

TIERED INSTRUCTIONAL INTERVENTION MODEL TO REDUCE THE EFFECTS OF WEATHER CONDITIONS ON STUDENTS' CURRICULAR AND EXTRA-CURRICULAR CONCERNS

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ABSTRACT

This study aimed to determine the weather conditions' effects on students' curricular and extra-curricular concerns and proposed Tiered Instructional Intervention Model, a well-planned involvement and top priority activity in addressing problems. Descriptive research design utilizing survey questionnaire was used in this study. The population was composed of seventy-seven student-respondents. Descriptive statistics using percentage distribution, mean, paired difference mean, standard deviation, ranking and descriptive ratings based on 5-point scale were utilized. Two-tailed t-Test results indicating statistically significant difference were employed. The student-respondents revealed a statistically significant effects of cool winter, dust storm and hot summer on curricular concern; while dust storm, other potential natural hazard (flood brought by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) and hot summer on extra-curricular matter. Probably, the underlying principle why the respondents perceived that way because of their difficulty to withstand unfavorable weather conditions as they are not accustomed to perform activities beyond their comfort zone. In the light of the foregoing results, recommendations were given: There should be a growing attention on the indoor air quality problems in the university including its thermal support aspects because these will stimulate receptivity or rejection to the curricular activities. This research further suggests that environmental factors affecting students' curricular and extra-curricular performances should be given in-depth consideration so that their engagement in learning will be enlivened.

Keywords: Intervention, weather conditions, curricular and extra-curricular concerns

INTRODUCTION

The heart of any response to intervention lies in the use of tiered instructional processes. Tiered instruction represents a model in which teaching delivered to students varies on several dimensions depending upon the nature and severity of students' difficulty in understanding the lessons. Tiered is coined from the word tier which means row, level or rank arranged one above another that's why a series of similarly arranged parts are the essential components of Tiered Instruction/Intervention.

Tier 1 is considered as the key component of tiered intervention because all students receive instruction within an evidence-based and behavior strategies as projected in their reading or math curriculum that is typically aligned within the state standard. All students receive Tier 1 instruction, but those students in need of supplemental intervention receive additional instruction at Tier 2 or Tier 3. Tier 2 consists of students who fall below the expected levels of accomplishment (called benchmarks) and are at some risk for academic failure. Instruction is provided in smaller groups than Tier 1. On the other hand, Tier 3 consists of students who are

considered to be at high risk for failure that's why the groups are of much smaller sizes, ranging from 3 to 5 that require intensive attention (Shapiro: 2012).

This model is appropriate because it fosters not only academic instruction but also promotes appropriate behavior expectations in classroom and university-wide. Once the students are already equipped with the skill in reading or math and behaviorally prepared in dealing with different situations, there isn't any university barrier like occurrence of weather conditions could hamper their good performance (Multi-Tiered Instructional and Behavioral Systems Model: 2011)

To reach the desired outcomes, the university should meet the needs of students' curricular and extra-curricular concerns because these activities form a dynamic link in the pattern of educational experiences necessary for all students. These areas provide chances of creativity and involvement that instill various important qualities in the learner and contribute to a long, happy and normal life of students. Since this study tries to determine if the disruption produced by weather conditions' occurrence to normal life in university is severe, sudden, unexpected and widespread; this Tiered Instructional Interventional Model is being proposed as it aims to deliver a high-quality instruction to complete the skill development of student for life-long application.

LITERATURE REVIEW

Bruner's theory of instruction inspired this study since it accentuates the teachers' role in the instructional and learning processes. Although Bruner saw that maturation and environment influence intellectual development, but he turned most of his attention to the instructional environment. Bruner recognized the importance of structure, but he focused on the responsibilities of the teacher rather than the responsibilities of the student or learner (McLeod: 2008).

Also, Lewin's theory of learning was considered important in this study since it emphasizes that an individual lives in a life space where external and internal forces interact to produce a behavior. The external forces consist of things, situations or condition around him while his drives, ideas, concepts, feelings, attitudes and insights constitute the internal forces. When these two forces interact, a resultant behavior forms (Smith: 2007).

In addition to other theories mentioned earlier, this study pointed out Berliner's idea because it contains concepts that focused on the effectiveness of teachers whose aim is to make each student end up possessing at least the knowledge and skills judged appropriate for a particular type of student (Brody: 2003).

Several related literature from local and foreign authors had been gathered to equip the researcher with background knowledge of the problems she investigated. The extent of weather conditions' effect on students' curricular and extra-curricular concerns should be well thought out to come up with an effective instructional intervention, in so doing: the following factors are greatly reflected:

Effects of weather conditions' occurrence: Weather condition has been with us since the recorded history, and presumably even longer. Generations of people have had withstand its occurrence. They have suffered the circumstances and recovered from them, and life has continued. The impact of weather condition usually results in two major setbacks: first, the direct loss of existing national assets in various forms; and seconds, the diversion of national

resources and effort. These are the concerns of the present study; to understand better the different forms of weather conditions and to find out whether the disruption made to normal life in university is severe, sudden, unexpected and widespread (Jones: 2004).

