ELECTRONIC CASE STUDIES: A PROBLEM-BASED LEARNING APPROACH

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ABSTRACT
E-Cases is an innovative approach to management development. Traditional case studies typically describe a decision or a problem in a real-life setting. E-Cases encourage students to formulate the decision problem themselves, search for relevant information and evaluate it to develop a group analysis. The approach stimulates active participation and enhances collaboration among the participants who actively engage in the learning process. E-Cases exploit the capabilities of Internet technology and hypertext documents. The format of e-cases is different to a traditional case study because the information is organised in a network of links (hypertext document) that approximates to a hierarchical structure. Students are presented with a summary page with links to internal information resources and external commentary on a company or phenomenon from journals, newspapers, business press and industry commentators. The key differences centred on information content, search and retrieval are related to learning theory and learning context. In particular the impact of learning styles and information analysis are considered in the context of jigsaw learning and individual learning theory. Examples of e-cases are presented and an outline of future research opportunities is suggested.

KEYWORDS
Problem-based learning; case study; learning theory

1. INTRODUCTION

Electronic cases (e-Cases) is an innovative approach to management development that exploits the capabilities of Internet technology and combines elements of traditional case study teaching and learning with problem based learning strategies centred around the concept of jigsaw teaching and case analysis. Traditional case studies have become such an integral component of most business school curricula that their use by staff and students is almost taken for granted, and that the learning concepts that they are designed to
support are not explicitly described or evaluated. Traditional case studies typically describe a decision or a problem in a real-life setting at a particular point in time (Erskine et al. 1998). In order to capture enough contextual information about the problem being considered traditional case studies are often lengthy documents of 15-25 pages length. Teaching notes sometimes contain additional information for the tutor but mainly focus on the analysis of an individual problem using specific theories and models to help the tutor guide the case analysis with an outline teaching plan. Popular case studies are often updated with addendums in an attempt to keep them up to date and topical, especially in management subjects that change quickly such as finance and information systems.

The format and presentation of e-Cases is different to a traditional case study. The information in an e-case is presented as a hypertext document and the information is organised in a network of links that approximates to a hierarchical structure. An obvious consequence of this difference in presentation and format is that the students’ use of information varies in terms of how they access and navigate through the hypertext document. Owing to the limiting nature of a static document, most traditional case studies present the student with a clear problem and the tutor expects a specific outcome. E-Cases can be used to replicate this approach but also lend themselves to being used for more general enquiries where the student is given a problem area, but is expected to then develop the specific problem themselves. The starting point is that students are presented with a summary page of a company (e.g. Motorola), industry institution (e.g. RosettaNet) or particular phenomenon (e.g. electronic markets) with links to internal information resources and external commentary on the company/phenomenon from journals, newspapers, business journals and industry commentators.

The immediately apparent difference between a traditional case study in a printed format and an e-case is the information content and its structure/presentation. However this must be viewed in a broader learning context in order to appreciate the potential of using hypertext documents for teaching case studies. In our experiences of using e-Cases with a wide range of postgraduate students and practising managers we have also observed differences in the way that delegates analyse, learn and share information and insights about a particular problem or business phenomenon – the learning process appears to be more intuitive and also encourages team work because different members of a small group are able to define and understand the specific nature of the problem themselves using their own information search approaches before sharing and debating their collective findings – the learning process is different. The other dimension which is always implicit in a learning environment but not always considered is the learning context – the particular environment and purpose of the case study. Of particular importance here is whether the students are co-located or are doing the case study through the Internet and sharing ideas electronically. A diagrammatic representation of how the components of a problem-centred e-case study are related to each other is shown in figure 1.

