Mind-mapping for conceptual material of introduction to management

Rr. Sri Kartikowati
Gimin, Sakdanur

Faculty of Education, Universitas Riau
Pekanbaru, 28293, Indonesia
Email: tikowati@lecturer.unri.ac.id

Abstract. Students with difficulty in comprehending conceptual materials need media that has powers in organizational, procedural visual, and supporting creative thinking; all are integrated in a mind-mapping media. This research is aimed to develop a learning design of Introduction to Management based on mind-mapping media concerning with conceptual materials. This is an early phase of research and development activities, in Introduction to Management class. Data of needs analysis is obtained through survey technique on 38 college students, then followed by literature study and focus group discussions. The result shows that a learning design of Introduction to Management, that highlights conceptual materials, has constructed on the basis of mind-mapping media. The design consisted of learning outcome, stages of preparing mind mapping media, and measurement method of effectiveness of the learning design implementation.

Keywords: *Conceptual material, Mind mapping, Introduction to management.*

1   Introduction

The course of Introduction to Management, presented for first semester college students at the Economic Education Department Faculty of Education, encompass 70% conceptual material and the remaining of 30% consists of case and practice material. To master the conceptual material, students need an alternative media or methods that facilitate them and to maximize the lecturing process.

During the last two academic years the effort to maximize the purpose of this course has been carried out by applying the Models, computer-based media, as a research recommendation (Kartikowati, 2014).

Unfortunately, the implementation of the design that relied heavily on material resources from the internet was not entirely successful. Two major obstacles were (1) internet facilities that were not always available when

needed due to either power outages or decreased server power. The second obstacle was the implementation of the Models was less satisfactory. The Models displayed through the Microsoft power point program were still dominated by sentences or texts that did not maximize the media that should function more than transfer knowledge. Whereas on the other hand, the course of Introduction to Management keep requiring the availability of up-dated materials such examples and illustrations to facilitate students to understand the conceptual materials.

The situation was resolved by reducing the use of media that has high dependency on the internet, and switching to the potential of the students themselves, addressing the ability to compose the construction based on their own knowledge. This idea is related to the constructivism learning theory explained that learning was not just a remembrance but also a comprehension. In this case students are actively constructing the information they obtain.

According to Anni (2007) constructivism approach also emphasizes group cooperation to enable students to figure out a model of thinking, the way of conveying ideas, and overcoming misconceptions. This learning activity solves problems openly, discourse, and experiment.

The media that has an advantage in comprehending the conceptual material in an integrated manner as referred in constructivism learning theory was the 'mind mapping', as the central focus of this study.

Mind mapping are widely used by various society in various activities, including educational society in the learning process that used to help learners understand something that could not be seen (abstract) or not experienced directly, such as a concept of knowledge.

Mind mapping has a procedural attribute that describe how tasks are performed; it can also be conceptual, i.e.: verbal description of reality by presenting relevant components, definitions, and data support (Mustaji, 2013).

An Educational institutions that support software, Inspiration, Inc., defines the 'mind mapping' as a medium that demonstrates the visual form of complex topic and information, enabling students to understand, create new ideas and build interrelationships.

Benefits of using 'mind mapping', among others are:
1) Help students actively brainstorm and explore any ideas, concepts, or issues.
2) Facilitate understanding of relationships and better relationships between ideas and concepts.

3) Make students easy to communicate new ideas and their thought processes
4) Help students remember information easily over complex things
5) Help students take notes and plan assignments

Focus of this study was initially in the area of media improvement. The media in this case is understood as a process of translating the design specification of learning into physical form, ie: media constructed on the basis from mind mapping --- ie mind mapping based media products.

Conceptual materials in Management lectures present a high level of abstraction that requires visual symbols. Visual symbols on the concept-based media with the assistance of the computer optimally would facilitate the process of understanding the concept. This is where the understanding of students who learn the concepts through mind mapping media is starting. Media improvement constructed based on design principles and following systematic steps is expected to produce a feasible and practicable media. Thus it is expected to create a quality learning that helps solve learning problems faced by students in order to achieve optimal learning outcomes. The purpose of this study is addressed to produce a improvement design for the course of Introduction to Management based on mind-mapping media, especially on conceptual material components.

2.   Methodology

This paper is an early part of a broader study that uses a research and development approach (R&D), i.e.: learning development of Introduction to Management. As an early part of an R & D, the focus of this paper is on the learning design using mind mapping, as an analysis result of the 'needs analysis' step.

This research and development study was conducted at the beginning of first semester in the year 2017-2018, taken a class of Introduction to Mangement involed 38 college students

Because of the large amount of conceptual material (70%) and for the effectiveness of the implementation and measurement of the research, two conceptual material topics need to be selected that meet three criteria of mind mapping media (procedural visual, outlining and narration).

Primary data of research such as opinion and expectation of students related to mind mapping matter was collected through an interview guideline. Similarly, secondary data including syllabus, lesson plan, learning contract, and any notes related to the subject was collected and analyzed.

The data collected then were analyzed by several experts of teaching and learning conducted in the discussions of focus group, until the design of mind mapping for conceptual material of Introduction to Management was composed. The design itself consisted of three components: Learning outcome, stages of preparing the mind mapping media, and measurement method of effectiveness of the learning design implementation.