Curricular and extra-curricular concerns: Modern education rests special emphasis on the need of curricular and extra-curricular activities because they have been known as source of enhancement and vitalization of the university curriculum. These activities provide chances of creativity and involvement which instill various important qualities in the learner (Kumar: 2009). These areas are given too much consideration in this study because they contribute to the student's long, happy and normal university life which the modern education system recognizes.

Problems encountered: The most basic issue on weather conditions' occurrence is its impact in education. Since education also suffered, it should address the question on how to reduce suffering and a true contribution to recovery. The most common approach to provide weather conditions' assistance is through instructional intervention. As such, the present study involves the evaluation of the respondents' perceptions on the effects of weather conditions' occurrence to determine the range of addressing them (Disaster Management: 2008).

Instructional mediation: Alternatives should be sought by looking at varieties of calendars as well as looking at the possibility of double, even triple sessions before the occurrence of any weather condition. It also calls for an alternative human resources development in all phases which include training so that they can propose adequate instructional interventions to the given areas. The given of any future scenario is already visible if educators are willing to admit an acceptable challenges for expected and foreseen events/changes which may demand a corresponding respond for a change. What is needed will attempt to explore in a search for alternative delivery systems of quality education using planning in scheduling, programming and alternative sources of financing (Inclusion Criteria for Select Programs: 2014).

Teacher's behavior as instructional intervention: In the conduct of this study, the researcher is further inspired and guided by the related literature on teacher's behavior as instructional intervention. This means optimization of academic learning time through classroom management, such as: physical space is carefully structured, instructional time is efficiently managed, student attention and engagement are monitored and focused, standards of student behavior are established and maintained, students are given responsibilities and lessons are carefully paced to balance successful performance and to progress toward the acquisition of new skills and knowledge (Behavioral Intervention Guide Addressing Student Behavior: A Positive Approach: 2010).

Reviewed and presented below are some studies which were found relevant to the present research.

Relation between Climate Conditions and Students' Achievements: On the study made by Zeiler and Boxem (2009), they emphasized that climate conditions really affect students' performance. It clearly shows that warm air environment is like IAQ of great influence to the students' performance. The result was determined thru the comparison made in three new schools with Thermo Active Building Systems with that of 11 schools with traditional heating systems. This study wanted to point out that there should be a growing attention on the indoor air quality problems in schools including its thermal comfort aspects because these will stimulate receptivity or rejection to the curricular and extra- curricular activities in school. Another study made by Woolner and Mc Caughey (2006) on climate conditions and

student learning, found that comfort factors appeared to have good effects on student achievement. It was revealed through the high result achieved by schools with good ventilation and equipped with air-conditioned facilities. It only shows that the prevailing condition experienced by the students really affects its performance as it enfoldes them to stay long time in class and participate actively.

After thorough scrutiny on the effects of climate conditions to students' achievements, it is worth saying that we should apply a proactive/preventative procedure as suggested in the following studies:

Management of Instructional Materials as a Mediation: One of the studies pointed out that, teachers utilized educational media only occasionally despite the findings that they had very good perceptions on the principle of instructional media preparation and utilization (Selection and Management of Instructional Materials: 2009). This is due to the teachers' belief that their knowledge on the subject matter and methods applied were very important in the teaching and learning process. As they are very important in the development of the students' competencies, proper selection of good teachers should be done; and only teachers who are good be allowed to teach the subject. It only proves that teachers' behavior is the best instructional intervention that would motivate students to strive more for their educational undertakings.

Recommendations on Utilization of Instructional Materials: Good and Grouws (2008) suggested the following instructional system: 1.) Instructional activity should be initiated and reviewed in the context of meaning. 2.) A substantial position of each lesson should be devoted to content development. 3.) Students should be prepared for each lesson stage to enhance involvement. This study is almost similar to the conducted research as it points out nearly the same features of the proposed instructional scheme. This is self-paced, motivational, inter-active, and gives immediate feedback. Since the application of instructional intervention is being proposed during the occurrence of the problem that is why, recommendation on its proper utilization is included.

METHODOLOGY

Methods and Techniques of the Study

Descriptive method was utilized as it involves investigation of data in order to answer questions concerning the current status of the subjects of the study. The strength of descriptive study lies in describing the status of phenomena as well as identifying relationship between and among the variables since it is not simply a routine fact finding activity (Fraenkel and Waller: 1994). The pursuit aimed to provide information concerning the extent of disruption caused by the occurrence of weather conditions to students' normal life in the university, the problems associated with it and the effects on educational undertakings.

