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The Effect of Dienes Objects Strategy on 5th Grade Primary School Students' Achievement in Arabic Grammar Subject

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Abstract

The current study aims at finding out the Effect of Dienes Objects on 5th Grade Primary School Students' Achievement in Arabic Grammar Subject . To achieve the above aim , a null hypothesis was set which states : There is no a statistically significant difference at level of (0.05) between the mean scores of the experimental group ,taught according to Dienes Objects Strategy , and the mean scores of the control one , taught according to the classical method .The sample of the study covered (115) students .distributed into four sections .A pre-test was administered and the variables were verified to secure the equivalence between the two groups of the study . The researcher has concluded that here are a statistically significant differences between the mean scores of the experimental group, and that of the control one . The researcher has conducted the t-test and the study has come up with invoking curricula designers to substitute the classical methods of teaching by modern ones that adopt effective strategies in teaching .

KeyWords : Effect, Dienes Objects Strategy , Primary School Students', Achievement .

El Efecto De La Estrategia De Los Objetos De Dienes En El Rendimiento De Los Estudiantes De Primaria De 5To Grado En Gramática Árabe

Resumen

El presente estudio tiene como objetivo descubrir el efecto de los objetos de Dienes en el logro de los estudiantes de 5° grado de primaria en la asignatura de gramática árabe. Para lograr el objetivo anterior, se estableció una hipótesis nula que establece: No hay una diferencia estadísticamente significativa en el nivel de (0.05) entre las puntuaciones medias del grupo experimental, enseñadas de acuerdo con la Estrategia de Objetos de Dienes, y las puntuaciones medias del control uno, enseñado de acuerdo con el método clásico. La muestra del estudio cubrió (115) estudiantes distribuidos en cuatro secciones. Se administró una prueba previa y se verificaron las variables para asegurar la equivalencia entre los dos grupos del estudio. El investigador ha concluido que aquí hay diferencias estadísticamente significativas entre los puntajes promedio del grupo experimental y el del control. El investigador ha llevado a cabo la prueba t y el estudio ha llegado a invocar diseñadores de planes de estudio para sustituir los métodos clásicos de enseñanza por métodos modernos que adopten estrategias efectivas en la enseñanza.

Palabras clave: Efecto, Estrategia de objetos de Dienes, Estudiantes de primaria, Logro.

1.1 Problem of the Study

Learning Arabic grammar , is considered one of the salient problems suffered by many learners at different stages of education .This problem has not raised in this era, but its roots can be traced back into several decades . Arabic grammar constitutes a sophisticated and educational problem in the that is avoided by the students , and even severely teachers of Arabic (Zair and Iman ,2011 :409). Weakness in Arabic grammar subject is prevailed in teachers of Arabic , in addition to their students .This judgment covers many of the educated ,researchers and lecturers .This is clearly recognized with remarkable mistakes if someone delivers a speech or lecture , and so how it will be with the school students (Al-Azawi ,2004 :118). Methods and strategies of teaching Arabic grammar have a vital role in facilitating learning Arabic grammar , in that if such grammar is taught

according to a solid or rigid technique , this will not stimulate or motivate students , , and vice versa . Many descriptive studies had indicated a problem and weakness in methods and strategies of teaching Arabic grammar and a decline in students' level in such a subject .

Hence, the researcher thinks that adopting modern teaching methods allow students to see the whole picture on this subject , and to apprehend the lesson more easily that leads to best achievement .Due to this , the researcher has adopted Dienes Objects Strategy .

Thus , the problem of the present study can be formed in the following question :

.Has Dienes Objects Strategy got an effect on 5th Grade Primary School Students' Achievement in Arabic Grammar Subject ?

1.2 Significance of the Study

In his book on Arabic , Rafaeal Patai says (1976 , :153):" I bear witness , from my own expertise , that there is no another living language that is nearly close to Arabic , either in its rhetorical or ability to penetrate levels of apprehension and perception , accessing directly to the feelings and senses and leaving behind a deepest effect .In this way , if Arabic to be compared only with music .Arabic is a multi-feature language in its letters , vocabulary , parsing , perfection in expression , and brevity .Moreover , Arabic is the most Semitic language Semitic language in sounds preservation and expression accuracy , richness in vocabularies , antonyms , multi- plurals as well as it is a language of Parsing for possessing its own rules in organizing the sentence in perfectly regulating words suffixes(Safasfah , 2004 :40) .

