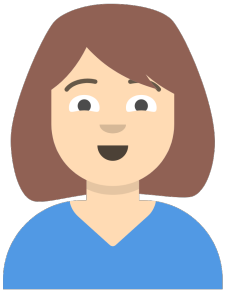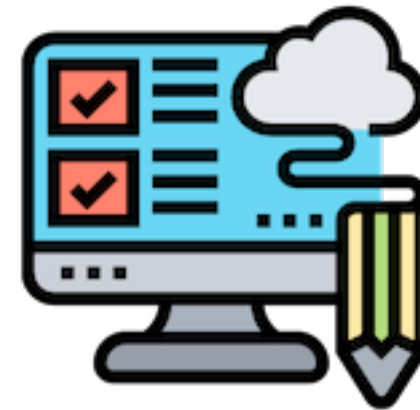# Impacts on Online Adult Learning: Supplementing Instruction of Survey Design Skills Using Play and Gamification Elements
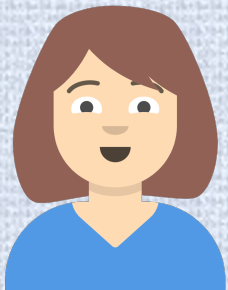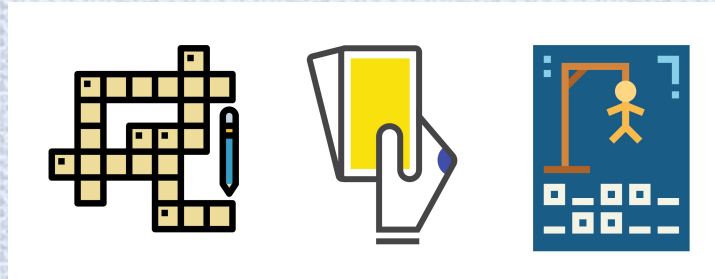
Tamara Parks
Western Governors University
December 2020

The research topic

**Play and gamification elements, and their impact on adult learning in an online environment.**

- Marin (2016) points to "play" as being "the element of 'fun' (which) appears to decrease discomfort (in the learning environment)".

- Boghian et al. (2019) defines the use of games in learning as those which provide visual metaphors, supporting students, and serve as vehicles for connecting information.

***see notes below for references

The research topic

Play and gamification elements, and their impact on adult learning in an online environment.
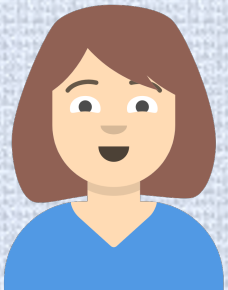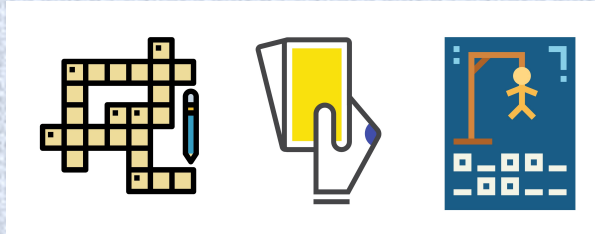
- COVID-19 pandemic –altered the availability of traditional resources when designing and delivering adult education.

- Educator training needed to justify:
  - Supporting new online learning systems
  - Increasing student engagement and focus
  - The study of advantages/disadvantages in adding gaming and play elements
  - A framework for solid educational decision making and resource development

The Research Problem

- Adults struggle learning in an online environment

- Online instructional strategies are not always effective at keeping adult learners focused on learning the instruction

- Particularly evident when learning how to design and build online surveys

- Perhaps a study that investigates survey building instruction with elements of gamification would help.

The Intervention-**The Instructional Unit**:
"Designing Online Surveys"
In the Canvas Learning Management System

- Online 8-to-10-hour class with:
  - 5 modules
  - 7 lessons
  - 3 gaming activities
  - 1 point acquiring competition project
  - Pre and Post test assignment:
    - Build a 10-question online survey

The Intervention-**The Instructional Unit**: "Designing Online Surveys" Unit Objectives

At the end of this 8-hour learning workshop, the student will be able to:

- Write survey questions which avoid survey abandonment
- Create online survey question formats which avoid survey abandonment
- Write survey question response options which avoid survey abandonment
- Research and select appropriate survey creation tools & resources, and construct a survey which avoids survey abandonment
- Plan and organize the communications between survey administrator and respondent to avoid survey abandonment
- Gather and report data from the survey

"Designing Online Surveys"
Module-Introduction and Overview

1. <u>Defining what survey abandonment means</u> as a survey design, and why it is important to avoid such elements. – YouTube videos

