E-LEARNING

CASE-BASED LEARNING IN AN
ELECTRONIC LEARNING ENVIRONMENT

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ABSTRACT: The benefits of e-learning have been widely established. These benefits include reduced costs, time savings, flexibility, accessible learning, and convenience. Due to such benefits, it has attracted business, industry, the professions, and of course educational institutes to begin using this platform either to supplement traditional teaching strategies or offer it as a complete substitute for them. The benefits of teaching with case studies are also well-recognized. Working with real world situations helps provide both students and workers with the skills and knowledge necessary to better understand concepts and practices. Combining the two approaches enables educators to take advantage of the benefits of both teaching methods and better prepare their students/trainees for the challenges of the modern workplace. This article examines the benefits of using case studies in an electronic learning environment and makes suggestions about how case studies can be used.

Introduction

How can the quality of teaching be improved? This is an issue of primary concern for school administrators as well as Human Resource departments. This is especially true in this era of high competition, rapid technological innovation and frequent changes in the workplace that affect the way business is conducted. However, schools and training programs have not always kept up to date with current trends and often rely on their tried and trued curricula rather than modifying it to meet the current needs of the workplace.

The reality is that businesses, regardless of the field, are expecting new employees, including recent graduates, to be able to start work with little or no supervision or training. Employees should be able to work with customers and in teams, define and solve problems, and take responsibility for their work (Wee, Kek, and Kelley, 2003). It is not enough to be familiar with concepts, but they must be able to apply them. However, without the proper education and training, employees may not have the ability to do so.

Curriculum at schools is often based on textbooks and often not on real problems and practical relevance. The result is that graduates are often theorists unable to integrate knowledge and solve problems. That is why many people believe that universities and training programs need to adapt to the current dynamics of teaching and learning,

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where students are more responsible for their own learning, take a more active role, and prepare for the marketplace. Furthermore, with the widespread use of digital technologies, it has produced a new generation of learners. As young people grow up with internet access and other digital technologies, it requires a new approach to education and training (Becker, Fleming, Keijsers, 2012).

There is, however, a solution to these issues. It calls for using case studies in an electronic learning environment. This article examines the benefits of using case studies and their applicability in an e-learning environment and makes suggestions about how case studies can be used.

E-learning

One such trend that can solve the issues just mentioned is "e-learning". E-learning refers to any form of learning/teaching that takes place via a computer network or is enabled by electronic technology. With the widespread availability of affordable tablets and "smartphones", "m-learning" (mobile learning) is an option worth investing in as a vehicle of learning (Nedungadi, and Raman, 2012). People are often connected to a network so now there is a potential for e-learning to take place in the workplace and traditional educational institutes through customizable just-in-time learning, delivered instantaneously across time and geographical boundaries. This is particularly useful for organizations which are geographically dispersed.

E-learning is becoming more frequently used to enhance learning, develop skills, improve performance, and increase levels of motivation (Becker, Fleming, Keijsers, 2012). The reason is because of many proclaimed benefits. Besides the ones already mentioned, these include:

- It is more accessible than other types of education and training.
- It is more cost-effective than other types of education and training.
- Information can be shared instantly and across great distances in real time.
- It helps build community.
- It is scalable.
- It reduces employee travel time and costs.
- It is available 24 hours a day.
- It allows for positive reinforcement on a regular basis and can provide immediate feedback.
- It can be efficient.
- It is easy to find and accessible.
- The learner is involved in the learning and can keep the learner's attention. (Becker, Fleming, Keijsers, 2012; Stewart, and Waight, 2008, Smith and Rupp, 2004).

However, e-learning is not a panacea on its own. E-learning is often criticized for a lack of authentic experience. In addition, a typical e-learning set-up is an individual sitting at a computer installed with interactive study materials, but separated from a context. In other words, e-learning often places too great an emphasis on the individual and technology (Svensson, Ellstrom, and Aberg, 2004). Learning often

requires some facilitation from an instructor and without it the course/task may not fulfill its goals. Furthermore, e-learning courses are often designed as a sequential series of static content. This does not take into consideration the style of learning or the prior knowledge and skills of the learner (Hye, Pedersen, and Baldwin, 2012).

Fortunately, there are solutions to these problems. Providing cases with rich descriptions and situated problems may bridge the gap between the virtual world and the real world. Furthermore, enabling a dialogue to occur in the electronic environment can alleviate some of these shortcomings. These concepts will be discussed in the following sections.

