

Educational Card Game Narrative

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Title of Game

The title of the card game is “Take Five” and is a play on words. The title refers to needing five ingredients to make the recipe, taking action to be healthy, and having simple recipes that are an enjoyable and delightful activity (so fun, it’s like taking a break!).

Tweet Project Description

Take Five is a nutritional matching card game for teens and young adults

#takefivesimplerecipes #healthyeating #takefivelearnasyouplay

Target Audience

The “Take Five” card game is appropriate for a wide audience range. The target audience is teens and young adults aged from late teens to thirties. However, the game can be played by people of nearly all ages. Gameplay is straightforward and accessible for children as young as 5 or 6 years old and, if needed, game rules can be altered slightly to facilitate learning for other beginner players as well. These players can play with the ingredients cards face up to help with the guessing of other players’ recipes, for example.

The recommended number of people to play the card game is 3-6 players. An average game length is 15 minutes, and several rounds can be played in a row.

The card game specifically targets this population as they may not have the healthiest diets. This could be attributed to a number of factors including a lack of knowledge, time or budget to buy and make healthy food. In fact, according to a recent survey, 60 percent of young adults aged between 18 and 25 years old reported not eating adequate amounts of fruits and vegetables, and 32 percent reported eating unhealthy snacks (Poobalan, Aucott, Clarke & Smith,

2014). However, eating healthily is of particular importance for teenagers and young adults because their bodies are still growing (Australian Government, 2017).

Unhealthy eating has been identified as one of the leading universal risk factors according to the Global Action Plan for the Prevention and Control of Noncommunicable Disease by the World Health Organization (Public Health Agency of Canada, 2018). According to a health report (Garriguet, 2009), there are a large number of Canadians who do not lead healthy lives with regards to eating healthily. Data also shows that there is a rising intake of sugar, fat and protein and a simultaneous decreasing intake of vitamins and minerals in Canadian diets (Brisbois, Marsden, Anderson, & Sievenpiper, 2014; Health Canada, 2012; Langlois & Garriguet, 2011).

Unfortunately, such concerns also apply to youth population. Almost 70 percent of Canadians aged 12 or older struggle with unhealthy eating habits (Tam, 2018). What is worse, around 33 percent of youth face weight management issues, which is largely attributed to their unhealthy eating habits (Pan-Canadian Public Health Network, 2017). Even for people whose weight is at a normal level, poor eating habits are related to health risks that might result in illnesses, such as heart disease or certain types of cancer (U.S. Department of Health & Human Services, 2011).

Previous research has shown that among other determinants of healthy eating (such as socioeconomic status, availability and accessibility of healthy food, and taste preferences), nutritional knowledge appears to make a difference in a healthy behavior change (Ball, Timperio, & Crawford, 2006; Birch, 1999; Brug, Oenema, & Ferreira, 2005; Capaldi, 1996). The present review of literature has also provided evidence of a positive association between nutrition knowledge and eating choices (Spronk, Kullen, Burdon, & O' Concor, 2014).

Furthermore, a positive correlation has been found between nutrition knowledge and eating behaviors (Frazao & Allshouse, 2003; Pirouznia, 2001). The more nutrition facts or knowledge teens and young adults have, the higher the level of possibility that they will lead a life with healthy diets.

Zoellner et al. (2009) have defined the term “nutrition literacy” as “the degree to which individuals have the capacity to obtain, process, and understand nutrition information and skills needed in order to make appropriate nutrition decisions” (p. 1). This definition emphasizes the relationship between the possession of nutritional knowledge and dietary choices. To build and strengthen the relationship between target players’ nutrition knowledge and literacy, the “Take Five” instructional game is designed and developed with the aim of reinforcing the interaction between nutritional facts and players’ awareness and knowledge about eating healthy. When target players enjoy this card game, they will be provided with more opportunities to learn nutrition knowledge and improve their nutrition literacy.

Game Purpose and Strategy

The ultimate objective of this game is to help players to raise their awareness of eating healthily and develop healthy eating habits. On the bottom of each ingredient card, we’ve included nutritional information about the food item on the card. By repeatedly looking at the information on the cards and playing with them, players’ cognition and knowledge is reinforced.

Our strategy in developing this game was to create a base set of rules that would be easy to remember and engage in for all players. The main strategy for gameplay is simple: players choose between a known card (the card at the top of the discard pile) and an unknown card (the card at the top of the deck) to acquire the cards they need for their recipe. Using this strategy alone, and with a little luck in picking necessary cards, any player can win. This means the game

is accessible to nearly all players, including children, ESL learners and those experiencing memory challenges, for example.

