

Multimedia Tools in the Design of a Business Process Reengineering Course Based on Brain Based Teaching: A Case Study on MBA Program in Mekelle University, Ethiopia

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ABSTRACT: The use of multimedia either to support traditional educational tools or independently in e-learning distance programs is increasing from time to time. Accordingly, in this paper the MBA evening program in College of Business and Economics of Mekelle University has been considered as a case. In order to show how Gagne's Nine Events of Instruction can be practically applied in developing educational lesson, in this paper, business process reengineering (BPR) is selected as one aspect of strategic management course. To enhance the quality of education in teaching strategic management in general and BPR as an aspect of strategic management in particular an attempt has been made to identify relevant websites based on the concepts of “orchestrated immersion” as well as “active processing”.

Keywords: Active Processing; Gagne’s Nine Events of Instruction; Multimedia; MBA; Orchestrated Imersion

1. THE IMPORTANCE OF MULTIMEDIA IN EDUCATION

Today due to the advancements in ICT self-paced learning systems are increasing significantly. Such trend paves the way for the incorporation of innovative methods of interactive learning modules and multimedia packages (Neo & Neo, 2011). This will defiantly support the modern trend in education that is student centered as opposed to the lecture method. In this method the active participation of students in the learning process that enables them to have their own decision regarding how they will learn are emphasized.

According to Neo & Neo (2011) the student centered method will be achieved by making the teacher act as a facilitator in supporting students in promoting their knowledge and motivating them through sharing and self development. In addition employing multimedia based recourses in teaching and learning are instrumental in enhancing the effectiveness and efficiency of learning.

In discussing the significance of multimedia tools for the improvement of learning in education Tarawneh, Tarawneh, and alzboun (2011) have identified the following characteristics that are believed to enhance the educational outcomes:

Makes the provision of information to students using variety of media, Hypermedia links allow students to organize information in many meaningful ways Include a wide variety of activities and

skills which groups can work on effectively over an extended timeframe; Involve a substantial amount of work, Involve open-ended assignments, Involve theme-based activities, Draw knowledge and experiences from a wide variety of sources, Involve interdisciplinary activities, are a way to achieve high self-esteem, Learners become more self-directed, Students learn to think effectively, practice problem-solving and decision-making , Requires and rewards good planning and execution skills, Students are motivated to create a quality product because a wider audience may view it, Multimedia skills will be useful for students in their adult live.

Similarly, Milovanović (2010) has identified the following advantages of e-learning as an aspect of multimedia learning environments: it enable cost reduction in educational service requirements as it makes possible distance learning on line; it makes self paced learning possible; it also make possible just in time access to timely information. Beyond that the other significant contribution is that real time human interaction become possible by the use of Web based collaborative learning communities.

Although it has the advantages mentioned above Tarawneh, Tarawneh, and Alzboun (2011) has identified the following disadvantages it requires high-end computer systems; developing multimedia requires high amount of investment and takes a great deal of time for its development; and if the learners and educators are not computer literate its effectiveness will be diminished unless training programs are arranged at the outset before introducing it.

Despite of the different drawbacks mentioned above the effective use of multimedia either to support traditional educational tools or independently in e-learning distance programs is increasing from time to time. Accordingly, in this paper the MBA evening program in College of business and Economics of Mekelle University will be considered as a case. Most of the students in the program are permanent employees in different industries in Mekelle and they hold positions of middle to level management in their organizations. Although, they attend evening classes regularly most of the time they are busy by their job and family assignments. Accordingly rather than following the traditional instructional method developing interactive multimedia learning environment is very crucial in enhancing the effectiveness and efficiency of the program.

Based on the principles of brain based learning I will identify nine events of instruction as well as the learning materials that would be used to build a lesson in Business Process Reengineering (BPR) as a aspect of strategic management course. In doing so, I will employ the table on page 382 in the “Developing an interactive multimedia e-learning environment” article as a guide.