Case studies

As was mentioned in the introduction, employers expect their workers to have the know-how to do their jobs. In order for learners to better comprehend the complex concepts and situations they will face, they need exposure to real life examples, or related learning strategies, such as with case studies. Thus, case studies are often practical in nature and place students in an authentic context (He, Yuan, and Yang, 2013). This practical application of skills and knowledge is one reason why students consider MBA programs, as many business schools have adopted the case-based learning approach as one of their prime teaching methods (Lee et al., 2009). However, case studies have been used effectively in teaching a variety of subject matters, for example in sociology (Bird and Erickson, 2010), business (2008), marketing (Wee, Kek, and Kelley, 2003), teacher training (Heitzmann, 2008), information security (He, Yuan, and Yang, 2013), and in countless medical, legal and business courses.

A case study is a scenario that explains a problem which requires an interactive response by the learner. It can take the form of a white paper, patient report, work sample, synopsis of actual legal cases or medical cases, existing governmental policies, or pervasive social issues in political discourse, etc. (Bird and Erickson, 2010). Cases traditionally present the facts. These may include such things as statistics, precedents and decisions handed by various courts of law, the decisions made by managers, the people involved, and any other useful information. They may also present expert opinions and their interpretation of the facts, which helps students gain awareness of the logic and rational behind the various perspectives. Traditionally they are in paper form, often from journals and books. However, multimedia video cases or web-based cases with hyperlinks to more details are also available. These latter types are especially suited to e-learning.

With case studies, it is a learning approach that challenges students with problems that they will encounter in the real world. Using cases in the learning process can help learners understand a situation, identify the range of issues involved in the case, make decisions, develop solutions and formulate principles for dealing with future situations (Bennett, 2010). Cases can take a couple of different forms; however, what they often have in common is that they are "stories". Humans naturally represent their experience in the form of stories, or cases, and make analogical inferences from them. They store these in their memory and later refer to this knowledge to understand a new situation through a process of analogical reasoning (Bennett, 2010). As a result, people attempt to solve new problems by retrieving past problem-solving situations and attempt to adapt an appropriate solution to the new situation (Hye, Pedersen, and Baldwin, 2012). Of course the prior experience does not have to

be their own; it could be also be an interpretation of others' experience. Regardless, in the workplace when people are confronted with a problem, they can search their memory for situations that they have previously solved and offer a solution. This cognitive process of using cases to solve problems is one of its main advantages.

Cases are effective at exercising typical educational objectives: comprehension, application, analysis, synthesis and evaluation. In traditional teaching, case methods usually involve studying the case, answering study questions, discussing the case, and preparing a case analysis report. The parts of the report usually include: defining the problem, justifying the problem definition, providing and evaluating alternative sources of action and coming up with a recommendation. As such, using them meets the educational objectives.

There are certainly benefits over traditional lecture-based teaching. On the lighter end, there are advantages from the students' point of view. First of all, case studies relieve the boredom that students may experience when they are repeatedly exposed to the same teaching methods. Indeed, research indicates that students express great satisfaction with using case studies in courses. Students are pleased by practical examples and making abstract principles concrete. Students in some research also strongly believe that case studies provide students with a good means of applying the principles to real world situations (Harper, Lamb, and Buffington, 2008; Lee et al., 2009). Thus from a student point of view, it makes sense to use case studies.

However, there are reasons to use them than for mere "pleasure". Using case studies has positive short- and long-term effects in knowledge acquisition, retention of concepts, and problem solving. First of all, cases make learning relevant and meaningful to the learner through active participation in analyzing, discussing, and handling real problems (Hye, Pedersen, and Baldwin, 2012). This helps in acquiring and retaining knowledge. They further facilitate students' assimilation, synthesis, and application of course concepts by requiring them to reason critically about complex situations and recommend courses of action under circumstances that mimic the issues that they may confront outside of the classroom (Bird and Erickson, 2010). As such, it allows students to apply their theoretical knowledge to real contexts.

Furthermore, case studies are an excellent method for gaining know-how. This method of learning allows for multiple representations of complex concepts, modeling and coaching of the problem solving process through guided learning experiences and provides a fear-free environment for trial and error (Wang, 2002). In addition if they are used as a team task, they allow students to compare and evaluate their own and others' perspectives, thus facilitating their learning. Research also indicates that active learning, for example by participating in case studies, helps students develop problem-solving and analytical skills which help students make better decisions and ultimately better employees (Heitzmann, 2008).