2. <u>Introducing each of the modules and what they will cover</u>.- YouTube videos

3. <u>Prerequisites check</u>, and verifying resources to take the class- YouTube video

4. Introducing the <u>class gaming competition</u> and how to participate. –YouTube video and summarizing infographic

5. Outlining the <u>first survey creation project</u> assignment- PRE assessment "Build an Online Survey"

Data Collection- Quantitative

- **PRE**-Test task- Build a 10-question online survey
  - Scored by RUBRIC (0-80 points)

CRITERIA scored based on features in survey
which avoid survey abandonment
(10 points each)

- Question writing
- Question response writing
- Question format selection
- Survey content management
- Survey tools and resources selection
- Survey layout and organization
- Survey aesthetics look and feel
- Professional communication

The Intervention-**The Instructional Unit:** "Designing Online Surveys"
Module 1-Survey questions and their formats

- Lesson 1-Writing survey questions- YouTube videos

- Lesson 2-Writing survey question formats- YouTube videos

- GAME- **crossword puzzle**-review survey *questions*

- GAME-**card matching**-review survey *formats*
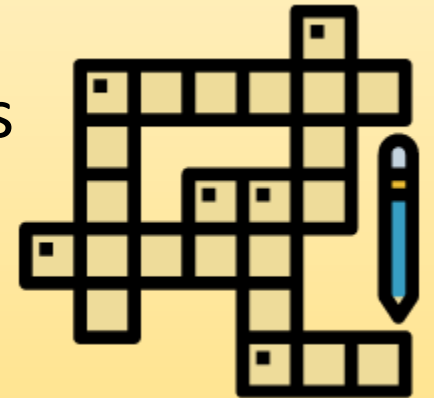
The Intervention-**The Instructional Unit:** "Designing Online Surveys"
Module 2-Survey question responses and creation tools

- Lesson 3-Writing survey question response options- YouTube videos

- Lesson 4-Researching and selecting survey creation tools and resources- YouTube videos

- GAME- **hangman**-review question response options
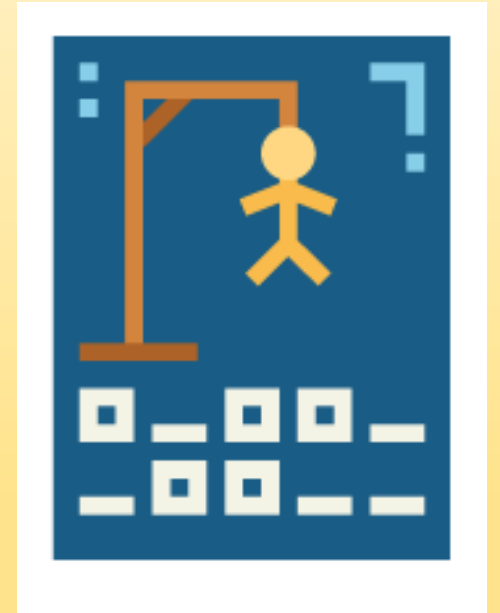
The Intervention-**The Instructional Unit:** "Designing Online Surveys"
Module 3-Organization, communication and data reporting

- Lesson 5- Survey Construction- YouTube videos

- Lesson 6-Survey Organization-YouTube videos and summary infographic

- Lesson 7-Data gathering and reporting- YouTube videos

The Intervention-**The Instructional Unit:**
"Designing Online Surveys"
Post Module-Wrap up and evaluation

The Intervention–The Instructional Unit: "Designing Online Surveys"
The Points Competition Project: **"Best Quick Reference Guide"**

CREATE YOUR QUICK REFERENCE GUIDE

Earn up to 150 points for the completed reference guide submission at the end of the class

See template in class materials for guidance or create your own

Template for Creating Quick Reference Guide

I. The step-by-step process of creating an online survey (create an infographic using a program such as canva.com)
   A. Graphics/Illustrations/Photographs
   B. Diagrams
   C. Charts/Graphs
II. Types of survey question formats and examples
III. Tools and resources used to build and deliver online surveys
   A. List of resources
   B. List of survey creation tools
IV. Survey do's and don'ts for creating survey questions, which avoid elements leading to survey abandonment
   A. Best practices
   B. Elements to avoid
V. Survey do's and don'ts for creating survey question responses, which avoid elements leading to survey abandonment
   A. Best practices
   B. Elements to avoid
VI. Common best practices used to create a survey, while avoiding elements which lead to survey abandonment
VII. Glossary of survey concepts defined for future use
VIII. Misc. extra information and references