2. GAGNE’S NINE EVENTS OF INSTRUCTION

When we talk about applying systematized and organized approach to instructional design Robert Gagne is considered as the prominent researcher in the issue at hand. Due to their increased interest in the outcomes or behaviors that should emanate from training he and his disciples are categorized as behaviorists (Kruse, 2008).

According to Neo and Neo (2011) Gagne's design approach is one of the influential instructional design models that shape other instructional design models. "Gagne's book, *The Conditions of Learning*, first published in 1965, identified the mental conditions for learning. These were based on the information processing model of the mental events that occur when adults are presented with various stimuli. Although many scholars has been trying to provide instructional design models, the nine events of instruction an elaborated model in creating positive learning environment has been developed by Gagne (Tsai, n.d.). In other words, "Gagne created a nine-step process called the events of instruction, which correlate to and address the conditions of learning" (Kruse, 2008, p. 1).

As illustrated by Shachak, Opir and Robin (as cited in Neo & Neo, 2011) "the formulation of the 9 events of instruction represents the learning hierarchy concept in promoting the transfer of knowledge or information". Designing instruction for learning and the selection of appropriate media is based on both internal conditions of the learner and external conditions like the instructions and intentionally planned events that support the learning process (Neo & Neo, 2011).

According to Gagne (2014) the nine instructional events and corresponding cognitive processes are:

- (1) Gaining attention (reception)
- (2) Informing learners of the objective (expectancy)
- (3) Stimulating recall of prior learning (retrieval)
- (4) Presenting the stimulus (selective perception)
- (5) Providing learning guidance (semantic encoding)
- (6) Eliciting performance (responding)
- (7) Providing feedback (reinforcement)
- (8) Assessing performance (retrieval)
- (9) Enhancing retention and transfer (generalization)

The 9 events of instruction are nicely summarized by Kruse, (2008) as follows:

1. Gain attention

In order for any learning to take place, you must first capture the attention of the student. A multimedia program that begins with an animated title screen sequence accompanied by sound effects or music startles the senses with auditory or visual stimuli. An even better way to capture students' attention is to start each lesson with a thought-provoking question or interesting fact. Curiosity motivates students to learn.

2. Inform learners of objectives

Early in each lesson students should encounter a list of learning objectives. This initiates the internal process of expectancy and helps motivate the learner to complete the lesson. These objectives should form the basis for assessment and possible certification as well. Typically, learning objectives are presented in the form of "Upon completing this lesson you will be able to.

3. Stimulate recall of prior learning

Associating new information with prior knowledge can facilitate the learning process. It is easier for learners to encode and store information in long-term memory when there are links to personal experience and knowledge. A simple way to stimulate recall is to ask questions about previous experiences, an understanding of previous concepts, or a body of content.

4. Present the content

This event of instruction is where the new content is actually presented to the learner. Content should be chunked and organized meaningfully, and typically is explained and then demonstrated. To appeal to different learning modalities, a variety of media should be used if possible, including text, graphics, audio narration, and video.

5. Provide "learning guidance"

To help learners encode information for long-term storage, additional guidance should be provided along with the presentation of new content. Guidance strategies include the use of examples, non-examples, case studies, graphical representations, mnemonics, and analogies.

6. Elicit performance (practice)

In this event of instruction, the learner is required to practice the new skill or behavior. Eliciting performance provides an opportunity for learners to confirm their correct understanding, and the repetition further increases the likelihood of retention.

7. Provide feedback

As learners practice new behavior it is important to provide specific and immediate feedback of their performance. Unlike questions in a post-test, exercises within tutorials should be used for comprehension and encoding purposes, not for formal scoring. Additional guidance and answers provided at this stage are called formative feedback.

8. Assess performance

Upon completing instructional modules, students should be given the opportunity to take (or be required to take) a post-test or final assessment. This assessment should be completed without the ability to receive additional coaching, feedback, or hints. Mastery of material, or certification, is typically granted after achieving a certain score or percent correct. A commonly accepted level of mastery is 80% to 90% correct.

