
The Effectiveness Of Action-Learning Techniques In Education

INTRODUCTION

Background of the Study

To acquire new knowledge, students need to be able to understand easily additional information. Sometimes students need specific skills that can help them to do this. These skills or learning strategies such as note-taking, outlining, library reference skills, or practicing using workbooks are technical methods of studying that help us process and ultimately retain information. Students also benefit from instructor's intervention and instruction that models the use of learning strategies and helps make new information more attainable to all students. Instructors can use effective instructional tools, like a very impressive lecture with a very good PowerPoint Presentation that will complement those strategies.

PowerPoint Presentations are the very first thing to consider when handling a lecture. To be able to commence an effective lecture, the instructor should have a clear goal and a course of action intended to achieve a result. According to Plato that, "Do not train a child to learn by force or harshness but direct them to it by what amuses their minds so that you may be better able to discover with accuracy the peculiar bent of the genius of each." This idea said by Plato struck our minds. Since instructors nowadays have their own methods or plans unto what techniques that could greatly interest the students, it has been found out that PowerPoint Presentation is one of the most valuable instructional materials that can help students to easily absorb their lessons in a specific subject on their own especially in Structural Steel Design. Obanya (1989) viewed the instructional materials as didactic material thing which are supposed to make learning and teaching possible.

According to Abdullahi (1982), instructional materials are materials or tools locally made or imported that could make remarkable development of lesson impact is intelligently used. Ikerionwu (Isola, 2010) referred to them as objects or devices, which help the teacher to make a lesson much clearer to the learner. Instructional materials are in various classes, such as audio or aural, visual or audio visual. Thus, audio instructional materials refers to those devices that make use of the sense of hearing only, like radio and audio tape recording. Visual instructional materials on the other hand, are those devices appeal to the sense of both hearing and seeing such as television, motion picture, and the computer.

Objectives of the Study

This study aims to provide students with instructional materials that will guide and supply additional examples and exercises that will compliment/supplement the lecture. These course materials are based on the topics provided by CHED CMO No. 29 Series 2007.

Theoretical and Conceptual Framework

This study was based on the Edgar Dale's Cone of Experience. Edgar Dale who theorized that learners retain more information by what they "do" as opposed to what is "heard", "read" or "observed". His research led to the development of the Cone of Experience. Today, this "learning by doing" has become known as "experiential learning" or "action learning" During the 1960s, according to Dale's research, the least effective method at the top, involves learning from information presented through verbal symbols, like listening to spoken words. The most effective methods at the bottom, involves direct, purposeful learning experiences, such as hands-on or field experience. Direct purposeful experiences represent reality or the closest things to real, everyday life. The Cone above describes learning experiences the shows a direct learning process of the students and explains that learners retain more information through their hands-on experiences in a real-life context that will allow the students to remember best what they do. It means that every hands-on activity provided through the instructional materials give meaningful experiences to the students that able them to create their different standpoints the positive and negative standpoints on the use of workbook in their learning process. It reveals that "action-learning" techniques result in up to 90% retention. People learn best when they use perceptual learning styles. Perceptual learning styles are sensory based. The more sensory channels possible in interacting with a resource, the better chance that many students can learn from it. According to Dale, instructors should design instructional activities that build upon more real-life experiences.

Significance of the Study

This study will be beneficial to the following:

Students – They will be able to see the importance of learning activities to their cognitive aspect that will help them to acquire and understand lessons from engineering subject.

Teachers – It will help them to assist and facilitate the learning of their students using learning materials like PowerPoint presentation.

Administration – They will be encouraged to provide and enhance more the use of instructional materials in teaching and learning engineering subjects.

Other Researchers – It will be a guide to their future study which is related to the present study.

Limitation of the Study

This study is limited only for the subject Steel Design of the Civil Engineering Department, College of Engineering, Capitol University. The course uses fundamentals of statics of rigid bodies, mechanics of deformable bodies, and structural analysis and applies them to the design of structural steel members, with emphasis on satisfying real-world needs. All design is performed in accordance with codes and specifications used in the National Structural Code of the Philippines. An inclusive design problem requires improvement of a design methodology, deliberation of alternative solutions, and design of an ideal steel structure to meet stated functional requirements.

Definition of Terms

Instructional Materials - are any collection of materials including animate and inanimate objects and human and non-human resources that a teacher may use in teaching and learning situations to help achieve desired learning objectives. Instructional materials may aid a student in concretizing a learning experience so as to make learning more exciting, interesting and interactive.

Steel Design - is an area of knowledge of structural engineering used to design steel structures. The structures can range from schools to homes to bridges.

Lecture Notes - Works consisting of notes taken at the delivery or reading of a speech before an audience or class, usually given to instruct.