As a matter of fact , Arabic grammar is the backbone of this language , and from this aspects comes the need to give more interest to Arabic and make it approachable to learners with seriousness and motivation , and the school plays the greatest role in this trend (Al-Shomali , 2000 :215) .

Arabic grammar is also the backbone in another sense in studying the relationships held between words in in sentences and phrases in being the guide of the styles by which ideas are expressed as identified by Ibn Khaldoun : "Language, grammar , eloquence , and literature ,and grammar is the most important of all by which essentials of purposes are semantically explained ; and accordingly the subject is recognized from the object , and the subject from the predicate ,and without grammar utility might be ignore "(Ibn Khaldoun,2004 : 367) .

On the other hand , grammar comes beforehand , by which purposes are semantically explained and grammar is the weapon of the language and

pillar of eloquence, jurisconsult (mufti) direction, Arabic stability and the secret of its eloquence and entity, and to which (grammar) favor is due to language adjustment and writing from grammatical mistakes, and finally by grammar many regulations are based on (Al-Hashemi, 2008: 25). Once again, Arabic grammar has got an essential role in preserving language from corruption, maintaining its originality that enables it to stand firmly against other living languages, and one type of the mental activity imposed by the nature of Arabs' life as well as society development. So, if a language is deprived from its grammar, its speech becomes nonsense, and thought mysterious that lead to be an ambiguous for both readers and listeners; therefore grammar is a necessity for all languages (Ismael, 2005: 327). As a matter of fact, grammar is connected to perfect sentence and a tool to mastering language skills, in that apprehension language needs to grasp its grammar that governs a system that gives the right meaningful form, and to perceive the speech purposes, to understand what is read, heard, written or talked about in away that concepts are settled in the receiver's mind, and with which meanings and notions become more clear without any mystery for both the speaker and listener or reader or writer (Ashour and Muhammed, 2007: 106). The last point is that disusing of the audio-visual aids in teaching Arabic grammar may change the leaning process into an automatic reiteration one without apparent apprehension (Hasan, 2017: 13). Thus, this has driven the researcher to adopt Dienes Objects Strategy to increase knowledge and understanding of the study subject.

Based on the above, the significance of the present study can be represented as follows:

1. Language significance as a tool of communication among human beings.
2. Significance of Arabic grammar in enabling individuals to language mastery, from grammatical mistakes and fault.
3. Significance of the strategies, methods, and teaching styles the present good knowledge to students.
4. Significance of Dienes Objects Strategy that help the learner to increase learning and motivation.
5. Primary school stage is one through which understanding and knowledge are configured.

1.3 Hypothesis of the Study

This study aims at finding out the Effect of Dienes Objects on 5th Grade Primary School Students' Achievement in Arabic Grammar Subject. To achieve the above aim, a null hypothesis was set which states:

.There is no a statistically significant difference at level of (0.05) between the mean scores of the experimental group ,taught according to Dienes Objects Strategy , and the mean scores of the control one , taught according to the classical method .

1.4 Limits of the Study

1. 5th Grade Primary School Students (Day and Evening Studies) at Baghdad Governorate –Karkh /2 during the academic year 2017-2018 .
2. 5th Grade Primary School Arabic Grammar Textbook .
3. First Term during the academic year 2017-2018 .

1.5 Definition of Basic Terms

a. Effect : Linguistically : A thing leftover and the plural is ‘’athar’’ ; ‘’aathwaro ‘’ I followed him ‘’ wafiaathreh’’ I went after him , ‘’taa’theer’’ : keep effect or left an effect(Ibn Manthoor , 2005: 9)

Conventionally : as defined by :

1.Ibrhim (2009,;30) as “the capability of an agent under study to achieve a positive results ,but in the absence of such a result , the agent could be one of the direct reasons for negative consequences to occur “ .