9. Enhance retention and transfer to the job

Determining whether or not the skills learned from a training program are ever applied back on the job often remains a mystery to training managers - and a source of consternation for senior executives. Effective training programs have a "performance" focus, incorporating design and media that facilitate retention and transfer to the job. The repetition of learned concepts is a tried and true

means of aiding retention, although often disliked by students. (There was a reason for writing spelling words ten times as grade school student.) Creating electronic or online job-aids, references, templates, and wizards are other ways of aiding performance.

Applying Gagne's nine-step model to any training program is the single best way to ensure an effective learning program. A multimedia program that is filled with glitz or that provides unlimited access to Web based documents is no substitute for sound instructional design. While those types of programs might entertain or be valuable as references, they will not maximize the effectiveness of information processing - and learning will not occur.

3. APPLYING GAGNE'S EVENTS OF INSTRUCTION IN BUSINESS PROCESS REENGINEERING

As mentioned above in this part a systematic effort is done to create a practical review of the events of instruction in a multimedia supported environment by demonstrating how they are applied in developing a lesson of BPR as part of the course Strategic Management. In doing this the following characteristics of the students in the MBA program have been considered:

- Most of the students are adults
- Most of them are middle to top level managers in different industries
- Most of them have more than ten years of work experiences
- Most of them have bachelors degree either in business or other discipline
- All of them are part time students (not regular students)

3.1. Gaining Attention

To gain the attention of students a short documentary about an old eagle has been presented to students. The documentary is the story of an eagle. The eagle has the longest time-span of its species. It can live up to 70 years. But to reach this age, the eagle must make a hard decision. In its 40th year its long and flexible talon can no longer grab prey which serves as food. Its long and sharp beak becomes bent. It's long-aged and heavy wings, due to their thick feathers, stick to its chest and make it difficult to fly. Then, the eagle is left with only two options: DIE or go through a painful process of CHANGE which lasts 150 days. The process requires that the eagle fly to a mountain top and sit on its nest. There the eagle knocks its beak against a rock until it plucks it out. Then the eagle will wait for a new beak to grow back and then it will pluck out its talons. When its new talons grow back, the eagle starts plucking it's old-aged feathers. After five months, the eagle takes its famous flight of rebirth and lives for 30 more years. Why is change needed? Many times, in order to survive we have to start a change process. We sometimes need to get rid of old memories, habits and other past traditions. Only freed from past burdens, we can take advantage of the present. To view the documentary visit the website <http://www.hoax-slayer.com/rebirth-of-the-eagle-hoax.shtml>.

As BPR is the conscious understanding and critical analysis of and radical redesign of existing business processes to achieve breakthrough improvements in performance measures (Hammer & Champy, 1993). And it is a change initiative emanating from the present crisis situation like the case of the old eagle. The documentary is appropriate analogy of the situation of an organization which is

not operating effectively and unless the current methods of operation are reengineered.

3.2. Inform Learners Of Objectives

After the introduction students are presented with the learning objectives as follows:

Up on successful accomplishing of this lesson you will be able to:

- Understand the concept of BPR.
- Appreciate how an organization will implement it.
- What are the challenges in implementing BPR

3.3. Stimulate Recall Of Prior Learning

Students are called up on to recall their prior knowledge of change management processes in order to understand the basic procedures of any change management initiatives. Students can be asked questions like the basic steps in change management and the challenges in implementing change in organizations and it is explained to them that similar procedures will be applied in introducing BPR as a strategic change management initiative. Students are asked to reflect the procedures and challenges of change management and compare it with the new change initiative-BPR.

3.4. Present The Content

Using attractive power point slides present the concept of BPR, what are the procedures in implementing it and what challenges have been faced by organizations in the process of implementing it. Here multimedia elements will be used in order to make the delivery interactive in its content. Power points will be animated and the content will include text, graphics, photos and pictures. In addition to that in order to make the students further master the contents all of the materials will be uploaded on line and make them available in the university web site.