Learning can also be enhanced when cases present the experiences of skilled experts in the field. When cases present multiple perspectives, it can help learners develop conditional knowledge because they retain the complexities and contradictions inherent in realistic situations. Learners profit from interpreting the stories of experts and learning from other people's experiences to fill the gaps in their own knowledge (Bennett, 2010). In addition, when students search for relevant information in similar cases or when trying to solve the case, they develop their knowledge and skills in looking for solutions, which is also useful for their future (Hye, Pedersen, and Baldwin, 2012).

Advantages of case study methodology include the following:

- They permit students to analyze issues.

- They utilize higher order skills, rather than just passively memorizing information.

- They apply theoretical knowledge to class-rooms/workplaces and question the assumptions underlining theories.

- They use self-analysis and self-reflection skills.

- They enable students to share and compare viewpoints.

- The provide opportunities for students to improve their teamwork, communication and problem solving skills (Kawulich, 2011).

- They force students to reason critically about complex situations and recommend courses of actions (Lee et al., 2009).

- They provide an opportunity to conduct practical training with a minimum of equipment.

Case studies in e-learning

Case-based learning can be considered as one approach to e-learning that effectively transfers knowledge and skills. Educators, especially in higher education, attempt to focus on learners' active knowledge construction (Hye, Pedersen, and Baldwin, 2012). This is a process by which the learner can explore, reflect on and produce knowledge. As has already been mentioned, the ultimate goal is to be able to solve real-world problems. E-learning and cased-based learning can assist in reaching this aim.

Some of the benefits of both e-learning and case studies have already been discussed. It follows that applying the two together should yield positive results. Indeed, using technology can enhance the quality of case-based activities. For one thing, the most current issues of a case can be placed on the web, which will allow students to analyze and then discuss it regardless of the students' location.

Another benefit is that students can get feedback from instructors, experts and other students, which provides them with timely insight on how to get started in solving the problem. In addition, research by Mitchem et al (2008) on using discussions in case-based learning found that students were positive about their participation as they gained multiple perspectives from other group members, and they also revised their own thinking, learned from others, and gained confidence. Of course, they should be able to transfer what they learned from the case and the experience in general to future problems (Hye, Pedersen, and Baldwin, 2012).

Furthermore, instructional multimedia components such as video, animation, narration, images, presentations, etc. can provide students with a greater context, leading to a better comprehension of the concepts and principles associated with the case (Lee et al., 2009). Students also claim that multimedia case studies are helpful to their learning and enhance their technological, decision making, and leadership skills (Kawulich, 2011).

Another subjective benefit comes from adult learners who have specific learning goals. They tend to be more satisfied when real cases are used in an interactive and supportive e-learning environment than when just sequential and less flexible e-

learning methods are used (Hye, Pedersen, and Baldwin, 2012). They are not only more satisfied, but they also learn more.

While it is clear that case-based learning provides a good experience, case studies in an e-learning environment do not guarantee success on their own. This is especially true if the instructor uses approaches unsuitable for an e-learning platform. For example, while technology can provide support to students to help them come with ideas, concepts and solutions, it can also be a burden. Sometimes students may be overwhelmed with the amount of information available or may not know how to weed through it. In addition, some may be burdened by the technology as they have to manage tasks and tool functions in the learning processes at the same time (Lee et al., 2009). With e-learning, there is also the disadvantage that students are often required to type their answers. Some have difficulty expressing their ideas fully in this manner, especially as compared to the speed provided by oral communications.

Sometimes in case studies, like in many other class exercises, students are situated as outside observers. Reactions may be different when placed in a real situation where they have an emotional stake. In addition, many cases are overtly controlled by the instructor of the course. There are often other factors influencing decisions that are not addressed in the cases. Furthermore, the instructor usually serves as the moderator of verbal exchanges and can judge the student arguments. However, outside the classroom, there is nobody to regulate the conditions. Overall, however, there are many more benefits to case studies than drawbacks, especially when they are used correctly. Criteria to use cases correctly follow.

The first requirement is deciding on the subject matter that should be practiced. In most situations, the problem should defy a simple solution, even though there may be one best solution. One of the purposes is to encourage students to think and weigh various information. If the case is presented as the perspective from various characters, then students will have to consider each of those perspectives, weigh the evidence and then consider their classmates' interpretation of the various positions (if it is not done as an individual assignment). In real life then, students will be better prepared to assess which position is most viable.