Operationally Defined : A desired change or undesired occurring through learning .

b. Strategy : as defined by ;

1.Al-Hashemi and Taha (Ibn Manthoor , 2005: 9) as “ a set of notions and principles that deal with one domains of the human cognitive ones.in comprehensive and integrated trends to achieve goals specified beforehand .

2. Zair and Samaa (2013,; 57) as “ a broadened that includes a set of steps formed of different theoretical frameworks , and these frameworks are gathered under one designation , strategy , to be applied in the domains of education .

Operationally Defined : A systematic and integrated plan of procedures conducted by the researcher inside classroom to achieve the goals set by a specified period of time for 5th Grade Primary School students (the sample).

c. Dienes Parts defined by :

1.Abdulrahman(2007,;42) as :”a set of cubes considered of different digital systems and there are four different sets referred to as units and Ste-reographs .

2.Al-Manufi (2008,; 49) as “ ready made parts designed to represent a

digital system that includes a system of cubes ,triangles , and units ‘’ .
 Operationally Defined : Different-formed parts used by the teacher to facilitate the process of learning of 5th Grade Primary School students .

1.6 Theoretical Framework

1.6.1 Dienes Parts Strategy Stages

Dienes described his strategy in six stages of learning the following concepts ; free playing , ruled –governed games , seeking for common features, assimilation , coding ,and formation (Dienes, 1971 : 36) .In this sense, Dienes thinks that learning the scientific concepts is accomplished through similar consecutive stages as those of Piaget’s ones in the cognitive growth as shown below :

Stage 1 : Free playing

This stage includes indirect unguided activities allowing the learners to experience and abstract manual processing of some concept component intended to be studied ,and as much as possible this stage is to be more free and unrestricted as if the learners involve in this stage for enjoyment and entertainment (Zair et. al 2014,; 389) .

Stage 2 : Games

In this stage ,the learners or students identify the rules of games set by the teacher through experimentation ,and those learners are ready to set new games when they discover the main rules of the games .This stage helps the students to analyze the concept structure and discover their elements (Al-Ameen ,2001 : 98-99) .

Stage 3 : Comparison

In this stage , the learners or students start seeking for common features of the concept ,through which the educational situation is discussed (The Concept) and to be compared with other examples similar in structure .In this stage , the learner can collect a list of common features of the concepts presented , and in turn the teacher presents examples that denoting the concept for the learners to be able recognize the common features , and in turn the learners can be able to practice the classification process (Yasin and Raji , 2012 : 116-117) .

Stage 4 : Exemplification

Having observed the common features in each example, learners need to find out one example of the concept which might be represented by the teacher ,and this concept includes all the common features .Instead o the example , the concept might be represented in the form of a diagram or a verbal example .Such an example helps classify the common features existed in all examples implying the concept .Such an example is more

abstract from other ones. This will help the students or learners to apprehend the abstract scientific structure including the concept (Bell Fredrick , 1989,: 92) .

Stage 5 : Coding

In this stage , the learner studies the concept through figurative exemplification or as a map .This is achieved through a series of processes that lead to concept exemplification in which the student or learner develops his own classical language into scientific symbolism used in sciences , and then the teacher starts describing the concept in precise scientific words , and finally forms a verbal code o the concept that the learner has recognized its features in the previous stages to be compared with the name of the concept (Yasin and Raji , 2012:117) .

Stage 6 : Formation

In this stage , the learner perceives the scientific structure within the framework of the material to which the concept belongs and uses the abstract images as models to solve miscellaneous problems (Obeid ,2009 : 73) , testing the organizing the information which he learned about the concept and the learner uses the concept in new educational situations .This stage can be described as the precise scientific formation stage (Yasin and Raji , 2012:117).

1.6.2 Dienes Objects Strategy Merits

1.It focuses on making the learners finding out knowledge that leads to retaining

it for a longer period of time in their memory .

2. It Makes the learners used to form provisions and rules to regulate their

methods of study to reach to an illustrative description (sketch , verbal expression) .

3. It encourages group work and competition .

4. It activates the creative innovation among learners through confronting educational situations that require finding out many solutions and alternatives.