3.5. Providing Learning Guidance

To assimilate the information in the material more effectively students will be instructed to clarify and organize the material. In doing these different questions will be incorporated in the material about the concept and implementation challenges of BPR. Beyond that real life experiences and examples will be incorporated in the material. This will be done by providing case studies of successful and unsuccessful attempts of organizations that have implemented. In addition to that students will be instructed to look at interviews with company executives who have implemented BPR in the web specifies in website selection. Students will be instructed to look at different websites that are of significant help in further comprehending the issue at hand.

3.6. Eliciting Performance

After demonstrating the different contents in the material and in line with the objectives of the lesson, different activities and tutorials will be embedded in the content in order to encourage students participate and confirm their understandings. Accordingly, a group assignment will be given to students by providing them a case study about an organization that implemented BPR and they are

instructed to analyze the case based on their knowledge of the issue at hand and present their findings in class. Further as the students are managers in different organizations in Mekelle to capitalize on their experience they will be instructed to look at the specific challenges that they expect if they intend to implement BPR in their organization and present their ideas in class. In doing this tasks if they face any challenges they are encouraged to contact the professor either in person or on line by email.

3.7. Providing Feed Back

In order to reinforce learning immediate feedback will be provided to learners after the completion of their exercises and their group and individual assignments. In doing this regarding the conceptual exercises the instructor will show their answers to the questions and provide the necessary guidance and support by showing the correct answer for the incorrect answers. Regarding the two assignments as they are supposed to submit the reports and present them in classes; the instructor will provide his evaluation on the reports as feedback in addition to his interactive comments on the individual and group presentations.

3.8. Assessing Performance

Based on their performance on the exercise and individual and group assignments the instructor will show the performance scores and percentages. In order to enhance the likelihood of retention, the instructor will provide suggestions and recommendations for each student and praise will be extended based on the level of performance.

3.9. Enhancing Retention and Transfer

Finally, at the end of the module a review section should be incorporated by summarizing the core issues in the lesson through short video clips. In order to further enhance the learners' motivation for further exploration in the application of the content additional information for advance knowledge will be incorporated. This is done by identifying seminal works on the issue at hand that are books, journal articles, periodicals and websites.

4. IDENTIFYING WEBSITES VALUABLE IN EFFECTIVE TEACHING OF BPR

In order to enhance the quality of education in teaching strategic management in general and BPR as an aspect of strategic management in particular an attempt has been made to identify relevant websites based on the concepts of "orchestrated immersion" as well as "active processing".

Before identifying the five websites for the lesson BPR first let's have a brief summary of "orchestrated immersion" as well as "active processing". According to (Caine & Caine, 1991, p. 153) "orchestrated immersion provides learners with rich, complex experiences that include options and a sense of wholeness. It presents what is to be learned in ways that allow for the perception of new patterns and relationships and make what is being learned intrinsically more meaningful". Making the learning environment more intrinsically more meaningful demands the move from the traditional instruction mated to the brain based method of instruction. One principle of enhancing the quality of education through brain base learning approach is to apply the principle of relaxed alertness in our teaching environments and instructional design. For (Caine & Caine, 1991, p. 143) "relaxed alertness ensures that students are challenged with in a context of safety. A sense of purpose serves to orient

and focus experiences. When student do what is important to them, they interpret their “work” differently. Intrinsic commitment includes a degree of excitement that energizes processing and patterning. Relaxed alertness also includes a personal sense of well-being and safety that allows students to explore new thoughts and connections with an expanded capacity to tolerate ambiguity, uncertainty, and delay of gratification”.

The same authors contended that “orchestrated immersion and relaxed alertness are not enough”. He goes on saying “to maximize connections, gain deeper insights, and perceive the additional possibilities that are hidden in experience, we have to deliberately and consciously work for them” (p. 147).

