



UTILIZING GAMIFICATION TECHNIQUES WITHOUT PLAYING A GAME

HOW TO DESIGN, DEVELOP AND DEPLOY ENGAGING ONLINE CONTENT
TO PROMOTE STUDENT LEARNING

1



LEARNING OBJECTIVE

- AFTER ACTIVELY PARTICIPATING IN THE PRESENTATION, THE PARTICIPANTS WILL IDENTIFY AT LEAST ONE OPPORTUNITY TO APPLY GAMIFICATION TECHNIQUES EFFECTIVELY WITHIN THEIR ONLINE COURSEWORK.
- PARTICIPANTS WILL MOVE AWAY FROM SIMPLY SUBSTITUTING TECHNOLOGY AND TOWARD CREATING NEW ENGAGING ASSIGNMENTS USING TECHNOLOGY.

2

E-LEARNING GAMIFICATION

IS THE APPLICATION OF GAME ELEMENTS AND GAMING TECHNIQUES TO NON-GAME ELEMENTS, SUCH AS ONLINE LEARNING CONTENT, IN AN EFFORT TO MAKE IT FUN AND ENGAGING. IN OTHER WORDS, IT'S THE USE OF GAME MECHANICS TO ENCOURAGE LEARNERS TO EXPLORE AND LEARN AS THEY MOVE TOWARD AN END GOAL.

GAMIFICATION IS NOT BOUNDED BY TECHNOLOGY OR THE NEED TO BE DELIVERED ONLINE; IT DOESN'T HAVE TO BE DIGITAL. INSTEAD, GAMIFICATION IS A DESIGN SENSIBILITY.

KARL KAPP



<https://healthnewshub.org/hartford-region/top-news/child-hooked-fortnite-yet/>

3

USE OF A NARRATIVE WITH PARAMETERS

A KEY PART OF MANY GAMES IS THE NARRATIVE, OR THE STORY, BEHIND THEM.

HOW TO INCORPORATE THIS GAME ELEMENT?

PROBLEM BASED LEARNING PROVIDES A GREAT OPPORTUNITY TO INCORPORATE A SCENARIO AND ADD A NARRATIVE ELEMENT TO YOUR COURSE. (SEE: STI WIKI, TB DISCUSSION AND PANDEMIC SIMULATION)

USE SPECIFIC AND CONCISE INSTRUCTIONS FOR THE LEARNERS TO COMMUNICATE THE PARAMETERS FOR YOUR SCENARIO. CLEARLY COMMUNICATE WHAT YOU EXPECT LEARNERS TO DO.



4

EXAMPLE: SCENARIO PARAMETERS

- YOUR MEDICAL ETHICS BOARD HAS BEEN CALLED INTO EMERGENCY SESSION. AVIAN BIRD FLU HAS MUTATED AND IS NOW ABLE TO BE SPREAD FROM PERSON TO PERSON THROUGH RESPIRATORY DROPLETS RESULTING IN A PANDEMIC.
- THE VIRUS HAS A 40% MORTALITY RATE WITH RATES EVEN HIGHER AMONG PREGNANT WOMEN. THOSE AGES 15-40 HAVE THE GREATEST RISK OF DEATH AS THEY HAVE THE BEST IMMUNE FUNCTION. RESPIRATORY FAILURE ACTUALLY OCCURS DUE TO THE BODY'S IMMUNE RESPONSE TO THE VIRUS.
- US BORDERS ARE CLOSED AND DIABETICS ARE HAVING TROUBLE OBTAINING REGULAR INSULIN AS THE OFF SHORE PRODUCERS ARE IN A COUNTRY WHICH HAS COLLAPSED.
- YOUR STATE IS IDENTIFIED AS A PRIORITY AREA AND A LIMITED NUMBER OF VACCINES HAVE BEEN DISTRIBUTED. THE STATE BORDERS WERE THEN CLOSED AND ARE CURRENTLY PATROLLED BY THE NATIONAL GUARD. YOUR HOSPITAL HAS ENOUGH VACCINE TO COVER TEN STAFF INDIVIDUALS IN THE MICU. THE MICU HAS BEEN CONVERTED INTO AN AVIAN BIRD FLU SPECIFIC CARE UNIT IN YOUR HOSPITAL AND YOU MUST KEEP THE 15 BED UNIT RUNNING FOR THE NEXT WEEK BEFORE YOU WILL HAVE ANY ADDITIONAL VACCINE.
- IN ORDER TO COMPLY WITH THE HOSPITAL INFECTION CONTAINMENT POLICY, ONCE VACCINATED THOSE STAFF MEMBERS WILL NOT BE AVAILABLE TO COVER OTHER UNITS AND WILL BE RESTRICTED TO WORKING WITHIN YOUR UNIT WHICH WILL EXCLUSIVELY CARE FOR THOSE WITH AVIAN BIRD FLU. WHICH MEMBERS OF YOUR STAFF WILL RECEIVE THE VACCINE?