Population of the Study

The population of this research consisted of the purposely selected university students who were consecutively enrolled in three trimesters of school year, 2014-2015. Only English courses were included so that the researcher can observe and directly get hold as much needed information about the effects of the weather conditions' occurrence on students' curricular and extra-curricular concerns. A total of eight (8) sections taken from the four (4) English courses that obtained the biggest enrollees during the 3rd trimester of school year 2014-2015, were involved. The researcher opted to use 10 as the constant number of students per class because it is somewhat higher from its minimum requirement in order to open a course.

Research Instruments

Questionnaire, the researcher's modified instrument, was used for the purpose of this study and was further explained thru interview. A set of questionnaire was given to the students to determine the extent of the disruption of the weather conditions' occurrence to their university lives, problems encountered associated with it and their perceptions on the effects. The first draft of the questionnaire was shown to the members of research committee for their comments, corrections and suggestions. Having assured of the questionnaire's content, the researcher subjected it for validation and reliability test.

Data Processing and Statistical Treatment

The data gathered were classified and presented in tables utilizing the Descriptive Statistics such as frequency and percentage distribution, Mean, Standard Deviation and Rank. Descriptive ratings of data were based on computed 5-point Likert scale items for data processing which considered as the best way to express the information desired for analysis and interpretation. Hypothesis testing was used to measure the significant effects of weather conditions' occurrence on curricular and extra – curricular concerns in which the individual scores were computed using t-test (two mean test, two tailed test).

RESULTS

Table 1 shows the respondents' perception about the extent of experienced disruption on normal life in university due to weather condition's occurrence. Obviously, hot summer 3.64 was observed serious. On the other hand, moderately serious was the descriptive rating derived from 3.16 for dust storm and 2.97 for cool winter; while less serious for other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) 2.38. The overall result taken from the four indicators obtained a mean of 3.04 interpreted as moderately serious. Combining the four indicators revealed an overall standard deviation of 1.35.

Table 2 presents the problems encountered associated with the disruption brought by the weather condition's occurrence on students' normal life in university as perceived by the respondents. The level of each problem was rated based on the given 5-point scale such as: all of the time, often, sometimes, rarely and never. The outcomes were presented according to each acquired rank in chronological order. The following were: limited opportunities to participate in scholastic activities (3.35; 1st), lessons that are not 100 percent explained/discussed (3.23; 2nd), inadequate academic recreation due to disturbed classes (3.18; 3rd), irregular attendance (3.16; 4th), incomplete attainment of my learning outcomes/results (3.14; 5th), difficult to achieve 100 percent participation (3.13; 6th), limited time for learning (3.12; 7th), interrupted classes and distracted (3.06; 8th) respectively, basic skills are not properly developed (2.79; 9th) and others (2.05; 10th).

Table 3 emphasizes the effects of the weather conditions' occurrence on curricular matter as perceived by the respondents. The garnered standard deviation of the weather conditions was listed, namely: cool winter 1.44, hot summer 1.39, dust storm 1.24 and other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) 1.32 paired to the curricular standard deviation of 1.13. The presented data made known of the great dispersion of a set of scores from its mean in cool winter while dust storm's set of data values was closer to its mean. Further analysis of the data revealed that, curricular concern obtained a set of scores intact to its mean while weather conditions' obtained scores deviated from its mean. Therefore; the smaller the

computed standard deviation, the lesser the quantified amount of variation of a set of data values; while the larger the computed standard deviation, the greater the measured dispersion of a set of data values.

Table 4 highlights the effects of the weather conditions' occurrence on extra-curricular matter as perceived by the respondents. The standard deviation of the weather conditions, namely: cool winter 1.44, hot summer 1.39, dust storm 1.24 and other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) 1.32 paired to the extra-curricular standard deviation of 1.11. The findings revealed that dust storm obtained a set of data values closer to the mean while cool winter garnered a greater dispersion of a set of data values from the mean. Thorough analysis of the data revealed that, extra-curricular concern obtained a set of scores intact to its mean while weather conditions' obtained scores deviated from its mean. Hence; the smaller the computed standard deviation, the lesser the quantified amount of variation of a set of data values; while the larger the computed standard deviation, the greater the measured dispersion of a set of data values.

