to make sure they are on par with the requirements for an e-learning course.

Peer tutoring as a strong enabler

In his doctoral dissertation "The role of tutors in problem based education", Jos Moust found no difference in effectiveness between undergraduate students and university staff acting as tutors. A few quotes from this dissertation¹:

- "A first assumption is that the absence of a teacher in a discussion group enables students to discuss more freely with each other about issues. (...) The second premiss is founded on the idea that the knowledge structure of the student-teacher is more comparable to the knowledge structure of the student he guides. (...)

The third hypothesis is based on the idea that students taught in a context in which they are guided by peer-tutors, become more motivated to learn."

- "The outcomes concerning cognitive congruency as well as role congruency were also in line with the assumptions. Both courses showed that student tutors

¹ Moust, Jos: "De rol van tutoren in probleemgestuurd onderwijs", from the English summary p. 153 - 160

were better at understanding the nature of the problems students faced in attempting to master the subject-matter. (...)

Significant differences were also found to assessment orientation. Student tutors used the end-of-course exam more frequently than staff tutors to direct students activities (...)

From these findings, one has the impression that student tutors have a better idea of the problems first-years have in understanding the subject-matter as well as the demands that a university education requires. Because they are able “to speak the language of the students”, they appear more competent to offer the members of their group solutions that first-years can comprehend. Conversely, staff tutors guide the process of learning and studying from a relatively remote distance. Probably, they are unable to visualise the problems students have with the knowledge acquisition. During the learning process, staff tutors rapidly correct what students contribute to the discussion. By formulating their approvals and disapprovals in a pedantic manner, staff tutors have a chilling effect on students’ participation in the discussions.”

We have used these insights in several e-learning projects. In order to stimulate the use of the system, students who had completed the course have been appointed as tutors and managers of e-mail communication, forums and chat threads about the topics. Our experiences confirm the conclusions of dr. Moust.

Best practices for course effectiveness testing

We have learned that the best course design test happens with the help of workers who have just recently acquired the knowledge from another source. These “research subjects” reflect better on their learning problems than the best didactic scholar can do.

Based on the Internet inquiry

The survey was conducted between 30th June and 10th July 2006 and is based on n = 91 questionnaires. This is a response of 5 % on 1822 active students in that period.

The objective of the inquiry is to determine whether within a universe of existing e-learners, there is a relationship between the appreciation of e-learning and the personal situation of the learner: is he or she obliged to complete a course or is it his or her choice to take a course online.

- The sample shows a majority of male students: 64 %. With 11 % unemployed it reflects the Belgian population. 25.5 % are retired or work at home 63.5 % have a job.
- The majority of women (75 %) likes to study with others as in the male population this tendency is less strong: 50 % likes to study in a group.
- On the total sample, there is a slight preference for blended learning: 42 % and 34 % prefers pure e-learning. Surprisingly, 24 % still prefers a classroom which indicates the e-learningcourse was the only alternative available.
- The majority is taking the course as an instrument for better job performance, and they took the course on their own initiative: 88 %
- 62 % of the sample uses the facilities (PC, browser, connection) at home, the rest uses the company's facilities or the unemployment agency's facilities.
- The majority (89%) finds freedom of studying (organisation, time management, etc...) important. Nevertheless, these freedom lovers prefer to study in the presence of others: 59 %! The majority of the freedom lovers prefer e-learning and blended learning: 81 %, which is composed of 44 % blended learning and 37 % PC-based learning
- Classroom learning accounts for 19% of the freedom lovers
- The number of students who would like to know the results of their fellow students is about 50-50.

Conclusions:

- The motivation to improve job performance is the main driver for e-learning
- E-learning course designers should bear in mind that the closer the e-learning experience comes to classroom learning, the more it will appeal to a broader audience.
- Blended learning which guarantees a maximum level of freedom is an organizational conundrum

Based on the telephone interviews

Ten telephone interviews have been conducted. This may appear a small sample but since each interview came up with the same picture and since the total group of students was not larger than 25, we decided the indications were conclusive enough.

All students were between 17 and 22 years old.

This led us to five observations:

1. The “MTV factor”

The multitasking generation with a short span of attention seems to like e-learning provided they can “grasp a subject in the time it takes to view an MTV clip”.

2. KISS (Keep It Simple Stupid)

Even the toughest subjects should be explained in a simple, easy to grasp way.

“I want to study while I eat my sandwiches or do a routine job”.

3. Interactive

This has to be interpreted in the broadest possible sense: intuitive user interface, contextual and thesaurus-based search possibilities, direct feedback on tests, individual learning paths, helpdesk, (live) coaching,...

“I want the system to react on what I am doing.”

4. Feedback on the learning process

A Learning Management System (LMS) monitors the learning process. Most e-learning applications provide the monitoring data as information for the trainer or coach. In future LMS versions, this process feedback should be presented directly to the student in an understandable presentation format.