5

WITHIN THE NARRATIVE GIVE STUDENTS CONTROL

HAVING CONTROL OVER THE JOURNEY AND THE OUTCOME IS A COMMON ELEMENT OF GAME DESIGN.

HOW TO INCORPORATE THIS GAME ELEMENT?

- PUT STUDENTS IN CONTROL OF CRITICAL DECISIONS AND THEN PROGRESS BASED ON THOSE DECISIONS.



6

EXAMPLE: PANDEMIC SIMULATION

- **YOU HAVE FOUR VENTILATOR BEDS AVAILABLE IN THE MICU. WHICH PATIENTS GET THE VENTILATORS?**

- A.) MALE POLICEMAN, 29 YEARS, NO SIGNIFICANT MEDICAL HISTORY, TWO CHILDREN
- B.) FEMALE TEACHER, 38 YEARS, HISTORY OF HYSTERECTOMY AND GALLBLADDER SURGERY, BMI 32, TWO CHILDREN
- C.) FEMALE NURSE, 56, HISTORY OF DIABETES, SMOKER, NO CHILDREN
- D.) MALE CARPENTER, 23, NO SIGNIFICANT MEDICAL HISTORY, NO CHILDREN
- E.) FEMALE ATHLETE, 21, NO SIGNIFICANT PAST MEDICAL HISTORY, CURRENTLY 18 WEEKS PREGNANT
- F.) MALE, CEO FOR LOCAL TECHNICAL COMPANY, 59, HISTORY OF HEART DISEASE, PEDIATRIC WING IS NAMED AFTER HIM DUE TO A VERY LARGE MONETARY DONATION MADE LAST YEAR, FATHER OF 4 CHILDREN.

7

HAVE THE NARRATIVE UNFOLD AND BUILD OFF PREVIOUS DECISIONS

THE CEO FOR HOSPITAL ARRIVES AND STATES PATIENT F WILL GET A VENTILATOR AND PATIENT C (WHO IS THE MEDICAL DIRECTOR'S WIFE WILL GET A VENTILATOR).

- PATIENT A DIES.
- PATIENTS G & H ARRIVE

YOU STILL HAVE FOUR VENTILATORS AND PATIENTS B-H ALL NEED THEM. THE PATIENTS YOU PREVIOUSLY GAVE THE VENTILATORS ARE CURRENTLY ON THEM. WHO WILL RECEIVE THE FOUR VENTILATORS? WILL YOU TAKE ANYONE OFF A VENTILATOR TO GIVE IT TO SOMEONE ELSE? WHAT WILL BE THE RAMIFICATIONS OF YOUR DECISION?

8

ENCOURAGE CONTINUOUS “PLAY”

We know this part can be hard.
Keep going!

CONTINUOUS PLAY IS THE ABILITY TO PICK UP WHERE YOU LEFT OFF AND CONTINUE THE GAME. THIS MEANS EVEN IF THEY “LOSE” THE GAME, THEY CAN START OVER AND TRY AGAIN.

HOW TO INCORPORATE THIS GAME ELEMENT?

LET LEARNERS KEEP GOING! IT’S A GREAT SIGN WHEN LEARNERS WANT TO RETRY OR REVISIT CONTENT. IT MEANS THEY ARE INTERESTED AND INTRIGUED. STUDENTS WHO INTERESTED ARE SIGNIFICANTLY MORE LIKELY TO RETRY OR REENGAGE WITH CONTENT THEY ARE STILL WORKING TO MASTER.

ONE WAY TO INCORPORATE CONTINUOUS PLAY INTO YOUR COURSES IS TO ALLOW LEARNERS TO KEEP TRYING IF THEY HAVE NOT REACHED MASTERY (SEE SOLVE THE OUTBREAK), ANOTHER WAY IS TO LET THEM WORK THROUGH A SCENARIO AGAIN AFTER CONSIDERING THE ALTERNATIVES RAISED IN THE GROUP (PANDEMIC SCENARIO).

We want more!