Awarding the Digital Badges in the points competition
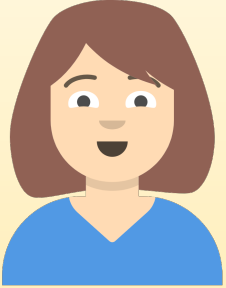
- Learner each created an anonymous AVATAR for tracking daily points counts

- Competition posted in Announcements daily

- Digital Badges awarded for each tier level achieved from points earned in the crossword, card matching, hangman, and Best Quick Reference Guide project

Survey Design — Apprentice

Survey Design — Expert

Survey Design — Master

Sparky
279 points
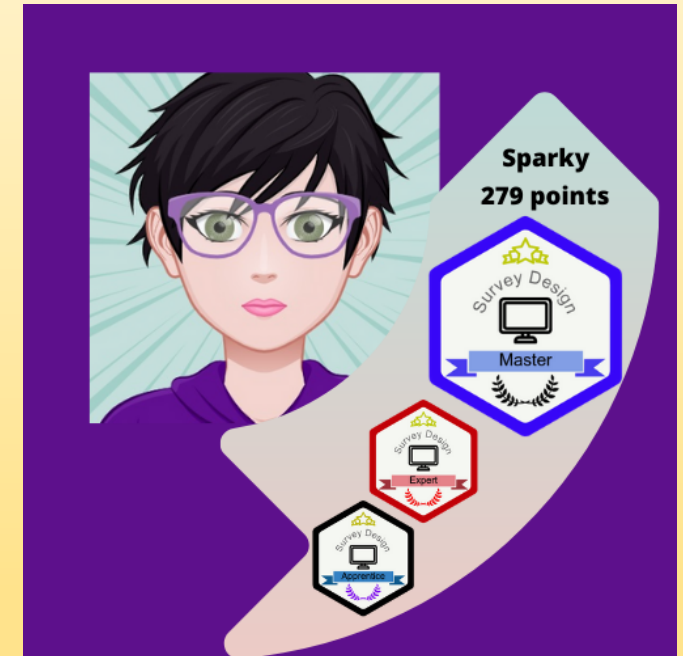
Data *Collection*– Quantitative

- **POST**-Test task– Build a 10-question online survey
  - Scored by RUBRIC (0-80 points)

CRITERIA scored based on features in survey
which avoid survey abandonment
(10 points each)

- Question writing
- Question response writing
- Question format selection
- Survey content management
- Survey tools and resources selection
- Survey layout and organization
- Survey aesthetics look and feel
- Professional communication

Data *Collection*– Qualitative
Online survey questionnaire:
Survey about gaming in online learning

Survey Questions

- How did you feel about the crossword puzzle activity in your online learning?

- How did you feel about the card matching game in your online learning?

- How did you feel about the hangman game in your online learning?

- How did you feel about the competition for points and badges from the 3 games and the Quick Reference Guide creation, in your online learning?

- How did you feel overall about having games and competitions in your online learning?

Data *Collection*- Qualitative

Phone interview questionnaire:
Follow-up about gaming in online learning

INTERVIEW QUESTIONS

Question 1: "How would you describe the positive feelings present, regarding the games and competitions in the learning unit?

Question 2: "How would you describe the negative feelings present, regarding the games and competitions in the learning unit?

Question 3: "What kinds of things did you do, during the learning unit, as a result of the feelings you have just described?

Question 4: "What else can you describe, about the feelings present during the learning unit?

Analysis Methods–Quantitative
Assignment of variables and their values

- PRE assessment scores (PRE <Unique Identifying Student Number>)
- POST assessment scores (POST < Unique Identifying Student Number >)
- DIFF = POST-PRE (for each student number)
- ADIFF=average of all DIFFs (=28 points)

Table 1			
Differences of individual scores of pre and post scores (out of 80 points per assessment)			
Unique Identifying Student Number	PRE score (points)	POST score (points)	DIFF of individual scores (points)
S103	40	64	24
S105	16	66	50
S106	50	78	28
S107	54	64	10

Analysis Methods–Quantitative
Assignment of variables and their values

- APRE= Average of PRE scores
- APOST= Average of POST scores
- VPRE= the absolute value (points)
  of the <u>variance</u> of each PRE from APRE (=40 points)
- VPOST= the absolute value (points)
  of the <u>variance</u> of each POST from APOST (=68 points)