“I want to know how I am doing”.

5. Learning styles

We use the Grasha Riechman model for a few reasons:

- a) It is easy to communicate to all project participants
- b) It is easy to assess who belongs where in the model
- c) It connects group behaviour to the learning process
- d) last but not least it is a learner-centred model

The Grasha Riechman model uses three bipolar dimensions in its *Student Learning Styles Scale*:

participant versus avoidant

collaborative versus competitive

independent versus dependent

Although the results of our inquiries are not significantly conclusive, we estimate that in an e-learning environment there is a tendency towards less dependent learners. On the participant – avoidant scale we see a tendency towards the “avoidant” end of the scale, while there is no significant tendency on the competitive – collaborative scale. In our future e-learning projects we hope to perform a better field-test where the teaching and coaching methods will be blind tested in several student groups. Needless to say that it takes a larger project to produce a positive cost-benefit analysis for this extra investment. Our hypothesis is that this social behaviour model of learners provides valuable input for the change management strategies, associated with the introduction of e-learning in a work environment.

Based on the focus groups

We conducted two focus groups of four managers, each from a wide variety of profiles: small and large business, vocational training projects, academic training projects, etc...

The main conclusions from these sessions were:

1. Management support is just as crucial to succeed as students' acceptance. The most quoted forms of support were:
 - a) competence based incentives,
 - b) internal certification procedures and
 - c) embedding in ISO procedures based on EFQM (or INK in the Netherlands)
2. Which quality standards should the management impose on an e-learning system? There was much discussion about this point but we found consensus on six quality standards:
 - a) e-learning should meet its objectives, ranked from high to low level objectives:
 1. increase organisational value. With a balanced scorecard approach, management can get a clue on how a learning organisation can contribute to corporate performance
 2. increase competences of individuals and teams. A consensus on the definition of "competence" was very hard to reach.
 3. reach classic didactic objectives: cognitive, affective, attitudinal and conative performance.
 - b) e-learning should help the learners to apply the lessons learned in an operational environment. The core of an e-learning effort is to address a business problem, e.g. "increase effective use of time in the organisation" or "manipulate a production machine efficiently" or "increase communication effectiveness of e-mail in the organisation"

c) e-learning should link to existing procedures and business processes.

Disciplines like business process management and Service Oriented Architecture break down all processes into well documented procedures or messages to its smallest granularity, e.g. LogCustomerCall or CheckCredit. This enables the organisation to link the knowledge needed to execute these processes to the smallest component, thus increasing reuse and flexibility.

d) e-learning should motivate the learner to expand and increase his knowledge beyond the content offered. Although we pointed out earlier that technology is not an issue, this is the point where many of the existing e-learning platforms fail. Many of them do not or wrongly use a database to store knowledge cells and links to external knowledge bases. Since you can't measure what you don't record, this very important aspect is neglected in many e-learning platforms.

e) e-learning should offer a maximum of usability. It is considered important to choose the right metaphor for the content and enable the learner to navigate in both a structured and unstructured manner. A thesaurus based search engine strongly supports this concept.

f) Last but not least: e-learning should offer value for money. This proves that e-learning is finally reaching the main stream market. In the beginning, early adopters were interested in the technical aspects and were curious about the effects on the organisation. Many e-learning projects were initiated without embedding it in a global business perspective. Needless to say that many of these early initiatives are archived for later historical analysis...

Conclusions

There is still a lot to be learnt

Our findings are just scratching the surface of what makes the acceptance of e-learning in a work environment successful. We hope they will stimulate discussion and further research by the academic community.

From our first results we can submit the following acceptance criteria for e-learning in a work environment:

The e-learning system is aligned with management's objectives

E-learning has a future if management supports it as a strategic and important tool for the realisation of the organisation's mission. In all other cases e-learning is underutilized at best or worse: an expensive experiment.

Flexibility through standardisation

Standardisation plays an important part in successful e-learning projects. The main standardisation issue is about:

- metadata describing the information object, or "sharable content object" as the Advanced Distributed Learning Community calls it,
- consistency in the construction and storage of information objects: knowledge objects should be normalised for RDBMS storage
- improving communication by reducing ambiguity about concepts, principles, rules, procedures, etc... in the organisation

Include (peer) tutoring in the e-learning ecosystem

E-learning in a work environment always has social aspects: the learned theory has to be applied in the everyday work environment. Therefore the use of (peer) tutoring will certainly improve acceptance and it can enhance the impact and the effect of e-learning on job performance.

Learner-centric approach

Sure, we all put the customer first but in many e-learning systems, the designers have only paid lip service to a learner-centric approach. Content remains the main focus of many e-learning projects.