3.   Results and Discussion

In this paper, the mind mapping becomes special because it is not merely produces a construction of knowledge (visualy) about an abstract, but the said construction is presented with the support of computer technology that eventually resulted bigger benefit. The combination between mind mapping visually and outlining using computer is to reach the objective of learning

Learning Outcome

Processed primary data gathered through survey resulted some information: (1) more than a half college students have already known the term of mind mapping; (2) the average students has understood on how to manage mind mapping media; (3) agree to apply it in Introduction to Management course, and (4) willing to conduct discussion activities and provide supporting tools such as computer.

Furthermore, the secondary data review indicated that to achieve the learning objective of Introduction to Management for one semester, material is divided into 14 topics that consisted on 11 conceptual materials and 3 discussion & practice topics.

Of the 11 conceptual topics there are 8 topics suitable to be applied using the media mind mapping. An overview of all topics of conceptual materials of Introduction to Management for one semester displayed on Table 1.

The second column in Table 1 shows the sequence of weeks in which conceptual topics are studied using mind mapping media. The third column shows two topics (Planning and Organizing) selected for the research purpose.

For the research purposes, 2 conceptual topics are selected due to homogeneity consideration. Meaning that the two topics are in relatively similar conditions, both discuss about functions of management.

Since the material coverage needs to be stated, it is necessary to formulate learning outcome. Learning outcomes are statements that describe the knowledge or skills students should acquire by the end of a particular assignment, program, or class. It will help students understand why that

knowledge and those skills will be useful to them. Learning outcome of Planning and Organizing are listed in Table 2.

Table 1. Conceptual Material of Introduction to Management implemented by Mind Mapping

No	Week	Description
1	2	Management levels and skills
2	3	Evolution of Management
3	5	Organisation & Functions
4	6	External Environment of Organization
5	7	Planning
6	9	Organizing
7	10	Leadership
8	11	Motivating
9	12	Staffing
10	13	Controlling
11	14	Cycle of Management functions

Table 2. Learning Outcome

After studying this course, students should be able to:		
Planning	a.	Understand what is meant by doing planning
	b.	Identify characteristics of planning function
	c.	Identify the products of a planning process with examples
Organizing	a.	Understand what is meant by doing organizing
	b.	Identify characteristics of organizing function
	c.	Identify the products of an organizing process, plan with examples

Learning outcome as displayed in Table 2 would be used as guideline for lecturer as well as students, in the process of designing and preparing mind mapping media.

Computers, with current level of technology, have multiple functions are used for a variety of purposes including utilization in the learning process. The idea of computer use to mind mapping media is included.

In addition, not only for students, mind mapping for teachers is also provide insight into their thinking processes on a particular topic. By asking students to create a mind mapping construction, it would shows their understanding of a concept, the lecturer can understand what the student's early knowledge is and how well students understand the task or material being taught. This is a very effective way to evaluate students' understanding.

Moreover, Levie & Levie, 1975, quoted by Azhar (2013: 12) argued that the stimulus of the visuals produces good learning outcomes for tasks remembering, recognizing, recalling, and linking facts and concepts.

Stages of Learning Activities for Mind Mapping Preparation

The next step, over the 2 topics of conceptual material should be determined o which topic that functioned as control variable and one other topic as an experiment variable. By using a 'tossing coin' technique, we have the result:
1.   Planning as a control variable
2.   Organizing as an experiment variable

A controlled variable is held constant in order to assess the relationship between two other variables. It is one which the researcher holds constant (controls) during an experiment. The control variable is not part of an experiment, but it is important because it can have an effect on the results. It is not the same thing as a control group. In this study, Planning as a conceptual material is learn without mind mapping interruption. The goal is to present a learning process without any concern to mind mapping. This is done to know the difference of effectiveness level of mind mapping which will be done by experiment variable at the implementation stage.

On the contrary, experimental variable is a variable that is being looking at, and whose values are independent of changes in the values of other variables. It is something that the experimenter purposely changes or varies over the course of the investigation. In this research, the topic of Organizing as an experimental variable is studied and discussed with the use of mind mapping media, students are being directed trained by lecturer to create mind mapping media the best.

Initiation of the mind mapping-based media development consists of at least two main activities. Firstly, starting from the visual mapping gained through the stages: (1) Time for brainstorm ideas; (2) Structure our thoughts; and (3) Visually communicate concepts to strengthen the understanding with the Diagram and Map views.

Second stage is outlining & narration, by doing: (1) Take notes to organize information; (2) Structure writing for plans, papers and reports of description our ideas; and (3) Use the integrated Outline View into the computer to focus on main and supporting ideas and to clarify thinking in written form.

Measurement method on Design Implementation

The following is the method of measurement for design implementation:
(1)   Measurements are addressed to two topics of conceptual materials that functioned as a control variable and as an experiment variable.

(2)   Once the two topics are implemented in the learning process, students are given a test with regard to the content of the material.

(3)   The answer of the question is assessed for comparison by using T-test or differential test (to determine whether there is a difference in score of the two topics).

(4)   Next measurement is the degree of gain as contribution of using mind mapping media - the higher the gain score the better the degree of utilization of mind mapping media to learning process of Introduction to Management.

4.   Conclusion

Most college students involved in Introduction to Management class face with the problem of comprehending conceptual materials. In order to cope with it, media of mind mapping was proposed.

To know the effectiveness of the media, the   research and development approach was carried out. This paper, that presents a learning design of Introduction to Management, is a part report of an early phase of the research and development.

This initial stage of R & D resulted in the design that used mind mapping media for conceptual material in the course of Introduction to Management. It consisted of three components, i.e.: learning outcome, stages of preparing mind mapping, and measurement method of effectiveness of the learning design implementation.

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