![Diagram](example.png)

**Figure 1. Components of the problem-centred approach to learning**

### 2. INFORMATION CONTENT

The e-Cases website, www.mbs.ac.uk/webspace/pdrinkwater/e-cases/e-cases.html, provides a class with a range of companies and each group is allocated to an individual company. Of course this does not stop individuals from exploring the details of the other cases, but in a limited timeframe, such as a day workshop, each group focuses on its own case study and then presents their results back to the whole class. In this way a common theme such as electronic commerce, strategy alignment or implementation can be explored in a
classroom situation, and the theoretical models are informed with data from a diverse range of organisations in a single session. This is fundamentally different to the detailed analysis of a single case study by in a shared discussion.

The Covisint e-Case http://www.mbs.ac.uk/webspace/pdrinkwater/e-Cases/Covisint/covisint.html presents an overview of the electronic market together with links to reputable and informative sources of opinion, and views about the competitors. There is a clear structure to the information presented, but the student is not directed in terms of how to access, read, assimilate and understand the data, or indeed, when to stop collecting data. In an e-Case context, the student is expected to behave much more as a researcher or academic consultant, than as a directed student analysing a specific problem for a particular company at a fixed point in time.

Rather than present a question that is specific to a particular context, students are asked to apply theoretical models around a particular theme, e.g. business - IT strategy alignment, and prepare an analysis in the form of a presentation. While investigating an organisation and collecting data, the students attempt to answer a series of related questions that are used for all of the e-Cases studied by a class. Typical questions might include:

1. Discuss the relationship between the company’s business strategy and its IT strategy.
2. Identify the elements in the company’s overall strategy that give it competitive advantage.
3. Which elements of the company’s overall strategy are visible to competitors?
4. Discuss the organisation’s relationship strategy with its customers.

To create a structure to the e-Case analysis, the commonality arises from the questions and the associated use of theory, rather than the whole class focusing on a single case. It is then possible to see how a theory such as Porter’s competitive forces, or Keen’s reach range model can be applied in a variety of business contexts and the students learn about the application of such models by their own efforts and also from observing the other groups (Porter 1985), (Keen 1991). Of course, the concept of a hypertext document could be used to support an analysis of a single case study, but the fact that it is possible to have a range of cases presented in a similar format lends itself to this approach of using multiple case analysis in a single teaching session. Similarly it would be possible to gather together multiple case studies in a simple document format but because cases are normally written as standalone documents and are often focused on a very company-specific issue, it would be problematic to analyse multiple cases in a single session with a large group.

Assessment is based on group presentations as well as the notes the groups provide to support their arguments. Presentations are typically prepared using a desktop presentation tool such as PowerPoint and participants use the ‘Notes’ facility to explain the points of each slide and cite any resources used. The incentives for learning are not only to gain a good grade, but also to compete against the other groups.

3. LEARNING PROCESS

Presenting information organised using Internet technology has several advantages. It encourages group members to formulate the decision problem themselves and stimulates active participation. Learners are not limited by the static presentation of data but rather they actively seek for information and often have to cope with information overload. The nature of Internet information also means that parts of the e-case study material update themselves automatically whilst others wither naturally. The structure of the learning process in a traditional case study derives from the focus of a particular problem or situation. In a classroom situation where separate groups of students each focus on a different e-case study, the learning process is focused on a theoretical framework that is applied to multiple e-Cases and around the definition of the problem and the associated information collection, organisation and analysis.

E-Cases encourage participants to act as consultants in a problem-based learning environment. The participants analyse the e-business strategy of a particular organisation in groups, apply theoretical frameworks to support their analysis and provide a recommendation. The format of e-Cases provides easy access to data as well as links to dynamic data sources. Electronic resources are available to provide core and contextual information about the focal organisation, its markets and its economic partners. Jigsaw learning
techniques (Silberman 1996) are used to stimulate discussion and engage participants in the learning process. One or more instructors facilitate and guide the case learning process.

The participants of e-Cases are encouraged to teach each other different parts of the case and share their experiences. They interact, exchange ideas, learn from one-another and role-play in groups. Each group of ‘consultants’ is assigned a case and is expected to report its findings back to the rest of the groups. Participants explore how information systems technologies support and shape business and organisational strategies and answer a number of questions. They prepare group presentations and discuss their cases in front of the class. ‘Clients’ i.e. participants from other groups as well as the course instructors can ask questions.