Statics - is a branch of mechanics which studies the effects and distribution of forces of rigid bodies which are and remain at rest. In this area of mechanics, the body in which forces are acting is assumed to be rigid.

Mechanics of deformable bodies - deals with how forces are distributed inside bodies, and with the deformations caused by these internal force distributions. These internal forces produce "stresses" in the body, which could ultimately result in the failure of the material itself. Principles of rigid body mechanics often provide the beginning steps in analyzing these internal stresses, and resulting deformations. These will be studied in courses called Strength of Materials or Mechanics of Materials.

Structural analysis - is the determination of the effects of loads on physical structures and their components. Structures subject to this type of analysis include all that must withstand loads, such as buildings, bridges, vehicles, machinery, furniture, attire, soil strata, prostheses and biological tissue.

REVIEW OF RELATED LITERATURE

This chapter presents the review of related literature that has some connections of the study. Engineering studies has two parts the lecture and the laboratory exercises. Usefulness of lectures plays a key role in providing necessary design skills.

However, evaluation of lecture can be subjective and inconsistent. According to Richard K. (1991), effective planning at the school level begins with curriculum development and passes through the scheme of work and units of work to the weekly workbook and daily lesson plans. Similarly, Dodd W. A. (1970) explains that there are three main elements in the process of preparation. First, there is the syllabus, which tells the teacher, in broad outlines, what aspects of its subject are to be covered annually. Second, there is the scheme of work, which is the detailed version of the syllabus and addresses the specific needs of a class and the school community. The third element is the lesson plan that shows clearly how the lesson is to be taken in the time prescribed by the school timetable. These three elements, according to Dodd, integrate and interrelate to ensure that there is continuity in the teacher's teaching and the child's learning. Onyejemezi (1981) points out that instructional materials increase the rate of knowledge; save the instructor time and effort, increase learners interest and to retain of what is learned.

In the same manner, Moronfolo (1982) carried out a research in Ilorin Local Government Area of Kwara State. She used questionnaires to collect data on the material resources available for the teaching of some selected subjects in ten secondary schools and related these to student's achievements in each of the selected subjects and to the amount of resources available for the teaching of the subjects. Finding showed a significant effect of material resources on the students' academic performance in these subjects. Bloom, B. S. (1956), talks about three categories of learning: cognitive, psychomotor and affective.

Cognitive Learning Theory denotes that the different processes concerning learning can be explained by evaluating the mental processes first. The cognitive learning is concerned with intellectual processes, psychomotor with the development of physical movements and the affective with the development of attitudes, values, beliefs, interests and social relationships. These categories of learning help the teacher determine behavioural and non-behavioural intentions and the learning experiences to accomplish them. Habermas, S. L. (1990), offers another explanation for the apparent divisions in what is the unity of knowledge. He suggests that they arise as a result of human cognitive interests. These interests are threefold. First, is 'technical knowing', which relates to an 'empirical analytic' type of knowledge. The teacher here is concerned mainly Pacific Curriculum Network Volume 10 Number 1, 2001 with helping the students learn the 'facts and figures' associated with the subject or the topic being discussed. Second, there is an interest in understanding meanings that relate to an 'historical hermeneutic' type of knowledge.

At this phase of learning, the students are assisted to ascertain what events mean to people and the context through the negotiation of meanings. The third way of knowing eventuates through critical and inquiry-based learning exercises. At this stage, the students begin to ask whether the knowledge they have acquired is reliable or not. This they do by inquiring, discovering, scrutinizing and appraising. In the classroom, inquiry based learning approaches, such as case studies and research projects, contribute significantly to this way of learning. In brief, then, Habermas' three 'ways of knowing' can be employed in any subject or lesson. The teacher's input in the beginning can be seen as technical knowing. In this phase of the lesson, teachers provide information on the new concepts and ideas that they intend to develop. In the second part of the lesson, teachers provide opportunities for group discussion in which students collectively explore the concepts and ideas further. In the last step of the lesson, teachers provide tasks that involve critical review of the materials developed. In this case they are involved in inquiry-based learning. Kurt & Akdeniz, (2002), stated that worksheets are materials by which students are given transaction steps regarding what they are supposed to learn. Also, they include activities which give the students main responsibility in their own learning.

Thus, worksheets are known to help students gain scientific process skills such as setting up experimental mechanism, recording data interpreting the data, and so on so that they can conceptualize the concepts in their mind. Schreiner, (2008), specified that when using pre-made hand-outs/workbooks, it is necessary for teachers to tailor their teaching to the hand-outs, explaining the material in the same terms or part of a process in an identical order. Teachers can increase student engagement by integrating contemporary topics into their teaching. The creation of customized hand-outs allows them to do this seamlessly. It can keep students interest by including topics that they care about in the hand-outs. Students notice this extra effort and enjoy these little additions. Zachariah (2011) stated some of the Mathematics teaching and learning resources in secondary schools to include; chalk boards, Mathematics textbooks, three dimensional figures and charts.