10

COMPETITION: LEVELS & REWARDS ARE HELPFUL

LEVELS/REWARDS

ACHIEVING DIFFERENT LEVELS, GOALS, OR CHALLENGES IS A COMMON THEME AMONG GAMES.

HOW TO INCORPORATE LEVELS/REWARDS?

“UNLOCK” THE LEVELS WHEN LEARNERS COMPLETES NECESSARY STEPS OR EARNS A CERTAIN NUMBER OF POINTS. (IE. CDC APP)

LEADERBOARDS CAN BE USED TO ENCOURAGE STUDENT **GROUPS**, STUDENT GROUPS LIKE TO GET RECOGNITION FOR THEIR SKILLS AND EFFORT.

CONSIDER GIVING “BONUS POINTS” TO LEARNERS FOR MORE DIFFICULT QUESTIONS OR ADDITIONAL MASTERY (IE. SCORES OVER 20,000 POINTS ARE IN LEVEL 3 AND ARE A BONUS)

see: [Solve the Outbreak](#)

11



- IT IS ALSO ESSENTIAL TO DESIGN CONSTRUCTIVE FEEDBACK OPPORTUNITIES TO PROVIDE DIRECTION, PROMOTE SELF-CORRECTION AND ULTIMATELY LEAD TO PROGRESSION AND ACHIEVEMENT OF LEARNING GOALS.
- FEEDBACK IS A KEY PART OF GAMING. IT LETS THE USER KNOW THAT THEIR ACTION HAS BEEN REGISTERED OR RECOGNIZED.
- IMMEDIATE FEEDBACK PROMOTES EFFICIENT LEARNING AND BEHAVIORAL CHANGE ESPECIALLY WHEN COMBINED WITH THE SCIENTIFIC PRINCIPLES OF REPEATED RETRIEVAL AND SPACED REPETITION.
- **HOW TO INCORPORATE THIS GAME ELEMENT?**
- FEEDBACK DOESN'T HAVE TO BE TEXT. VIDEO FEEDBACK MAY BE MORE PERSONAL. ALSO, "UNLOCKING" NEW LEVELS IS A TYPE OF FEEDBACK THAT LETS STUDENTS KNOW THEY'RE DOING WELL AND PROGRESSING.
- OPPORTUNITIES TO "CHECK YOURSELF" ARE A WAY TO PROVIDE FEEDBACK AND LET LEARNERS KNOW HOW THEY'RE DOING.



12

Emoji feed-back with self check

	Disease	no disease	Total
Exposed	93	100	193
Not Exposed	101	210	311

were well. They had no symptoms and they did not eat any

[NUR 518- Week 13- Calculating RR](#)

13

Promotion of Self Correction

The screenshot shows a web browser window with the URL <https://www.khanacademy.org/learn/relative-risk/a/relative-risk-lesson-1/a/relative-risk-lesson-1-quiz>. The page title is "Calculating Relative Risk | Lesson Preview". The main heading is "Where should these subjects go in your 2x2 grid?". Below the heading is the name "Elizabeth Hume" and a green progress bar. The instruction says "Sort the boxes for your 2x2 table". A single box containing the number "341" is shown below the instruction.

14

Provide the example (set the scene) and let students work through it with opportunities to self correct based on feedback.

The screenshot shows a web browser window with the URL <https://www.khanacademy.org/learn/relative-risk/a/relative-risk-lesson-1/a/relative-risk-lesson-1-quiz>. The page title is "Calculating Relative Risk | Lesson Preview". The main heading is "Where should these subjects go in your 2x2 grid?". Below the heading is the name "Elizabeth Hume" and a green progress bar. The instruction says "Sort the boxes for your 2x2 table". A single box containing the number "341" is shown below the instruction.