4. THEORETICAL MODELS OF LEARNING

Traditional case studies capture events and replicate what actually happened. The views of different stakeholders are often given to enhance the participants’ understanding of the situation. Participants are encouraged to assemble flows of knowledge from different sources as well as appreciate the relevance and significance of information to the task at hand. Therefore, they gain a deeper understanding of the case and improve their decision-making skills.

The underlying assumption of e-Cases is that adults learn through their own or each other’s experiences and seek autonomy and self-direction in learning (Jones 1995). Learners seek to identify as well as assess their information needs, set goals, devise a learning strategy and reflect on the results (Knowles, 1975). The e-Cases format encourages participants to adopt a task-oriented or problem-oriented approach to learning. The design is based on the principles of ‘Jigsaw learning’ or ‘peer teaching’. The Jigsaw learning approach assumes that the teaching material can be broken down into parts that, when taken together, form a body of knowledge or skill (Silberman 1996). The participants of e-Cases are expected to teach each other different parts of the case study and share their experiences. They interact, exchange ideas, learn from one-another and role-play at two levels:

Group level. As described above, each group of ‘consultants’ is assigned to investigate an organisation and reports its findings back to the rest of the groups. The groups explore models for aligning information systems technology and structures with business objectives. They prepare group presentations and discuss their cases in front of the class. ‘Clients’ i.e. participants from other groups as well as the course instructors can ask questions.

Individual level. Each member of the group assumes a role and examines a particular aspect of the organisation under investigation (e.g. background, competitors, information system resources, business strategy). Even though two or more participants could work together on some parts of the study, each group member is encouraged to focus on a specific aspect of the analysis. All the members of the group are expected to participate in the presentation of the case and collectively answer any questions. Our experience has shown that ideas, perspectives, and invaluable insights are often brought out by intervals during the presentations.

Unlike other electronic books and case studies (including Web-based case studies) that impose a linear approach to learning, the locus of control lies with the learner. E-Cases are used as a vehicle to illustrate theoretical frameworks and encourage reflective thinking and practice. Participants construct their own understanding of concepts and explore a problem to arrive at a solution. The Jigsaw learning approach allows them to learn through each other’s experiences in a problem-based learning environment. The learning process is continuous and cyclical and may circle back on itself in the form of feedback loops that support information flows and carry collective knowledge. There are several benefits to students of using e-Cases over simple documents. E-Cases are generally easier to keep up to date with contemporary events and e-Cases give access to topical business and information systems material. They also allow students to develop expertise in analysing information in small groups that are close to real-life management situations. The process of group learning may be facilitated by groupware systems, and whilst this may be beneficial in a group that is being taught face to face, it is essential for distance learning students who are able to co-ordinate the intra-group analysis of an e-case regardless of geographic location, and then share the results between the groups using groupware technology. The following sections describe how e-Cases have been used in practice and explore the implications for learning strategies, learning theory and information analysis.
Each group conducts its analysis separately and then all of the groups present their findings back to the whole class. This multiple case analysis is similar in concept to the concept of theory building from case study research described in the seminal paper by Eisenhardt (1989). From a learning perspective the particular application of e-Cases to groups who then teach each other and share ideas and concepts, has been referred to as jigsaw learning.

5. DATA ANALYSIS

In order to add depth to the data analysis, the instructor may choose to vary the procedure described above. This idea is based on Eisenhardt’s work on case study research (Eisenhardt 1989). Each e-Case is broken down into parts taking into account a number of dimensions such as leadership structures, organisation of information systems and performance. Each group explores an e-Case chunk, analyses it, reconvene and provide presentations. At the end the participants under the guidance of the instructor search for cross-case patterns and discuss similarities or differences across e-Cases (i.e. industry sectors).