5. It transfers the learner unconsciously from the sensory stage easily and flexibly into the stage of abstraction and coding (Dienes, 1971 : 75) .

1.3 Teacher Roles

AL-Amin (2001,: 75) has identified the teacher roles according to Dienes Objects Strategy as follows :

1.Asking only the purposive questions and allow appropriate time to answer .

2. When participating in a group work , the teacher works as an individual in a group and he must not be a dominator in setting opinions and suggestions .

3. Interfering in the educational situation when needed .

4. Accepting learners' errors assigning the correct and incorrect answers .

5. Accepting learners' suggestions and helping them in explaining and illustrating.

6. Encouraging the cooperative learners behaviors and independent patterns (ibid.

:107) .

1.4 Previous Studies

The researcher herself hasn't come up with any previous study which tackled the effect of Dienes Parts Strategy in Arabic.

1.4.1 Yasin (2006)

This study was conducted in Iraq and aimed at finding out the effect of Dienes Objects Strategy on achievement and attitude of the students towards Mathematics subject in 1st grade secondary school .The researcher has used the experimental approach to study the effect of the independent variable .The sample of the study comprised (40) students distributed into (20) students for the experimental group , and (20) for the control one .The equivalence between the subjects of the two groups was conducted .The statistical means used in the study were T-test ,Pearson Formula , Item difficulty , and Discrimination Power .Some of the results obtained areas follows :

1. There are statistically significant differences between the mean scores of the achievement of the experimental group , taught according to Dienes Parts Strategy ,and the means scores of the achievement of the control one , taught according to the classical method .

2. There are statistically significant differences between the mean scores of the attitudes of the experimental group , taught according to Dienes Parts Strategy ,and the means scores of the attitudes of the control one , taught according to the classical method ,and in favour of the experimental group (Yasin , 2006: 2-3) .

1.4.2 Lewa (2009)

This study was conducted in Palestine and aimed at finding out the effect of Dienes Objects Strategy on acquiring and retaining the mathematical concepts by 6th Primary School students .The sample was purposively selected which included (81) distributed into (41) students for the exper-

imental group , and (40) for the control one . The statistical means used in this study to find out the differences between the two groups are : Tow –independent T-test and Kuder-Richardson Formula. Results gained showed that :

1. There are statistically significant differences at level of significance of (0.05) between the mean scores of the experimental group ,and the mean scores of the control one in acquiring the mathematical concepts, and in favour of the experimental group .
2. There are statistically significant differences at level of significance of (0.05) between the mean scores of the high achievement in the experimental group ,and the mean scores of the control one in acquiring the mathematical concepts, and in favour of the experimental group .
3. There are statistically significant differences at level of significance of (0.05) between the mean scores of the low achievement in the experimental group ,and the mean scores of the control one in acquiring the mathematical concepts, and in favour of the experimental group .
4. There are no statistically significant differences at level of significance of (0.05) between the mean scores of the experimental group in acquiring the mathematical concepts pre- test ,and their mean scores of the postponed test of the same test (Lewa , 2009: C - H) .

1.4.3 Awad (2009)

This study was conducted in Iraq at Thi Qar university and aimed at finding out the effect of Dienes Parts Strategy on achievement , scientific thinking , and retention among 2nd grade secondary school students in Mathematics subject . The sample included (60) distributed into (30) students for the experimental group , and (30) for the control one . The statistical means used in this study are : Pearson Correlation Coefficient , T-test Coefficient and Alpha Cronbach Formula. Results gained showed that :

1. There are statistically significant differences between the mean scores of the achievement of the experimental group , taught according to Dienes Objects Strategy ,and the mean scores of the achievement of the control one , taught according to the classical method .
2. There are statistically significant differences between the mean scores of the achievement of the experimental group , taught according to Dienes Objects Strategy ,and the mean scores of the control one , taught according to the classical method in the scientific thinking .

There are statistically significant differences between the mean scores of the achievement of the experimental group , taught according to Dienes Objects Strategy ,and the mean scores of the control one , taught according

to the classical method in retention (Awad,2009 : 90) .

1.5 Methodology

The researcher has adopted the Semi-Experimental Method for its suitability to nature of this study as by its steps the experiment of this study will be conducted (Obeid ,1985 : 84) .