The next consideration is when to use case studies. There are two possibilities. The first is to present course concepts before introducing the case. The concepts and theories can be followed-up in the case. This can take place either through reading, videos or live on-line teaching. Research by Bird and Erickson (2010) indicate that this procedure provides the best results. When students have not been exposed to the central theoretical ideas and concepts prior to participating in the exercise, their ability to apply concepts is hindered. They may express hesitation or lack of authority when trying to express their thoughts.

Of course, instructors may also use case studies to demonstrate to students what they do not know. In this way, once students read the theory, they will understand the importance of knowing the concepts, especially if they have already seen it apply to real life situations. This also provides the instructor with knowledge about what information really needs to be taught. If students are already familiar with the concepts, then the instructor can focus on other concepts or dig even deeper into the concept then he/she otherwise would be able to.

The concern is choosing the case. Good case studies are structured in ways that embed course material into rich social and cultural contexts and help students see clearly how the thoughts and actions of the characters are shaped by larger social

forces. A good case should contain as much information as is necessary to reach the learning objective. In some circumstances, this may include all the possible information about the situation the company is facing. If it is for a business course, this may include things like who the competitors, suppliers and customers are or things like the social, political, legal and economic environment of the organization, the goals of the company, and the products and services they offer. On the other hand, this may burden the students if there is too much information and they cannot find the relevant facts. In that case, it is more effective to use a short case that is focused on the learning objective. In that way, it reduces the amount of time getting acquainted with company.

The length of a case does not always determine its difficulty level. As cases become more complex, less structured and open-ended, they stimulate thinking (Figure 1).

FIGURE 1. A CONTINUUM OF CASE COMPLEXITY (Kim, Hannafin, and Kim, 2004)
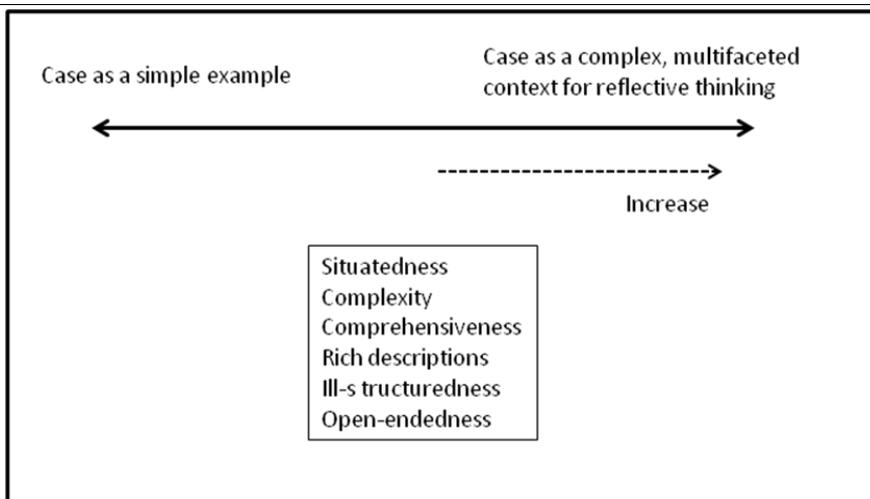
Besides stimulating thinking, the case should engage students in active problem solving in the context of life experience. For teacher training, this might mean how to deal with a problematic child. For doctors this might mean how to diagnose an illness. For a business, this might mean solving a communication problem within the company. The benefit of using real cases is that case is that it helps students develop the skill in finding all the necessary facts surrounding the case, which is something they may have to do in the real workplace. When presenting real life work situations, however, it is important to realize how much work experience in the field students have. With less experience (or no work experience), students may be less eager or even unable to respond to the case.

At the other extreme is the alternative to work with an invented case, which can be completely invented or be a grouping of different situations from real cases. The purpose of this is it allows instructors to focus on a specific aspect of an item they want to work with. Since the goal is to accelerate expertise, scenarios should be derived from experts. While they may not be able to articulate the tasks and

knowledge they used very clearly, they can describe a challenging situation that they solved on the job explain the cues, reasons, and hypotheses for their decisions and actions. In this way, students can get an idea of the thought process of an experienced person and start to learn what to look for.

However, rather than stripping down the case to decontextualized facts, it is better to design a case as a "story". The story reveals a dilemma or problem that the characters are facing. It should explain to the reader what each character did and how he or she interpreted and processed the information available to him or her. In this sense, the story reveals the dilemmas and practical contingencies of everyday life and personal problem solving (Bird and Erickson).