6. THE E-CASES LEARNING PROCESS

Over the years, several learning theories have been developed (Merriam et al. 1999). In order to facilitate and guide the e-Cases learning process, it is important for the instructor to understand the way that learning takes place. Rather than merely an internal process, learning is interactive and may result in nonlearning responses (Jarvis 1987). To achieve ‘higher forms of learning’ e-Cases participants are encouraged to engage with the learning material, reflect on their learning through discussions with their peers and adopt a problem-oriented approach to learning.

According to Gestalt learning theorists, the solution to a problem often comes as a ‘flash of insight’ (Hergenhahn 1988). Learners think of the elements that are necessary in order to solve a problem and cognitively (and repeatedly) rearrange them until they gain insight into a problem. Learning is therefore a mental process that allows an individual to reorganise experiences.

Adults learn through their own or each other’s experiences and seek autonomy and self-direction in learning (Jones 1995). This assumption underlies our understanding of how learning takes place when engaging with the learning material of the ‘living case study’. The design of e-Cases encourages participants to adopt a task-oriented or problem-oriented approach to learning.

A problem-oriented approach to teaching cases studies is the ‘Seven Steps approach’ (Easton 1992). Its main principle is that participants can develop a solution to a case study by following a number of steps:

- **Step 1**: Understanding the situation
- **Step 2**: Diagnosing problem areas
- **Step 3**: Generating alternative solutions
- **Step 4**: Predicting outcomes
- **Step 5**: Evaluating alternatives
- **Step 6**: Rounding out the analysis
- **Step 7**: Communicating the results

There are some similarities between the living case study and the Seven Steps approach. For example, in both approaches participants explore the case problem and provide a diagnosis of the situation. The Seven Steps methodology however, is a rational approach to problem solving and does not necessarily reflect the way that most people solve problems. The living case study does not direct participants into a particular way of thinking but it rather encourages them to explore learning pathways to arrive at a solution at their own pace and depending on their own learning style and capabilities.
e-Cases participants adopt an incremental approach to learning and continually build upon what they have already learned. The ‘Jigsaw learning’ format breaks down the problem into smaller parts and facilitates learning through peer-to-peer teaching and group-to-group exchange. Participants learn to download and interpret information, assess the relevance of data, collaborate in a group as well as process, discuss and present back the results.

The instructor participates in the learning process and can use the output to enhance the content of e-Cases. As part of the assessment participants are required to provide data, URLs and sources used, thus adding to the teaching material of e-Cases.

7. DISCUSSION

In traditional case studies, a researcher visits an organisation and collects data. However thoroughly the organisation may be investigated, the collected data is limited, static and might contain errors which constraints the readers. The living case study however, provides easy access to data as well as links to dynamic data sources and allows participants to actively seek more information. Once the e-Cases have been set-up, there is only a need to ensure that the links are ‘live’. The content of e-Cases is further enhanced by the contributions of the participants.

Traditional case studies capture events and replicate what actually happened. The views of different stakeholders are often given to enhance the participants’ understanding of the situation. e-Cases better resemble real-life situations in which decision makers are faced with a fuzzy decision problem and try to establish causes and implications by obtaining data and seeking the advice of colleagues or experts. Participants are encouraged to assemble flows of knowledge from different sources as well as appreciate the relevance and significance of information to the task at hand. Therefore, they gain a deeper understanding of the case and improve their decision-making skills.

Unlike other electronic books and case studies (including Web-based case studies) that impose a linear approach to learning, the locus of control in the living case study lies with the learner. E-Cases are used as a vehicle to illustrate theoretical frameworks and encourage reflective thinking and practice. Participants construct their own understanding of concepts and explore a problem to arrive at a solution. The Jigsaw learning approach allows them to learn through each other’s experiences. The learning process is continuous and cyclical and may circle back on itself in the form of feedback loops that carry collective knowledge and support information flows.

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