In support of how important Mathematics' instructional materials are, Cornelius (1982) opined that concept formation in secondary schools is still linked to concrete representation (teaching aids), and on the mental activity that takes place as the child experiences and interacts with his or her environment. This is supported by Carison (2011) when he concluded that the workbook approach holds promise for teaching introductory statistics courses. Para (2015) gave the purpose of organizing instructional materials; that it is so that both students and teacher can have access to correct materials with minimum of disruption. For effective management of instructional material Santos (2009) stated the standards used to determine the propriety of its selection. The age of the children who normally could be expected to have access to the material, the educational purpose to be served by the material, with priority being given to the selection of materials that encompass state and district performance standards, the consideration of the racial, ethnic, socioeconomic, and cultural diversity of the district, and the degree to which the material would be supplemented and explained as part of normal classroom instruction. To further show the importance of instructional materials, Jegede, Okota, Eniayelu (1992), stated the factors responsible for poor performance in science, technology and mathematics which include poor laboratory facilities, unfitting teaching procedures and insufficient number of learning facilities in schools against steady increase in number of students.

METHODOLOGY

This chapter describes the methodology used in the study. It begins with an introduction about the chapter followed by the research design. There is also information about the selection of libraries stated in the research with the data sources and data collection procedure. A significant portion of this chapter describes the trustworthiness of the study along with the role of the researchers. This chapter concludes with the data analysis.

Research Design

This method used in this study is the Case Study Method. A case study is an in-depth study of a research problem rather than a sweeping statistical survey or comprehensive comparative inquiry. It is often used to narrow down a very broad field of research into one or a few easily researchable examples. The case study research design is also useful for testing whether a specific theory and model applies to phenomena in the real world. It is a useful design when not much is known about an issue or phenomenon.

Research Locale

The study is conducted at the College of Engineering, Capitol University, Corrales Extension Street, Cagayan de Oro City. The faculty office is located at the Building 2, 2nd floor of the said institution.

Data Processing & Analysis

Since this is a descriptive study, all gathered data are entered in Microsoft Power Point and it is programmed in Microsoft Excel to satisfy the understanding of the students. To complete the study, a software consist of situational problems with detailed solutions that was based on the codes and specifications of National Structural Code of the Philippines through the reference

book will be set.

RESULTS AND DISCUSSION

This chapter presents the results and the findings of the study. To provide the students with PowerPoint presentation that will guide them and supply additional examples and exercises that will compliment/supplement the lecture. The following course materials are based on the topics provided by CHED CMO No. Series 2007.

According to M. A. Mkpa (1989) the best way of helping students to learn is to bring them face to face with the world which education anticipates introducing to them. These demonstrations of real life situations are materials, devices and techniques that help the instructor to make realistic method to his job. Whether real or substitutes, these representations have a common goal. They help the instructor to convey the intended message excellently and eloquently to the learners so that the learners receive, appreciate, retain and apply the experience gained to reach overall educational goals. Babalola (2004) explained that instructional materials are designed to promote and encourage effective teaching and learning experiences. Instructional materials are therefore, sight tools for teachers at all levels of education for effective instructional delivery and promotion of learner's academic achievement. Instructors may also find that allowing students to complete workbook assignments as a group or in partners is an effective teaching strategy. In groups or pairs, students collaborate, learn to take on roles as leaders or innovative thinkers, and rely on each other to work through the worksheet problems and prompts (Channing, B. 2002).

CONCLUSION AND RECOMMENDATION

This chapter presents the summary of findings, conclusions and recommendations of the study.

Summary of Findings

Specified below are the significant findings of the study:

1. The CHED's course outline is the current basis of topics in Structural Steel Design.
2. The current basis of engineering workbook in Structural Steel Design is the book authorized by Venancio I. Besavilla, Jr.
3. Every chapter in the workbook has a minimum of five problems that need to be answer by the students.

Conclusions

Based on the findings of the study, the researcher develop the following conclusions:

1. The content of topics in engineering workbook of Structural Steel Design is mandated by the CHED Memorandum Order for BSCE Course Specification.
2. The total number of engineering workbook exercises exceed the minimum of five problems every chapter.
3. There is no current engineering workbook for Structural Steel Design.

Recommendations

Based on the conclusions, the following recommendations are made:

1. Students should practice problem solving from the given exercises.
2. Instructors should talk with the students alone about their expectations and explain to the students in a clear manner what is wrong and what is to improve.
3. Encourage students to ask questions and receive clarifications regarding the topics discuss that unsure about.

eduzaurus.com