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Developing a critical view on e-learning trend reports: trend watching or trend setting?

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Trend watching reports are an indispensable resource in the e-learning domain. Many HRD departments consider these reports as essential cornerstones for the development of their e-learning strategy. But what is the quality of the forecasts made in these reports? In this article, several methods of forecasting trends are discussed, resulting in a checklist to evaluate the quality of trend studies. Next, this checklist is applied to evaluate some significant trend studies. The evaluation results show that the reports do not meet basic quality criteria, such as 'sound methodology' and 'objectivity'. The article concludes with some critical remarks on the role trend watching reports play in the domain of e-learning.

Introduction

Many organizations use e-learning. In addition to the provision of information via web-based technologies, e-learning also involves the provision of software packages designed to facilitate (informal) learning for individuals and/or groups both with and without Human Resource Development (HRD) specialists. Undoubtedly, e-learning could provide an enormous boost to opportunities for training, learning and development (Gold *et al*., 2003). The e-learning market is still in its infancy. It is an unstable and non-transparent market, which complicates the forecasting of its future. In the

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December 2003 special issue of the *International Journal of Training and Development* on e-learning, important observations on the absorption and diffusion of e-learning are demonstrated, showing the complexity and the interrelatedness of the factors involved. This complexity is multidimensional and is related to differences in the absorptive capacity for e-learning in organizations (Graeme *et al*., 2003), the importance of collaboration and trust as essential factors in e-learning (Mason & Lefrere, 2003) and also to the risks of using e-learning in terms of costs, interaction or attrition (Welsh *et al*., 2003).

In order to shed some light on the future diffusion and exploitation of e-learning, substantial time and money are dedicated to conducting trend-watching studies. Usually, these studies focus on the consequences of e-learning developments for future HRD practice, investments or policy.

Discussions on trend reports tend to focus on their content. This article provides a somewhat different angle by discussing the role, influence and quality of trend-watching reports in the field of e-learning.

The motivation for the article stems from a literature search by the authors which investigated the future of e-learning in Europe (Van der Klink *et al*., 2002). During the literature search it became clear that not many reports were available, the content of the reports was quite similar and they all referred to one another. After completing the literature search the authors still had many unanswered questions, such as: Who is actually responsible for the content of the reports? How should we value the content? Do we have access to or insight into the data the reports conclusions are based on? While discussing these issues the idea emerged to design a checklist for critical evaluation of trend reports. In this article the authors present the outcomes of their discussions.

First, attention is paid to developments in the e-learning market. Then the topic of sound trend watching research is discussed. Next, the construction process of the checklist and the checklist itself are described, together with its application. The article concludes with remarks on the difference between trend watching and trend setting and provides recommendations for trend watching in the field of e-learning.

The e-learning market

In this article, e-learning is defined as 'learning or training that is prepared, delivered, or managed using a variety of learning technologies'. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, CD-ROM (Rosenberg, 2001; Kaplan-Leierson, 2002; MASIE Center, 2002). The market for e-learning still appears to be highly unstable: none of the organizations (universities as well as specialized companies) in this market have a large share and competition is high. An indication of this instability is that 60% of the players involved in e-learning are at the same time providers and users (CEDEFOP, 2002). Many different providers operate in the market, all supporting different products, processes and services. This heterogeneity of supply causes non-transparency of the market for customers.

Furthermore, the demand of customers is evolving constantly, due to insights gained during implementation of products, but also due to shifting concepts at national and international levels. In addition to the initial requirements, focused on 'provision of technology' and 'user friendliness', there are rapidly changing demands, e.g. for pedagogical support and more complex enabling technology (e.g. for collaborative learning and working).

The non-transparency of the market and the shifting concepts in the field mean there is a pressing need for predictive trend studies that give an overview of providers, target groups and possible e-leaning solutions. These studies enable developments to be anticipated and assist organizations with the development of e-learning strategies and policies (Van der Klink & Jochems, 2004). This is reflected in the popularity of websites providing information about the latest products and services (e.g. EduTools, 2003) and in the demand for trend studies.

Features and difficulties of trend studies

The methodological and technical constraints of disruptive technologies complicate predictions and are exacerbated by market instabilities. This point was stressed more than twenty years ago by Collingridge (1980), who stated his 'dilemma', that attempting to control a technology is difficult, and not rarely impossible, because during early stages, not enough can be known about its social consequences and by the time these consequences are apparent, control has become costly and slow. The same argument holds true for the development and use of e-learning; in its current, early stage, we think only limited understanding of the full potential is seen, and by the time a sound grasp exists on what e-learning might represent and for which groups it is relevant, it might be very hard to change applications and implementations of e-learning solutions.

