

Chaos and the Analogy of Education

¹M. Şahin Bülbül and ²Ş. Şule Erçetin

¹Department of Secondary Science and Mathematics Education,
Middle East Technical University, Turkey

²Department of Educational Administration, Supervision,
Planning and Economy, Hacettepe University, Turkey

Abstract: It is thought that educational systems are chaotic systems because of their nonlinear, complex structure and chaotic educational environments can be good for more effective education. In this study we aim to create the analogy for revealing the relation between education and chaotic systems. We used a model that we can talk about the chaotic systems for introducing them to the managers, students and teachers. And we asked them what are the elements of a chaotic system can be thought as students and teachers. According to the findings analogy with the magnet that swings as tied up to the rope is thought as students and teachers are the elements that affects the magnet with rope most.

Key words: Chaos theory · Education system · Analogy of chaos with education

INTRODUCTION

Chaos theory is a kind of topic that is researched recently and this is guessed that it will be investigated in the future more. The content of chaos term is explained with almost 32 of definition and Kauffman [1] describes chaos as “systems that have pieces in too many interactions.” Chaos theory has too many application fields from depression to problems within family; from examinations to communication; from the structure of brain to the structure of internet [1]. Because of education has too many components there are studies which tries to execute the similarities between chaos theory and education.

Cafolla and Kauffman [3] indicated that learning is a kind of activity which is nonlinear and adopting linear kind of education for growing teacher in 21th century is not appropriate. They also contributed to the application of complexity to the education by creating an equation.

There are also studies which contain the applications of chaos theory to the management field [4] and stress on that managers who know the chaos theory would create better solutions to the chaotic events [5].

Fractals which are the geometry of chaos, the output of the system are taken as the input at each phase and can be obtained when the operations repeated [6]. Bülbül [2] -by taking into account this structure- defends that

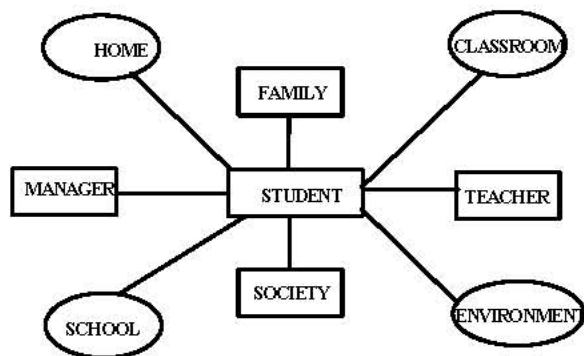
mechanisms in classrooms should have self-similarity with national education system for converging to a natural structure of educational system.

The similarity between the expression of the fractals by fractional counting not with integers and the reality that there is not only one kind of student, different features of the students should be taken into consideration can be the example of the compatibility of these two fields. Bülbül [2] offer a kind of classroom order which is appropriate with golden ratio that symbolizes the similarity between little and big systems (fractals) on the basis of fringed information spread (Photograph-1). According to this order starting from the teacher table through the rest of classroom, a kind of sitting order that look like inverted pyramid view that in order 1,2,3,5 and 8 of students can sit can be applied.

Theory investigates the nonlinear systems, shows that little effects can create big problems, stresses that estimating the situations in the future is something really difficult and explains that chaotic systems dependent to sensitive situations. Also theory explains that each confusion has a function on the road that goes to order, random shocks (such as the effect of a speech of a minister of education) can generate attractive elements in system and reveals the self-organizing structure of chaotic systems. With these aspects chaos theory has a structure that can easily be related with education.



Photograph 1: The sitting order that arrayed according to numbers which give the golden rate and it supplies opportunity for the progress of the knowledge through back in a fringe way.



Schema1: The elements which can create chaos in educational system.

Bülbül [2] gives the example of arrangement of the schools with different structures with the law called “combination of education” in the years that Turkish Republic was founded, while he explains the systems with many elements. In a short time after this application the successful results created has become an example of successful management of chaos. As an example to the butterfly effect we can say that: to direct the education becoming a minister isn’t a necessity, the ones who grow the ministers are teachers [2].

For revealing the relation between chaos theory and education better Bülbül [2] has modified the elements of education as people and places and put the students to the centre. He mentioned a pattern among as place “home, classroom, school, environment”; as people “family, teacher, society, manager” (Schema-1).

This study, addition to mentioning the researches which describes the similarities chaos and education it aims to create an analogy, so it is examined that whether schema-1 is enough to explain the chaotic structure of the education or not.

METHOD

A chaotic structure was converted into a three-dimensional model (Photograph-2) and for asking which aspects of prepared system and education resembles, chaos theory was explained to 39 people in Bilecik Science and Art Center. Science and Art Centers are the educational units that established for the education of prowess students except lesson hours. In this study participants are teachers, students and managers.

After the presentation that chaos theory is explained, chaos is explained with the help of prepared the pendulum mechanism with magnet and in education system what can it corresponded to is asked. The analogies that percentages are high are collected in one analogy and this analogy is called Bilecik Analogy.

Findings: To the presentation that the structure of the chaos 39 people listened, but to the studies that analogies about the education are created 35 people participated. 10 of participants were teacher, 25 of them were students. None of manager has told his/her idea.



Photograph 2: The pendulum mechanism which consist of one of them big (number 2) and one of them tied up to a rope (number 1) magnet and four steel bar (number 3,4,5 and 6) that is used for explaining the chaos theory.

32 of people from the ones who explained the ideas resembled “the students” element in education to the magnet that tied up to the rope shown with number one. When the papers which the ideas explained are investigated for the moving number one 2 people find a similarity with “teacher” and a person with “success”.

28 of the 32 people who think that number one symbolizes “student” related big magnet with number two with “teacher”, 3 of them with “educational system”, 2 of them with “school” element.

When those 32 people’ paper are investigated to the question that ask what 3, 4, 5 and 6 numbered steel bar symbolizes 32 of “family”, 31 of “friend”, 28 of “society”, 20 of “school and course”, 15 of “management” and 2 of media” expressions are found.

RESULTS

Bilecik analogy that is shaped in the light of findings describes the some elements’ similarities of a chaotic system and education. According to this analogy the magnet that swings as tied up to the rope is student. Teacher is the element that affects the magnet with rope most. This element affects the students both by pushing and pulling. Four of steel located around the centre

magnet symbolize the student has a pulling effect on magnet with rope. These steel bars are paired with friend, family, society and school. As a result it is thought that interaction among student, friend, family, society and school has a chaotic structure.

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