Table 1: Extent of Experienced Disruption to Normal Life in University

Indicator	N	Mean	Std. Deviation	Description
Cool Winter	77	2.97	1.44	Moderately Serious
Hot Summer	77	3.64	1.39	Serious
Dust Storm	77	3.16	1.24	Moderately Serious
Other Potential Natural Hazards	77	2.38	1.32	Less Serious
Overall		3.04	1.35	Moderately Serious

Table 2: Range of the Problems Met Associated with the Experienced Disruption to Normal Life in University

Indicator	Mean	Rank	Description
Problem 1	3.06	8th	Sometimes
Problem 2	3.06	8th	Sometimes
Problem 3	3.16	4th	Sometimes
Problem 4	3.14	5th	Sometimes
Problem 5	3.12	7th	Sometimes
Problem 6	3.13	6th	Sometimes
Problem 7	2.79	9th	Sometimes
Problem 8	3.23	2nd	Sometimes
Problem 9	3.35	1st	Sometimes
Problem 10	3.18	3rd	Sometimes
Problem 11	2.05	10th	Rarely

Table 3: t –test (2-tailed) Value Indicating the Effects of Weather Conditions Occurrence on Curricular Concern

Indicator	Mean	Std. Deviation	Paired Difference Mean	Sig. (2-tailed) Value	Interpretation
Cool Winter	2.97	1.44	0.41	.009*	Statistically Significant
Curricular	2.56	1.13			
Hot Summer	3.64	1.39	6.20	.000*	Statistically Significant
Curricular	2.56	1.13			
Dust Storm	3.16	1.24	0.60	.002*	Statistically Significant
Curricular	2.56	1.13			
Other Potential Natural Hazards	2.38	1.32	-0.18	.291	Statistically Not Significant
Curricular	2.56	1.13			

* Statistically significant at 0.05 level of significance

Table 4: t –test (2-tailed) Value Indicating the Effects of Weather Conditions Occurrence on Extra-Curricular Concern

Indicator	Mean	Std. Deviation	Paired Difference Mean	Sig. (2-tailed) Value	Interpretation
Cool Winter	2.97	1.44	0.21	.254	Statistically Not Significant
Extra-Curricular	2.76	1.11			
Hot Summer	3.64	1.39	0.88	.000*	Statistically Significant
Extra-Curricular	2.76	1.11			
Dust Storm	3.16	1.24	0.40	.044*	Statistically Significant
Extra-Curricular	2.76	1.11			
Other Potential Natural Hazards	2.38	1.32	-0.38	.036*	Statistically Significant
Extra-Curricular	2.76	1.11			

* Statistically significant at 0.05 level of significance

DISCUSSION

Disruption to Normal Life in University: The data revealed that dust storm obtained a set of data values closer to the mean while cool winter garnered a greater dispersion of a set of data values from the mean. The results proved that; the smaller the computed standard deviation, the lesser the quantified amount of variation of a set of data values; while the larger the computed standard deviation, the greater the measured dispersion of a set of data values.

Problems Met Associated with the Disruption: Almost all of the problems were sometimes experienced despite the remediation provided by the university due to the extreme effect of the weather conditions' occurrence.

Weather Conditions' Effects on Curricular Concern: Regarding the perceived significant effects of weather conditions on curricular concern, the two-tailed t-test at 0.05 level was utilized. The student-respondents revealed a statistically significant interpretation on the sig. (2-tailed) value of the following: cool winter and curricular .009*, dust storm and curricular .002* and hot summer and curricular .000*, indicating the rejection of Ho. While other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) and curricular received a statistically not significant interpretation on its sig. (2-tailed) value of .291, meaning Ho is accepted.

Weather Conditions' Effects on Extra-Curricular Concern: Concerning the perceived significant effects of the aforementioned weather conditions on extra-curricular concern, the two-tailed t-test at 0.05 level was also utilized. The student-respondents revealed a statistically significant interpretation on the sig. (2-tailed) value of the following: dust storm and extra-curricular .044*, other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon) and extra-curricular .036* and hot summer and extra-curricular .000*, indicating the rejection of Ho. Whereas cool winter and extra-curricular received a statistically not significant interpretation on its sig. (2-tailed) value of .254, meaning Ho is accepted.

CONCLUSIONS

Flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon received a statistically not significant interpretation because these conditions rarely/never occur in Bahrain. If the occurrence is expected; it only happens

once/twice a year or never, and its effect is lesser in extent or not a problem at all. On the other hand; cool winter, dust storm and most especially hot summer clearly explain how these conditions significantly affect the students' curricular concern as supported by the study of Zeiler and Boxem (2006) where they emphasized that climate conditions really affect students' performance.

Cool winter and extra-curricular received a statistically not significant interpretation because outdoor activities are likely done when the weather is cool to avoid the striking heat of the sun. Whereas, other potential natural hazards (flood caused by heavy rain due to the change of weather, lightning and thunderstorm, earthquake and typhoon), hot summer and dust storm attained a statistically significant result from the respondents since these conditions produce an unpleasant environment that hinders the effective implementation of extra-curricular activities. Other reasons why the respondents perceived that way because of their difficulty to withstand unfavorable weather conditions, as they are not accustomed to perform activities beyond their comfort zone.

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