**DreamIT MSU-STEP PROJECT**

 **Big Idea “Relations and Functions”**

**Name Ajay Kalra**

**Grade Level: 9-10**

**Subject: Algebra 1**

**Content Area Topic: Introduction to Functions**

**Topic 1 Defining a Function**

#### CCSS-M Content Standards

A-REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

F-IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f(x)*.

F-IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by *f*(0) = *f*(1) = 1, *f*(*n*+1) = *f*(*n*) + *f*(*n*-1) for *n* 1.

**Topic 2 Interpreting and Using Function Notation**

#### CCSS-M Content Standards

F-IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

**Learning Outcome(s):**

### Students Will Be Able To:

* Explain that all ordered pairs of a graph represent the solutions to the corresponding equation.
* Understand and explain whether a relation is or is not a function.
* Identify input as domain and output as range.
* Understand the input and output correspondence from various function representations.
* Recognize patterns and sequences as functions.
* Evaluate functions.
* Use function notation to model relationships.
* Make connections between function notation and other representations of functions (tables, graphs, and situations

**Suggested Time Allotment: Two weeks**

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I use multi- mode of instruction and provide many entry and exit points for my students to understand concepts and skills apply them in assessments and performance tasks.

For vocabulary student will use frayer model so that they will be communicate understand of math vocabulary with example, non-examples.

I will make groups based on students’ pre-assessment results and my questioning and probing techniques so that student can benefit from group dynamics and peer tutoring and support.

Students will use words symbols ,tables, ordered pairs and graphs to communicate their understanding of concept of relations and functions and will be able differentiate between relation and functions variety of ways.

Student will work in groups to play a game in which each group will be given different way of expressing functions.one group will be given ordered pair, second will be given table, third will be given graph and each group will be asked to communicate rule of the pattern they see and share with whole class.

Student will also compete by playing Jeopardy game on relations and functions on smart board to communicate their understanding and share with class.

Students will use online applications to look for pattern in tables and write rules of function.

Students will be provided with an opportunity apply concept in real life (Netflix rental, Costco or gym memberships, or any example with fixed and variable cost) to make mathematical linear model of real life situations.

Students will apply concept of functions in physics in distance time and velocity time graphs and use slope to graphically find velocity and accelerations in linear motions.

Students will be provided with performance task like “find cost of birthday party” ,” How much rent they should charge in order to make profit” etc.

Also students will be asked to create problems using the problems they have worked on or create new one.

I model for students what is the meaning of constructive feedback and how it encourage people to work in groups and make teams more productive.