We imagine a learning management system where the learning style of the student provides input for the content presentation. For instance an HTML tag `<LS_1> ... </LS_1>` to indicate for which learning style this presentation form applies. To avoid overly complex systems the number of learning styles should not exceed four. If Grasha Riechman's model provides an interesting framework for the social behaviour of the student, Neil Fleming's VARK model may be more appropriate for the presentation styles as VARK is based on the principal sensory mode of learning:

- **V**isual
- **A**uditory
- **R**ead/Write
- **K**inaesthetic

The future is in the content

As more and more projects provide the practice community with experience, concepts and models we see a growing tendency toward complex content organisation and sophisticated learning management systems that can present this content in various ways. This implies greater upfront investment and will lead to further concentration in content providers for “horizontal courses”, i.e. Office training, language training, etc...

Another evolution will stimulate this tendency: the convergence of digital libraries and learning objects, accessible via a single global repository.

On the other hand, e-learning will also grow in highly specialised knowledge domains as the chance of getting a classroom filled with specialists is very small. There, the need will grow for rapid e-learning application development, supported by automatic indexing and information storage, thesaurus-based knowledge modelling and simple, DIY-like presentation aids.

Do it right the first time


On the next page we highlight a few aspects from the process model for e-learning implementation related to the four acceptance criteria mentioned above:

1. Alignment with management's objectives
2. Flexibility through standardisation
3. (Peer) tutoring
4. Learner-centric approach




Discovery phase

The discovery phase is where the initiative is taken and presented to management. This is where the strategic objectives of management are matched with the organisation's competences and the tasks the organisation has to perform to survive. A classical SWOT from a knowledge management perspective will make sure all areas are covered.

 *This is where management has to show its commitment to e-learning as a strategic tool and promote the project as a strategic move to develop the entire organisation through "just-in-time" knowledge management. If the project is positioned as an experiment, the organisation will make sure it remains so.*


Alignment Phase

In this phase, the overall infrastructure is defined and project aspects like scope, time, budget, quality, information and communication as well as the organisation are defined in broad terms. A first inventory of potentially codifiable sources is made.

 *This is the phase where aspects of metadata are initiated. The organisation starts an inventory of all existing definitions of relevant corporate concepts, processes, procedures and rules to check on their consistency, clarity and robustness.*

Design Phase

In the design phase, the project team screens all designs on learner-centric issues: interface, course design, thesaurus, links to external sources,

 *This is the phase where the project team gets constant feedback from the future users of the e-learning system. The team should consult both novice and expert users in the course(s) in preparation. The project team should also envisage the system as a stand alone system and as part of a (peer) tutoring environment.*

Build phase

In this phase, quality assurance assesses the implementation of the above mentioned principles.

References

Since this paper is based on authentic empiric evidence and research, there is little direct reference to authors. Nevertheless we would like to point out to the interested reader some studies and works which add relevance to this paper and which have influenced the development of our methodology.

Books

Arnold, John, Cooper Cary and Robertson Ivan

Work Psychology, Understanding Human Behaviour in the Workplace

524 pages

Publisher: Pearson Education Ltd, 3rd Edition 1998

ISBN: 0-273-62868-2

Grasha, Anthony F.

Teaching with Style: A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles

386 pages

Publisher: Alliance Publishers, 1996

ISBN: 0964507110

Kaplan, Robert S. and Norton, David P.

The Balanced Scorecard

Translating Strategy Into Action

323 pages

Publisher: Harvard Business School Press, Boston MA, 1996

ISBN 0-87584-651-3

Moust, Jos

De rol van tutoren in probleemgestuurd onderwijs

Contrasten tussen student- en docent-tutoren

197 pages

Publisher: Datawyse/Universitaire Pers Maastricht, 1993

ISBN 90-5278-066-8

Nonaka, Ikujiro and Takeuchi, Hirotaka

The Knowledge-Creating Company

246 pages

Publisher : Oxford University Press, 1995

ISBN 0-19-509269-4

Senge, Peter

The Fifth Discipline

The Art & Practice of The Learning Organization

442 pages

Publisher: Doubleday:Currency NY, 1990

ISBN 0-385 26096 -6

Whitmore, John

Succesvol coachen

167 pages

Publisher: H. Nelissen, Baarn, 1999 (original UK version from 1992)

ISBN 90-244-0556-4

Reports

SITEC and Etudes et Formation S.A.

E-Learning au Luxembourg: situation et perspectives

48 pages

Publisher: Centre de Recherche Public Henri Tudor Grand Duchy of Luxembourg 2003

Internet sources

There are thousands of sites related to e-learning; almost every university in the world has a section on e-learning but finding a place where e-learning professionals meet that is not funded by one or more tool vendors is another thing. We chose these sites as interesting and not too overly biased towards software vendors:

<http://community.flexiblelearning.net.au/> a community of professionals and practitioners exchange information on e-learning.

<http://elearnmag.org/index.cfm> a free online magazine, published by the Association for Computing Machinery

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