In other words, in order to make our students seek for deeper implications of the experiences presented to them we have to deliberately guide our students and work with them in order to enable them significantly benefit from their experiences. This is because of the fact that students do not have the skill as well as the necessary awareness to look for deeper meanings and implications (Caine & Caine, 1991).

The consolidation and internalization of information by students in such a way that it is personally meaningful and coherent is identified by the same authors as active processing which is one aspect of brain based learning. “Active processing is extremely important in education. To some extent, it is often the only way for students to make sense of experience. Active processing also gives students the opportunities to take charge of the direction and nature of the way they change” (Caine & Caine, 1991, p. 147).

In order to enhance and encourage our student’s ability in active processing tools like reflection, contemplation, creative elaboration, and combination process has been identified by the same authors to be instrumental.

Accordingly, to provide our students with experiences that are appropriate for orchestrated immersion in an environment of relaxed alertness and guide them to develop the skill and awareness of active processing the following websites will be part of the module developed based on Gagne’s nine events of instruction:

The first website is to show a documentary on an aspect of implementing BPR in business organizations. In order to help our students have a realistic appreciation of the practical intricacies involved in implementing the BPR programs the following website that show different interviews and documentaries are recommended:

- www.youtube.com/playlist?list
- <https://www.youtube.com/watch?v=bca91f2zIJE>

The second website has to do with the case study analysis that will be provided as a group assignment. The website of the organization in the case study is the third one. The assignment is to read an article on BPR in the Public Sector: A Case of Successful Failure. The case organization is PubliCorp (a pseudonym) was a large civil engineering organization owned by a local government in Brazil. In order to analysis the article students are required to read the information presented in the

case and visit the website of the organization in order to come up with a solid analysis of the case. Identifying website for online journal articles in BPR is the fourth one. In order to help students have the capacity for further exploration of the research finding concerning BPR the following websites has been recommended:

- www.rassweb.com/details-ms/

This site is recommended because the *international journal of management sciences (IJMS)* it is a peer reviewed journal. *International Journal of Management Sciences (IJMS)* is an internationally peer reviewed monthly journal published by Research Academy of Social Sciences (RASS). IJMS publishes high quality theoretical and empirical papers that significantly contribute to the discipline of Management Sciences i.e. Marketing, Advertising, Strategic Marketing Management, Human Resource Management, Organizational Behavior, Supply Chain Management, Operations Management, Strategic Management, Economics, Financial Accounting, Managerial Accounting, Corporate Finance, Managerial Finance, Management Information Systems. The second website is:

- www.inderscience.com/jhome.php?jcode=ijams

This is selected because the Management science should help different managers and policy makers to make optimal, if possible, or satisfactory, at least, informed decisions. The *International Journal of Applied Management Science (IJAMS)* builds six interfaces: between management science theory and application; between management scientists and managers; between "hard" decision models and "soft" decision models; between deterministic and probabilistic models; between a specific strategy and an individual model; and finally, between a corporation and its environment, as well as the whole of society. Beyond these sites the following general sites are recommended for students who are interested to explore further on the issue at hand

- <http://scholar.google.com/>
- <https://search.ebscohost.com/>
- www.ebscohost.com/

As all the materials for the lesson are going to be distributed via Mekelle University website it will be a must for the students to visit this website that should be browsed by students.

In addition to the above identifies sites the documentary on the rebirth of the old eagle is also worth visiting its website is as follows:

- <http://www.hoax-slayer.com/rebirth-of-the-eagle-hoax.shtml>

5. CONCLUSION

Developing instructional materials based on brain based learning and the use of multimedia tools in instructional design are believed to enhance the quality of education. This paper shows that the use of multimedia tools and the application of the nine events of instruction in designing a lesson on BBR. Furthermore, the relevant websites for the lesson has been selected in order to enhance the instructional design based on brain based learning principles.

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