However, we built in additional game mechanics that increase a player's chance of winning. These additions encourage repeat play and continued exposure to the content of the cards. Strategies involve deciding what card to discard, guessing another player's recipe card, and picking up unnecessary discard pile cards. A first strategy is when a player is choosing a card to discard (as they must discard a card every turn), they can choose a card that they suspect the next player already has and won't need, or, they can discard a card that is used in only a few recipes and observe the behaviour of the next player (so they can learn more about what recipe card the other player has). Both approaches would require that players pay attention if they want to decrease the chances of the next player winning.

A second strategy is guessing another player's recipe card. If a player can keep track of the ingredient cards that another player is collecting, they can effectively stop that player from winning by forcing that player to trade recipe cards. This strategy requires that the player collects, sorts and remembers new information while playing.

A final strategy is for players to pick up unnecessary discard pile cards. If a player suspects that another player knows their recipe card, they can pick up a discard pile card that they do not need for their recipe in order to confuse the other players and discourage them from guessing their recipe card. Keeping in mind principles of cognitive theory and working memory, a good strategy would be to choose an unnecessary ingredient card early in the game when other players are most likely to have space in their memory to track others' card choices.

Learning Theory Connection

This card game is based on principles of cognitivism. It is believed that learning happens when there is mental activity that includes internal encoding and structuring. Learning involves “the process of connecting pieces of knowledge in meaningful and memorable ways” (Reeve, 2012, para. 4). Indeed, mental activity can include memory, thinking, and reflection (Reeve, 2012). Our card game exposes players to new knowledge as they may be unfamiliar with certain ingredients, what food group an ingredient belongs to, and how to incorporate the ingredients in healthy meal planning.

This card game is a fun and dynamic way of learning about healthy nutrition. In fact, this game “makes deliberate use of the social and physical context” (Brown, Collins & Guguid, 1989, p. 33) to encourage players to be active participants involved in their own learning process. Motivation to win the game by completing their own recipe or guessing another player’s recipe keeps them engaged with the content (Artino, 2008). Furthermore, “Take Five” incorporates considerable mental activity as players must decide on a strategy for collecting cards that involves deciding between picking up cards from the deck versus the discard pile.

According to Bloom (1956), there are six cognitive process levels for human brains, namely remembering, understanding, applying, analyzing, evaluating and creating. Memory has an important role within the learning process as well as within this card game. For learning to occur, content must be presented to the learner in a way that is organized and facilitates their understanding of the material (Artino, 2008). In our card game, the players have access to the List of Recipes cards, which present them with the all recipes and help them build on their prior knowledge on what ingredients are contained within these recipes.

For learning to occur and be considered successful, a learner must be able to transfer the acquired knowledge to various contexts. In other words, a learner “transfer[s] what is learned to novel problems encountered elsewhere” (Artino, 2008, p. 434). In our card game, we added the directions to all the recipes so that players can apply their new knowledge in other contexts and by making the recipe at home, for example.

As Cognitive Load Theory (CLT) states, learners have a limited capacity in their working memory when they are learning new information (Artino, 2008). Based on CLT principles, players will have five ingredient cards to manipulate plus one recipe card, which is in-line with the working memory’s limited capacity that recommends exposure to seven plus or minus two items (Miller, 1956).

To help with players’ germane cognitive load, the players will be able to discard ingredients cards that are not needed. Specifically, a player will be able to discard one card per turn. In addition, the Wild Card is related to the germane load theory as players are using their working memory to keep track of the cards being played in order to guess their opponent’s recipe.

In the learning process, receiving feedback is an important factor that contributes to a learner’s understanding by reworking the accuracy of their mental connections of the material through guidance (Salomon & Perkins, 1997, p. 3). Games such as ours provide the opportunity for immediate feedback. For instance, by adding the element of guessing another player’s recipe, they can know immediately if they are on the right track or not.

Unique Features

“Take Five” is a unique educational card game for several reasons. The game includes recipe directions so that players can make the healthy recipes at home. We provide 22 recipes

including side dishes, dips, and main courses. Each of these recipes only require five ingredients, which make them good meal choices for busy people to make. The directions are written in 3-4 easy steps to follow and are quick to prepare. The format of the recipe cards is unique as well, as they were created to reflect the style and format of actual recipe cards that the players' own parents or grandparents may have had at home. We've even included a recipe box to complete the effect.

The design of the cards was carefully considered. All the cards have a green tone, which is represents healthy food and diet. Additionally, both visuals and texts presented on the cards make the cards more recognizable and memorable. In fact, a picture is included on each recipe card as a visual representation of what the assembled dish should look like.

Another interesting feature is that one nutritional fact is listed on the bottom of each of the ingredient cards, which serves as a source of knowledge for the players and an additional entry point for the content on the card.

Finally, tone, style, and language were taken into consideration when writing the content for the card game. Plain English is used for the recipe directions, nutritional facts, and game instructions. Moreover, jargon is avoided to help players understand and make it accessible to the game's wide audience range.

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