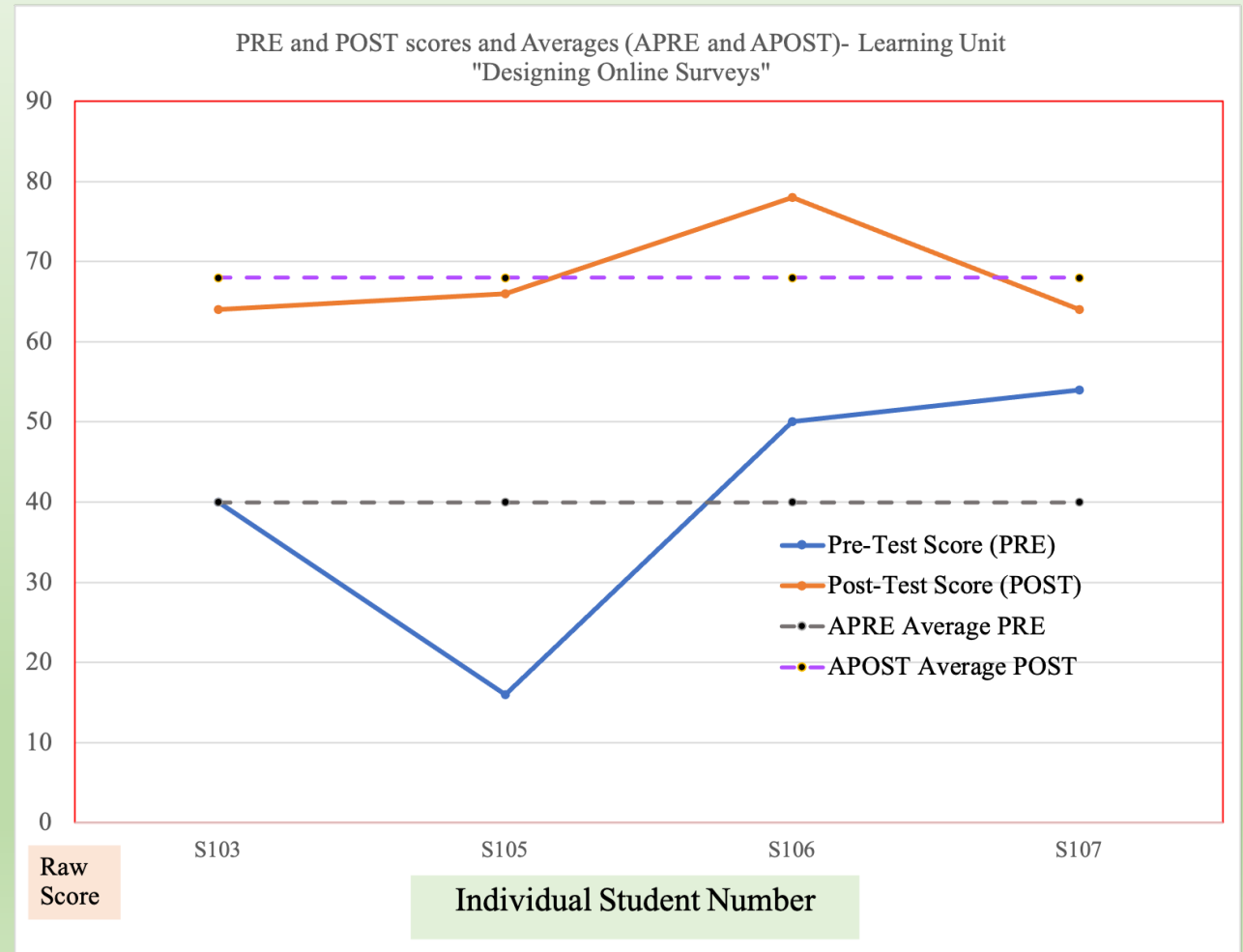| Table 2				
Comparison of individual pre and post scores to group average				
Unique Identifying Student Number	PRE score (in points)	Variance VPRE from average PRE score: (40 points)	POST score (in points)	Variance VPOST from average POST score (68 points)
S103	40	0	64	4
S105	16	24	66	2
S106	50	10	78	10
S107	54	14	64	4

Analysis Methods–Quantitative RESULTS

Figure 1– PRE and POST scores and Averages (APRE and APOST)– Learning Unit "Designing Online Surveys"
Showing Variations from APRE=40 And APOST=68
For each student score

Scores Improved, on average by 28 points between PRE and POST , an increase of 35%

PRE and POST scores and Averages (APRE and APOST)- Learning Unit "Designing Online Surveys"

- Pre-Test Score (PRE)
- Post-Test Score (POST)
- APRE Average PRE
- APOST Average POST

Raw Score

Individual Student Number

Analysis Methods-Qualitative
Assignment of variables and their values

Table 3

Summary list of survey and phone interview participant data and descriptions (qualitative data)

from gaming elements supplementing learning unit "Designing Online Surveys"