Regardless of where they come from, case studies must be properly prepared and presented. They must establish clear goals, and instructors must provide sufficient time to cover the case properly, and direct students on how to discuss the case and how it fits into the framework of the course (Kawulich, 2011). In this way, it can engage the student easier.

In the context of e-learning, additional media, including animation, video or audio, enhances the students' experiential learning by facilitating students' application of computer technology in real life scenarios and increasing the contextual understanding of a case (Kawulich, 2011). One thing to note, however, is that the research by Kawulich (2011) indicates that using too many multimedia case studies in a semester may turn off students, even if they were initially exciting and innovative.

Once the case is prepared, students then need to read/watch it. After covering the case, students can discuss the questions provided for the case or come up with an individual solution to the situation and submit it as an assignment. The typical format of a case study: problem definition, problem justification, list of alternative solutions, evaluation of the alternatives, recommendations and conclusions. This is essentially the scientific method. The problem definition step involves trying to find the real issue and distinguishing it from the symptoms. The problem justification section proves that the problem is really the core problem. The alternative courses of actions section is usually just a list of alternatives to prove that the students have not just come up with one solution. The evaluation of the alternatives comes next. Students can evaluate the cost of the solution, time it will take to implement and how permanent the solution will be among other things. In the final section, students should choose a solution and justify why it is the best one.

While doing the assignment as an individual can be useful, it misses out on the greatest benefits of e-learning. While students can gain situational knowledge from reading/watching the case, the discussion is the part that allows them to improve their problem-solving, reasoning and communication skills. The benefit of the group discussion, especially when there are structured questions, is that helps encourage students to examine and digest a wider range of information and perspectives than they would alone. In addition, Kawulich (2011) found that group activities made students' work more enjoyable and less stressful since they were able to learn from each other, share ideas with others, hear different perspectives, share responsibility for decision making and improve the understanding of the course content.

One important aspect of using case studies is indeed providing a forum for student discussion. As has already been mentioned, this allows students to express their opinion and also learn from others, as learning is enhanced when discussing with people who have different opinions, backgrounds, skills or knowledge and who can

ask thought-provoking questions (Ronteltap and Eurelings, 2002). With e-learning, this can take place in two ways: live chat rooms or through asynchronous communication possibilities.

Asynchronous communication, such as through discussion boards, may lead students to a deeper level of information processing when they compose documents which represent their personal knowledge stemming from the study of the literature (Ronteltap,and Eurelings, 2002). Asynchronous discussions allow learners to reflect and respond to issues being discussed, and thus help support critical thinking.

However, the instructor must facilitate the online discussion if "deep learning" is to occur. The questions that instructors pose should be open-ended to provide more thought as they moderate the discussion. Too much structure, on the other hand, may lead to less rich discussions and students only meeting the minimum requirements (Mitchem et al. 2008). Students like receiving feedback from the instructor during discussions and questions that keep the discussions focused. To assist in managing the discussion, the number of students per group should be limited. It is harder to follow discussions when more than 10 people are posting in one forum. Therefore, larger classes should be divided into smaller groups.

There are various tools available to the instructor and students to facilitate learning and collaboration. For example, students can use Web 2.0 tools such as blogs and wikis to collaborate with peers in brainstorming solutions (He, Yuan, and Yang, 2013). Regardless of the tools, instructors should attempt to maximize the unique characteristics of each tool. For example, email should be used for document sharing and perhaps setting up meetings, discussion forums should be used for developing and exchanging ideas, and chat rooms or multi-way conferencing or other synchronous tools can be used for brainstorming and decision making (Lee et al., 2009). As can be seen, the electronic environment enhances many aspects of case-based learning, but successful online learning is dependent on the effective use of technology and the ability of the instructor to moderate and ask questions.

Conclusion

Regardless of the subject matter, case studies are a powerful tool in teaching. Given the flexibility of e-learning, they can be more effective than following traditional teaching methods. They provide students with the opportunity to apply skills and knowledge that they will need in the workplace. Case studies are complemented by e-learning platforms. They provide the flexibility that employers and even students sometimes need. The group discussions in case-based learning in the electronic environment can improve the learning experience, produce more sophisticated solutions and better prepare students for the workplace. In short, cased-based learning certainly has its place in e-learning and provides more benefits over traditional on-line teaching methods.

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