1.5.1 Population and Sample

The Population of the current study comprises 5th primary school students at Baghdad governorate during the academic 2017-2018 . The Sample is 5th primary school students at Mahmoudiyah city .The researcher has selected Ibn Rasheeq Al-Qairawani primary school for including four 5th grade classes as shown in table (1) below :

Table (1)

Sample of the Study

Group	Class	No.
Experimental	5 th Section B	31
	5 th Section D	26
Control	5 th Section A	31
	Section C	27
Total		115

1.5.2 Variables Control

The researcher herself has controlled some variables to ensure the equalization

of the two groups of the study as revealed below :

1.5.2 Age Variable

Having checked the students records, the researcher has found the students are close-aged .

1.5.3 Pre-test Achievement

A Pre-test achievement of the students of both groups was conducted using T-test to find out the significance of differences between two means of the groups as illustrated in table (2) below :

Table (2)

T Value

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	27	6.3754	2.6624	51	0.464	Insignificant
Experimental Section B	26	6.0366	2.5374			

As table (2) above shows ,there are no statistically significant differences between the two groups in the pre-test , and as revealed in table (3) below :

Table (3)

T Value

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	31	6.419	2.3061	60	0.278	Insignificant
Experimental Section B	31	6.258	2.2652			

As table (3) above illustrates ,there are no statistically significant differences between the two groups in the pre-test .

1.5.4 Pilot Study

The achievement test was administered on a sample derived from Al-Iraqia Primary School at Mahmoudiyah in order to verify the following aspects :

1. Clarification of the test instructions.
2. Test Reliability : That the test provides the results when repeating the same test after a period of time on the same group and under the same conditions (Khattab, 1998,93) .
3. Test Validity : The test measures what is intended to be measured (Al-Zayoud,1998: 180) .

1.5.5 Application of the Experiment

The researcher herself has conducted the following steps before teaching the study groups :

1. Distributing Dienes Objects on the subjects of the two groups .
2. Providing the teacher with different templates of Dienes parts to be used in the Experimental group .
3. Ensuring the equalization between the two groups .
4. The experiment started from 1/10/2017 up to 17/1/2018 .
5. The pre test was conducted for both the experimental group and the control one.

1.5.6 Statistical Means

The data collected was analyzed using SPSS , and T-test to find out the significance of differences between the means scores of the two groups (Abu Allam ,1999 : 457) .

1.5.7 Results and Discussion of Results

1.5.7.1 Results of the First Hypothesis

There are statistically significant differences between the mean scores of the of the experimental group subjects (5th grade Section D), taught according to Dienes Parts Strategy ,and the mean scores of the control group subjects (5th grade Section C), taught according to the classical method by using T-test as revealed in table (4) below :

Table (4)

Significance of Differences between Means Scores of the Tow Groups in Achievement Test

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section C	27	10.22	4.78	51	3.42	0.05
Experimental Section B	26	14.69	4.64			

As the table above shows , T value = 3.42 which is statistically significant at level of significance (0.05) .This means that there are there are statistically significant differences between the mean scores of the of the experimental group subjects (5th grade Section D),and the mean scores of the control group subjects (5th grade Section C) .

1.5.7.2 Results of the Second Hypothesis

There are statistically significant differences between the mean scores of the of the experimental group , taught acceding to Dienes Parts Strategy ,and the mean scores of the control group subjects , taught according to the classical method at the first level of Bloom Taxonomy (Remembering) the table (5) below :

Table (5)
Significance of Differences between Means Scores of the Tow Groups in Pre Test Achievement

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section C	27	2.30	1.35	51	3.049	0.05
Experimental Section B	26	3.54	1.61			

As the table above illustrates, T value = 3.049 which is statistically significant at level of significance (0.05) .This means that there are there are statistically significant differences in achievement ,and in favor of the experimental group.