In his article 'Great expectations. Why technology predications go awry', Brody (1991) describes several reasons why forecasts are sometimes erroneous and what the consequences of inaccurate predictions are in terms of individual careers, research agendas and financial investments. Similarly, Christensen (1997) points to dilemmas related to the prediction of disruptive technologies' success: due to several factors (e.g. the technology is more related to the world of tomorrow than that of today) predicting future developments is a rather difficult endeavour. He concludes that the minimum requirements for good forecasts must be that they indicate future user needs and that the underlying logics and data are replicable by other forecasters.

Several types of forecasting methods can be distinguished (Porter *et al.*, 1991). The first and the most basic one is *monitoring*, the process of scanning the environment and of organizing this information. Monitoring can provide a large amount of useful data. However, it is only applicable in the case of linear developments, and if not filtered and structured in an adequate way, monitoring can easily result in an overload of data.

A second method is to obtain the *opinion of experts*. The idea is that the knowledge of a group of experts is superior to the knowledge of one person due to synergy effects or the opposition of several perspectives on developments, especially when data are lacking and when modelling is difficult or impossible. The weakness of the expert opinion method is that these forecasts are strongly influenced by the way questions are formulated and by different possible expert biases, such as work experience, regional specificities and communication skills.

A third method is *trend analysis*. Statistical and mathematical techniques are used to expand a known time series into the future. The assumption here is that past trends and conditions will continue in the future, hence this method is unsuitable for discontinuities in trends.

Modelling is a fourth method, offering a simplified model of the structure and the dynamics of a phenomenon. A model can describe the future behaviour of complex systems in a manageable way. Modelling relies heavily on quantitative data and on the quality of the assumptions underlying the model.

Finally, *scenario construction* is a method that aims to describe a plausible range of possibilities for the future. Usable forecasts can be constructed from a limited database, describing a set of imaginative descriptions. Although it runs the risk of predicting an imaginary future, scenario construction is a good way to integrate qualitative and quantitative information from different sources into a coherent picture. As a complex of economical, cultural and didactic factors are employed, the scenario method is increasingly adopted in technology forecasting. Typically, a set of three scenarios enclosing the forecaster's view on the range of possible futures are used: (1) a surprise-free projection, describing the baseline and most likely scenario, (2) the worst case projection, offering the pessimistic scenario, and (3) the best case projection, referring to positive changes in the relevant area.

In fact, no general rule of thumb can be formulated on the use of a specific forecasting method. The choice of the method depends on a large array of factors, like the complexity of the field, the nature of the development (e.g. linear or discontinuous), prior knowledge from history and the intended use of forecast results. Given the

complexity of the field of e-learning and the imperfection of the e-learning market, a scenario appraisal would be a good approach.

Construction and application of the checklist

As mentioned in the introduction, the initial work on e-learning trend reports stressed the need to develop an instrument to compare reports on quality. In this article, the concept of quality is defined using four dimensions: (1) Author and authority, (2) Accuracy of research and data collection, (3) Accuracy of the document, and (4) Objectivity of the presented content. To measure these four dimensions, criteria were constructed, varying between four and six per dimension (see Table 1). For every criterion, a rating scale was developed (see Table 2).

For the application of the checklist, trend reports were selected that were published between 2000 and 2002. Since we did not have access to certain commercial reports due to high acquisition costs, we relied on studies that were publicly accessible. Two

Table 1: Checklist for evaluating e-learning trend reports

	Author and authority
1	Is it clear who is responsible for the content of the study?
2	Is it clear what the credentials of the authors are?
3	Is it clear where the authors are employed?
4	Is it clear who published/sponsored the study?
5	Does the document contain a date of publishing?
6	Does the document contain information on how to reach the authors (e.g. address, phone number, e-mail)?
	Accuracy of research and data collection
7	Does the document contain information about the methods and instrument(s) used for data collection?
8	Does the document contain information about the central research question(s)?
9	Does the document provide information about the respondent group (including the number of respondents)?
10	How do you assess the fit between the methodological approach and the research questions?
11	Does the document provide information about the criteria used for selecting the sample of respondents?
12	How do you assess the criterion validity of the instrument (are the research outcomes supported by other references/sources mentioned by the authors)?
	Accuracy of the document
13	Is the investigated domain clearly defined?
14	Is the document organised logically?
15	Are the main points clearly presented?
16	Is the text easy to read?
17	Does the document contain references that are clearly listed?
18	Are trends/developments mentioned in the study supported by data or references?
	Objectivity
19	Do you experience that the authors have interest in emphasizing certain facts or figures (hidden agenda)?
20	Has the organization that published the study (financial) interests in the field of e-learning?
21	Does the document tend to sway opinions (advertising/selling language)?
22	Is the line of reasoning from research question to expectations for the future logical (e.g. no strategic omissions in argumentation)?

