PROJECT: iKIDS STEM GAME: Slices in Time DESIGNER: drBOB Appelman

	CONTENT	1. RECALL			2. UNDERSTAND			3. APPLY					4. ANALYZE				5. SYNTHESIZE		6. EVALUATE	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
KEY CONCEPT	**Action Verbs** used in **TASK** description	IDENTIFY	DESCRIBE	RECOGNIZE	DISTINGUISH BETWEEN	GIVE EXAMPLE	PREDICT	DEMONSTRATE	DISCOVER	OPERATE	IMPLEMENT	COMPUTE	OUTLINE	DECONSTRUCT	DSICRIMINATE	ANALYZE	DESIGN	CREATE	IMPLEMENT	EVALUATE
ARISTOTLE on MOTION: **[AM1]**	speed of a falling object is proportional to its weight	1	2	3	4	2	3		3											
GALILEO on MOTION: **[GM1]**	A falling object falls with uniform acceleration, as long as the resistance of the medium through which it falls is negligible	3	4	3	3	4	3	3	4			2			1					
GALILEO on MOTION: **[GM2]**	acceleration is proportional to the square of the elapsed time ($d \alpha t^2$)	3	4	3	3	4	3	3	4			2			1					

LEARNING ENVIRONMENT DEFINITION

CONTEXT:	**VIRTUAL GAME** which students play both **in a class / group** context as well as **outside the classroom** on their own (home or elsewhere). An Instructor might first orient students to the general science content to be addressed, and also ask for feedback from individuals or groups about their experience		
[**EM1**] EXPERIENTIAL MODE #1	Interacting with **Galileo in his Laboratory** along with other interns. This is where understanding of Galileo's goals and understanding of physics will be embedded into the historical context of the **early 17th century**	The TIME AVAILABLE:	1 – 2 hours
[**EM2**] EXPERIENTIAL MODE #2	**Performing an experiment** in the area of the **Tower of Pisa in Italy**. The iKIDS will perform the calculations according to good scientific methodology, while Galileo will simply be dropping two balls from the tower.	The TIME AVAILABLE:	1 hour

COG =	Student **Learns** or **Engages** cognitively	**CNT=**	**Information** is presented (or made available)
MET =	Student uses a **Strategy**	**ENV=**	Environment offers **opportunity** for **Interactions** (with people, objects, or things)
OPT =	Student encounters **Options** or **Choices**		
ACT =	Student must **Act**, **Interact**. or **Perform**	**AFF=**	There are **options** to manipulate objects, record data, make decisions

TIME	COG	MET	OPT	ACT	CNT	ENV	AFF	DESCRIPTIONS OF ENVIRONMENT & STUDENT ACTIONS &/or TASKS
: :					X	X		[AM1 + GM1: EM1] Galileo describes how his predecessor Aristotle described how objects will fall. He will also describe how he thinks that this is wrong and how he wants to find a way to disprove Aristotle's idea.
: :	X	X	X	X	X	X	X	[AM1 + GM1: EM1] The iKIDS huddle together and discuss how to best confront Galileo with their current knowledge of Newtonian Physics, Gravity, in a manner that would be understood by a 17th century scientist. They then pose an experiment to Galileo that would do what he wants.
: :					X	X		[AM1 + GM1: EM1] Following a brief dialog about size and weight of objects to use in this experiment they all head out to the tower
: :	X	X	X	X	X	X	X	[GM1 + GM2: EM2] As Galileo climbs the tower, the iKIDS gather measurements for the experiment. They step-off the distance away from the tower, and sight up to the top to gain the ALPHA angle for calculating the height. They then time the spheres dropping from the tower and calculate the acceleration with Galileo's formula ($d \alpha t^2$).
: :	X	X		X		X		[GM1 + GM2: EM2] They then discuss the results with Galileo in 17 century terms