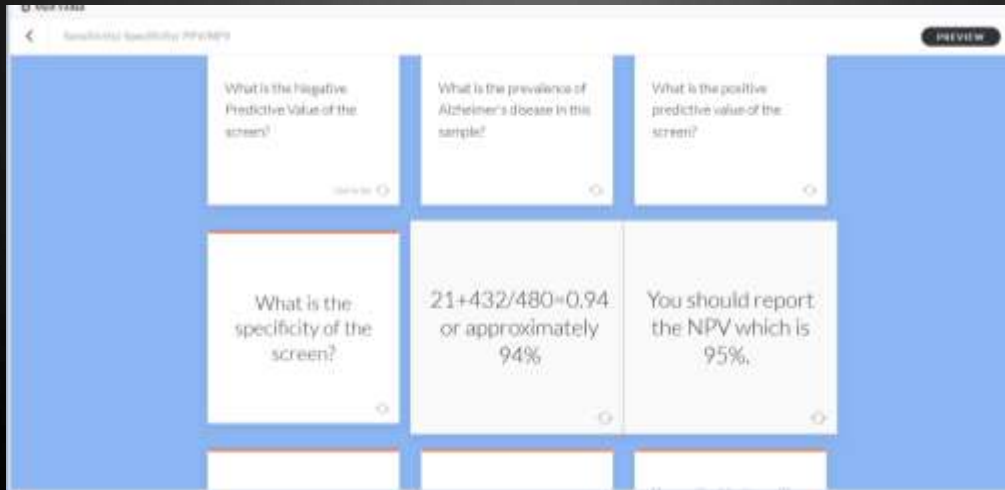
subjects did not have Alzheimer's disease. Of those with Alzheimer's disease 21 screened positive with your new test. Of those without the disease 432 screened negative with your new test. Complete an appropriate 2x2 table.

		Disease		
		(+)	(-)	
Test (Screen)	(+)	21	4	25
	(-)	23	432	455
		44	436	480

Did you get your 2x2 table set up correctly?
Double check it here before you work on the questions below.

15

Flashcards that flip over with the correct answers.



16

Provide visual feedback by linking visuals in content to visuals in feedback during self checks

How do we include categorical variables in a regression analysis when they have more than two categories?

The number of variables that have to be created is determined by using the total number of categories associated with the nominal variable and subtracting by the example above, there are 3 categories as we need to create 0-1 or 1 case variables. The category of all we do not create is base variable because the reference category is always avoided (0). You can also reference category in a variety of which based on what you are trying to determine or part of some publications suggest using the largest category, where the smallest category and call them that the "reference" category as a good reference. For example, if you were studying learning, having at least 1000 students and having a strong condition, you might want your base healthy group as your reference group.

Simultaneous entry

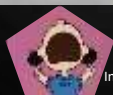
There is limited correlation between independent variables and there are a limited number of independent variables

Simultaneous entry is appropriate when the independent variables are thought to be equally important.

Variable	Category	Value
Variable 1	Category A	100
	Category B	200
	Category C	300
Variable 2	Category A	150
	Category B	250
	Category C	350
Variable 3	Category A	200
	Category B	300
	Category C	400



Correct! Simultaneous entry is your best choice.



Incorrect. In this situation you will want to dummy code.

17



CONSIDER: WHERE DO YOUR STUDENTS
STRUGGLE? WHERE WOULD CONTINUOUS
PLAY HELP IMPROVE OUTCOMES?

18

JUST REMEMBER

IN ORDER TO USE GAMIFICATION
CONCEPTS EFFECTIVELY IN YOUR
COURSES, THE GAME ELEMENTS
NEED TO BE ALIGNED WITH YOUR
LEARNING OBJECTIVES,
THOROUGHLY THOUGHT OUT
AND WELL DESIGNED.



<https://www.parentone.com/parenting/child-development-tips/the-likelihood-of-spot-thinking-related-delays-in-your-kid-at-this-stage>

19

REFERENCES

2018 AACN Apple Bootcamp

Open online course: www.courser.org/course/gamification

<https://www.growthengineering.co.uk/learning-by-levels-clear-development-pathways-for-each-and-every-learner/>

<http://karlkapp.com/gamification-is-about-design-not-technology/>

www.Community.Articulate.com/articles/Gamification-techniques

<https://elearningindustry.com/6-killer-examples-gamification-in-elearning>

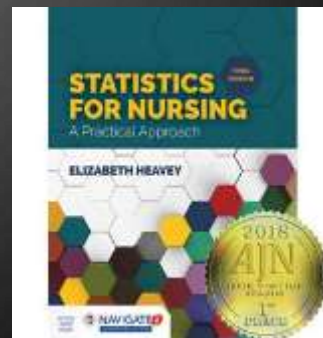
<https://www.shiftelearning.com/blog/before-gamifying-elearning-read-this>

20

QUESTIONS?

ELIZABETH HEAVEY, PH.D., R.N., C.N.M.
GRADUATE PROGRAM DIRECTOR/ ONLINE COORDINATOR
PROFESSOR
APPLE TEACHER- 2018 AACN APPLE BOOT CAMP PARTICIPANT

THE COLLEGE AT BROCKPORT
350 NEW CAMPUS DRIVE
BROCKPORT, NY 14420
LATHROP HALL #114
EHEAVEY@BROCKPORT.EDU
585-395-5308



21