Blue=Remarks <u>overlapping</u> in both surveys and phone interviews

Red=Remarks appearing in online survey only

Green=Remarks from phone interview only

Analysis Methods-Qualitative
Assignment of variables and their values
From the overlap of survey and phone interview remarks

Table 3

Participant **Positive** Feelings Present (PF)	Participant **Negative** Feelings Present(NF)	Participant **Responses** to Feelings Present (RF)
Fun	*Frustration*	*Contacted instructor for clarity of instructions*
Familiarity	*Difficulty*	*Did not follow or track progress/ competition*
Feeling focus improved	*Not motivated by points competing with others*	*Took more detailed notes in unit before game began*
	Confusion	

Analysis Methods–Qualitative
Assignment of variables and their values
From the survey remarks only

Table 3

Participant **Positive** Feelings Present (PF)	Participant **Negative** Feelings Present(NF)	Participant **Responses** to Feelings Present *(RF)*
Memorable feeling	*Competition pressure*	*Returned to online unit to review concepts*
Exciting	*Anxious*	*Ended participation in learning unit*
Enjoyable	*Challenging (negative)*	

Analysis Methods-Qualitative
Assignment of variables and their values
From the phone interview remarks only

Table 3

Participant **Positive** Feelings Present (PF)	Participant **Negative** Feelings Present(NF)	Participant **Responses** to Feelings Present (RF)
Challenging (positive)	*Anger*	*Organized notes for better content recall*
Pride	*Dislike for games*	*Conducted web searches to research and supplement learning*
Success affirming	*Overwelmed*	
Relaxation		

Study conclusions- Quantitative

Research Question 1 :
How does an online unit with gamification impact an adult learner's ability to develop a survey?

- There was an average improvement in scores, in the group, of 28 points (35%) from the PRE test survey building assignment and the POST.

- In the POST, the average score was 68 (out of 80), and all 4 participants were less than 11 points within that average.

- In the PRE assignment, the scores varied within 38 points of the average of 40 points

The impact on the learner was suggested to be a POSITIVE improvement in the focus and comprehension of the content necessary to achieve a high POST score.

Study conclusions- Qualitative

Research Question 2 :
How do adults feel about gamification elements supplementing their online learning?

- There were **many positive** and **negative** responses which overlapped in both the survey and phone interview

- Learner **connections to the feelings and responses,** and self-defined common strategies learners used to manage and cope with their feelings

- Most notably, was the ***common thread*** of the learner's development of a **strong note-taking** and **lesson review** management style, in **anticipation of the approaching gaming activity.**

Due to the feelings of pride and accomplishment associated with completing and "winning" the game, this suggested that a stricter study regimen was necessary to the learner,
which improved their scores on average 35%.

Strengths of the study

Small sample size- disadvantage for scalability, but advantage for data collection.
Validity of results dependent on analysis of a large body of data.
A great deal of time and focus was utilized to collect data, may not have been available in a large sample group.

Independence of study conduction- convenience sampling group
Did not require any group, school or organizational approvals or supervision
Flexibilities were in place to independently design, revise, review and deliver the learning unit,
and all the communications associated.

Credibility of learning content-the instructor was also the Subject Matter Expert (SME)
Over 10 years of research-based experience designing and administering online surveys (topic of learning)

Weaknesses of the study

Sample size- Original number of participants in recruitment was 7-However, 3 needed to drop out after partially completing course
Sample size factor made it difficult to establish scalability to a larger population
To overcome this, rich and detailed data were collected for optimal precision and accuracy.

Distance learning environment-participants were not local to instructor (out of state)
Accountability and communication with participants was limited to phone, text and email.
These factors had the potential to put learners at a disadvantage when urgent issues arose.
To overcome this, instructor was made available to learners 24/7.

Budget restrictions to the research student-Researcher not affiliated with schools or large organizations, which had resources to design and implement the learning unit
Limited to free or low-cost resources such as Canvas LMS, Canva (graphics program) and Google Suite.
Learning tools such as Adobe Captivate, with more powerful features to engage learners, not available

How I will apply knowledge to future professional contexts

- Utilize and share feedback with present and future colleagues, developing best practices when designing online learning for adults

- Participate in and consult with professionals in the design and assessment of adult learning which may contain gamification

- Build on this research to continue exploring educational topics in gamification and microlearning to enhance my learning work sample e-portfolio

- Develop a freelance business creating standalone, research-based learning modules

- Refer to this capstone as a body of knowledge and foundation for continued updating about the field of learning and technology