1.5.7.3 Results of the Third Hypothesis

There are there are statistically significant differences in achievement at the second level of Bloom Taxonomy (Understanding) ,and in favour of the experimental group as shown in table (6) below :

Table (6)
Significance of Differences between Means Scores of the Tow Groups in Pre Test Achievement at the Second Level of Bloom Taxonomy (Understanding)

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section C	27	3.59	2.04	51	4.052	0.05
Experimental Section D	26	6.54	3.15			

As the table above reveals , T value = 4.052 which is statistically significant at level of significance (0.05) .This means that there are there are statistically significant differences in achievement at the second level of Bloom Taxonomy

(Understanding) ,and in favour of the experimental group.

1.5.7.4 Results of the Fourth Hypothesis

There are there are statistically significant differences in achievement at the second level of Bloom Taxonomy (Understanding) ,and in favour of the experimental group as revealed in table (7) below :

Table (7)

**Significance of Differences between Means Scores of the Tow Groups in Pre Test
Achievement at the Second Level of Bloom Taxonomy
(Level of Application)**

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section C	27	2.00	1.14	51	4.598	0.05
Experimental Section D	26	3.62	2.02			

As the table above reveals , T value = 4.598 which is statistically significant at level of significance (0.05) in achievement ,and in favour of the experimental group.

1.5.7.5 Results of the Fifth Hypothesis

There are there are statistically significant differences in achievement using T-test ,and in favour of the experimental group as illustrated in table (8) below :

Table (8)

Significance of Differences between Means Scores of the Tow Groups in Pre Test Achievement

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	31	14.00	3.785	60	5.23	0.05
Experimental Section B	31	9.22	3.393			

As the table above reveals , T value = 5.23 which is statistically significant at level of significance (0.05) in achievement .This indicates that there are statistically significant differences ,and in favour of the experimental group.

1.5.7.6 Results of the Sixth Hypothesis

There are there are statistically significant differences in achievement at level of Remembering using T-test ,and in favour of the experimental group as illustrated in table (9) below :

Table (9)

Significance of Differences between Means Scores of the Tow Groups in Achievement at Level of Remembering

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	31	1.10	0.75	60	5.775	0.05
Experimental Section B	31	19.2	0.76			

As the table above reveals , T value = 5.775 which is statistically significant at level of significance (0.05) in achievement .This indicates that there are statistically significant differences ,and in favour of the experimental group.

1.5.7.7 Results of the Seventh Hypothesis

There are statistically significant differences between the mean scores of the of two groups at level of Understanding , and in favour of the experimental group by using T- test as shown in table (10) below :

Table (10)

Means Differences between Means Scores of the Tow Groups in Pre Test at Level of Understanding

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	31	2.25	4.52	60	7.409	0.05
Experimental Section B	31	3.31	9.84			

As the table above reveals , T value = 7.409 which is statistically significant at level of significance (0.05) .This indicates that there are statistically significant differences in achievement at level of Understanding ,and in favour of the experimental group.

1.5.7.8 Results of the Seventh Hypothesis

There are statistically significant differences between the mean scores of the of two groups at level of Application , and in favour of the experimental group by using T- test as shown in table (11) below :

Table (11)

Means Differences between Means Scores of the Tow Groups in Pre Test at Level of Understanding

Group	No.	Mean	S.D.	Degree of Freedom	T Value	Level of Significance
Control Section A	31	0.81	0.79	60	3.326	0.05
Experimental Section B	31	48.1	0.71			

As the table above illustrates , T value = 3.326 which is statistically significant at level of significance (0.05) .This indicates that there are statistically significant differences in achievement .

1.6 Recommendations

- 1.Ministry of Education is recommended to adopt Dienes Parts Strategy in teaching Arabic grammar in all stages .
2. Requesting curricula designers to abandon classical teaching methods due to lacking those methods fascination and motivation in achieving the goals set for studying Arabic grammar .
- 3.It is o necessity for teachers of Arabic to use more updated and modern methods of teaching , especially Dienes Objects Strategy .
- 4.Making use of the results and conclusions of the current study, especially at primary schools .

1.7 Suggestions

The researcher of the present study set the following suggestions :

- 1.Conducting a field study that adopts Dienes Objects Strategy to find out its effect in other stages of study .
- 2.Compairing the effect of Dienes Objects Strategy with other strategies according to other specific dependent variables .

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