The Development and Implementation of Buzan Mind Mapping Module

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Abstract

Using Self-Instructional Modules within the technical education can be an alternative approach and make significant contributions. Modules are not just "job sheets' or "old style work units" or "chapters of books" with questions added. Module is a planned series of learning activities designed carefully to assist the learners to accomplish certain specific objectives. An attempt to develop and implement a modular approach on Buzan mind mapping techniques was made in the secondary school. A quasi-experimental design research has been carried out to affirm the effectiveness of this module in test achievement among the students. This paper will discuss various components of this modular approach by referring to Meyer Model. Statistical analysis was done via an "intention to treat" comparison of post intervention scores and comparison of the change in scores from pre- to post intervention, using a two-sample t-test. Students participating in the self-instructional modular approach had a significant improvement in knowledge scores compared to non-participants.

1. Introduction

Buzan (2002) notes that mind map is the easiest way to put information into your brain and to take information out of your brain. It is a creative and effective means to note-taking that literally "maps out" your thoughts. Furthermore, visual tools can help us become more engaged, enthusiastic and better thinkers (Caviglioli *et al.*, 2002). Buzan expounded that mind map are particularly adaptive for reading, revising, note-taking and planning for exam efficiently. They are invaluable for gathering and ordering information, and for identifying the key trigger words and facts from:

(i)   Reference, books, textbooks, primary and secondary source books.
(ii)   Lectures, tutorials, course notes, research material.
(iii)   Your own read.

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2. Purpose of the Research

The purposes of this research is to develop and evaluate the qualities of Buzan Mind Mapping module. Specifically, the research objectives are:
(i)   To develop the Buzan Mind Mapping module.
(ii)   To analyze the effectiveness of Buzan Mind Mapping module on students' test achievement.

3. Methodology

This is a quantitative approach research started with the development of Buzan Mind Mapping module using Meyer Model (1988). The effectiveness of the Buzan Mind Mapping module was identified through two-sample t-test based on the quasi-experimental design that consists of a control and treatment group (Table 1). Both groups were given pre- and post intervention test that consists of 60 items on Project Design and Production topic for Living Skills subject. The present study is commonly referred to as a quasi-experimental study, a design that could also be called a hybrid form between an observational study and an intervention. The total study extended over a period of 2 months. After the pre intervention test, treatment group started the treatment by using the Buzan Mind Mapping module, whilst the control group without any treatment. The Levene's test (> .05) showed that at the pre intervention period, both groups of student were homogeneous.

Table 1: Pre- and post intervention test

	Pre intervention Test	Buzan Mind Mapping Module	Post intervention Test
Treatment Group	X	X	X
Control Group	X		X

4.1 The Sample

40 students for treatment and control group respectively were involved with the quasi-experimental design on assessing the effectiveness of Buzan Mind Mapping module on test achievement.

4.2 Reliability

The internal-consistency reliability value for the achievement test that consists of 60 items was $\alpha = .92$.

5. Development of Buzan Mind Mapping Module

The development of Buzan Mind Mapping module was based on Meyer Model (Figure 1).

5.1 Steps In Design And Development of A Module

Figure 1 shows the steps in design and development of a module. There are 11 main steps on developing a module based on the Meyer Model.
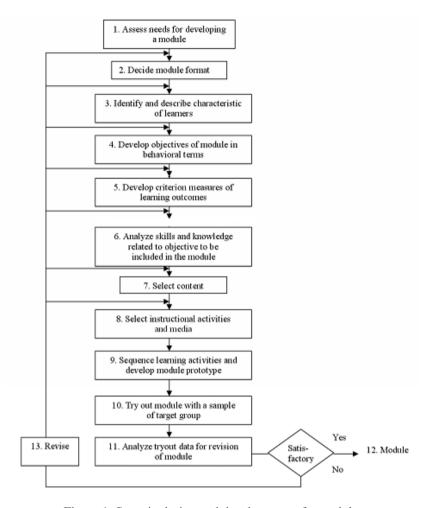
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┌─────────────────────────┐
│ 1. Assess needs for     │
│    developing a module  │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 2. Decide module format │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 3. Identify and describe│
│    characteristic of    │
│    learners             │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 4. Develop objectives of│
│    module in behavioral │
│    terms                │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 5. Develop criterion    │
│    measures of learning │
│    outcomes             │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 6. Analyze skills and   │
│    knowledge related to │
│    objective to be      │
│    included in the      │
│    module               │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 7. Select content       │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 8. Select instructional │
│    activities and media │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 9. Sequence learning    │
│    activities and       │
│    develop module       │
│    prototype            │
└─────────────────────────┘
           │
┌─────────────────────────┐
│ 10. Try out module with │
│     a sample of target  │
│     group               │
└─────────────────────────┘
           │
┌──────────┐   ┌─────────────────┐   ◇ Satis-      Yes  ┌──────────┐
│13. Revise│   │11. Analyze      │──▶ factory ─────────▶│12. Module│
└──────────┘   │    tryout data  │                 No   └──────────┘
               │    for revision │
               │    of module    │
               └─────────────────┘
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Figure 1: Steps in design and development of a module

6. Findings and Discussions

Both groups of student in treatmend and control grooup were taught by the same teacher on topic Project Design and Prodcution for Living Skills subject. The post intervention test was used to identify the students' test achievement. Two-sample t-test was used to test for differences among groups between the mean scores at the pre intervention as well as the post intervention test. Mean scores for treatment group were compared to mean scores for control group. The paired t-test was used to compare the changes in scores from pre- to post intervention in the two groups. A level of $p = .05$ was considered to be statistically significant.

Between-group performance

The average scores were 48.75% (pre) and 63.92% (post) for treatment group, 47.46% (pre) and 45.54% (post) for control group. The mean pre intervention and post intervention scores of the comparison groups are shown in Table 5. While there was no statistically significant difference between the groups in the scores obtained at the pre intervention test (Table 5), this difference became statistically significant at the post intervention test.

Within-group performance

The improvement in scores was statistically significant for treatment group, in which the students improved by 15.17% on average ($p < .05$). The post intervention score of control group worsened on average by 1.92% ($p < .05$).

In this quasi-experimental study, we examined the effect of Buzan Mind Mapping module on students' test achievement. There was a significant improvement from pre intervention to post intervention for the test achievement among the treatment group students. The average score at the post intervention test was also significantly higher than that for the comparison group, who did not participate in the use of Buzan Mind Mapping module. Participation in the self-instructional module certainly implies more complete and attentive reading of the Buzan Mind Mapping module that is also independent of the students' personal interests on reading. We suggest that the students to be motivated along the use of the modular approach.

Table 5: Mean pre- and post intervention scores of the comparison groups

	Treatment Group	Control Group	Between-group Comparison
Pre intervention	48.75%	47.46%	.477
Post intervention	63.92%	45.54%	.000*
Score's Variation	+ 15.17%	- 1.92%	
Within-group Comparison	.000*	.000*	

*p < .05, 2-tailed

7. Conclusion

Generally, self-instructional module is very useful to students. With this module, the students are able to learn the Buzan mind mapping technique and apply it directly on study especially for note taking and revision. Moreover, students could learn at their own pace by using this self-instructional module. The study also showed that using the Buzan Mind Mapping module benefits the students on test achievement.

Acknowledgements

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