Table 2: Ratings of the criteria

Rating scales: Yes (1 point) No (0 points) were used for items 1, 2, 3, 4, 5, 6
Rating scales: Detailed information (1 point), Some information (0.5 point), No information (0 points) were used for items 7, 8
Rating scales: Detailed information (1 point), Some information (0.5 point), No information (0 points), Not applicable (0 points) were used for items 9, 11
Rating scales: High (1 point), Moderate (0.5 point), Low (0 points) Not applicable (0 points) were used for items 10, 12
Rating scales: Very (1 point), Medium (0.5 point), Not at all (0 points) were used for items 13, 14, 15, 16, 17, 18, 22
Rating scales: Very (0 points), Medium (0.5 point), Not at all (1 point) were used for items 19, 21
Rating scale: Yes (0 points), No (1 point) was used for item 20

informants were asked to check whether the selected four studies were the most important, recently published public trend studies. The informants have an indisputable reputation in the field of e-learning and hold the position of professor in e-learning and senior researcher in the field of e-learning, respectively. Both informants reported that according to their knowledge no significant recently published studies were excluded from the list.

The following four studies were included for closer examination: Clark (2002), Close, Humpreys and Ruttenbur (2000), Ruttenbur, Spickler and Lurie (2000), and Bachman (2000).

Subsequently, two assessors applied the checklist to evaluate these reports. After performing individual evaluation, the two assessors shared their results and discussed their findings to reach mutual agreement. It appeared that the findings of the assessors did not contrast strongly and establishing mutual agreement was possible for every single criterion.

Outcomes of the evaluation

Table 3 presents the results of the evaluation process. Considering the four dimensions that were used to rate the reports, all four reports obtained the maximum score for the dimension 'Author and authority', implying that it is clear who was responsible for writing and publishing the report. Below average scores can be observed for the

Table 3: Outcomes of the evaluation

Report	Author and authority (6 points maximum)	Accuracy of research and data collection (6 points maximum)	Accuracy of the document (6 points maximum)	Objectivity (4 points maximum)	Total score (22 points maximum)
Clark (2002)	6	0	2.5	0.5	9
Close *et al*. (2000)	6	0	2.5	1	9.5
Ruttenbur *et al*. (2000)	6	0.5	4	1.5	12
Bachman (2000)	6	0	3.5	1	10.5

dimension 'Accuracy of the document', and very low scores were observed for the dimensions 'Objectivity' and 'Accuracy of research and data collection'. The low scores on the dimension 'Objectivity' can be explained by the fact that the reports used persuasive and quite optimistic language to predict e-learning's future. Moreover, the reports did not pay substantial attention to possible barriers that might have negative effects on the future of e-learning.

Very low scores were observed for the dimension 'Accuracy of research and data collection'. In fact, the reviewed studies are mostly quasi-scientific in the sense that authors point to a large range of possible developments, using a selection of empirical data, mostly without reference to the source of the data and referring to expert opinions. This may indicate a bias, by providing only information that supports optimistic views.

It is remarkable that trend studies in the domain of e-learning are hardly based on sound methodological approaches. None of the methods described in Porter's (1991) overview of forecasting methods is used. The studies are hardly reproducible by other researchers, because the conceptual framework, data used and the methodology were not made explicit. The trend reports, although they sometimes reflect a very uncertain future, are evidently keen on describing a rosy future. The large distribution of commercial trend reports via the Internet strengthens the image of a bright future due to the frequent quotations by business press and academia.

Conclusions and discussion

The methodology that was used in this study for evaluating the quality of the trend reports obviously has some limitations. First, only a limited number of trend reports were included. However, the reports that were evaluated can be regarded as major trend reports that have a significant impact on the discussion about the future of e-learning. They are cited by a broad group of experts working in this domain both in private industry, in academia, and in governmental services. Second, the number of dimensions that were used for evaluating the quality of the reports was limited to four. Nevertheless, these four dimensions do cover the main characteristics and basic quality criteria of trend reports. Thus the approach can be regarded as appropriate for exploring the basic quality aspects of trend watching studies and for enhancing discussion of this topic.

With this exploration, we do not intend, and are not in the position, to criticize either the writers or the users of the trend reports. Our only message is to note that the effect of these trend reports is rather the setting than the watching of trends. Without a close look at the methodology used, most actors in this field cite these reports rather uncritically. The effect is an increase in status and hence credibility of the reports.

Therefore, we would like to advise readers to be critical of the quality of trend studies in the domain of e-learning. The checklist presented in this article provides a useful conceptual framework to evaluate the basic quality of trend studies.

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