

# An Overview of Cooking Video Games and Testing Considerations

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**Abstract**—*Video games are an important part of the lives of many people, being a popular entertainment medium, and providing engaging and motivating player experiences. Some types of video games are also played to learn about a particular topic, working as serious games (games that have a purpose beyond pure entertainment). That is the case of cooking games, a hybrid game genre where simulation, casual and other genres are involved. In cooking games, food preparation and presentation are the central gameplay mechanic. In this paper, we present a review of popular cooking games, and suggestions for analyzing and testing cooking video games, taking into account the games' usability, training and learning components. These components could help designing and developing new cooking games. We conclude that in order to improve cooking games testing, testers should know the basics of cooking shown in the game beforehand, and be aware of the importance of the game's look and feel to evoke meaningful and compelling culinary experiences. Cooking games can help people to learn a life skill such as meal preparation, beyond just playing a casual game.*

**Keywords**—*Cooking games, Serious Games, Culinary experience, Testing, Casual Games*

## I. INTRODUCTION

Video games are part of people's daily lives, becoming the largest entertainment industry in terms of revenue [1], where casual games (games that are played by anyone, with simple gameplays and short and easy-to-follow rules [14]) is one of its more popular genres. One type of casual video games is cooking games, played on different platforms including game consoles and mobile devices. Cooking games are a hybrid genre where simulation, casual, arcade, puzzle and other game genres are involved. As van Ryn points out [17], in cooking games, timing is important, because players need to pay attention to the timeliness and modularity of cooking tasks. According to Moby Games website [2], cooking games are "any game where cooking (or other forms of food preparation) is a central gameplay mechanic," where players prepare dishes by combining ingredients following a few rules. There are similar approaches of serious games (video games that have a purpose beyond pure entertainment [4]) designed to promote nutrition and food literacy, such as [16]. In this paper, we do not take into account video games where restaurants and waitressing are simulated and managed, because these belong to other types of genres or sub-genres, such as business management simulation, which is beyond the scope of this paper. In cooking games, people learn something about food recipes, special features on dish preparation, such as learning how to cook from regular to ethnic food [3], as well as experiencing the process of food preparation and presentation. Cooking games can be considered as a type of serious games

because of their learning, training and playful components of meal preparation, which can be applied beyond entertainment [4]. Being a type of simulation games, "gamers encounter [in cooking games] a challenge (strive to perform well in the rewarding system or competitive mode) and are likely to experience physical presence (control and manipulate virtual cooking tools and feel as if the virtual objects were real ingredients and cooking tools players can perceive some degree of immersion" [5].

Game testing is an essential and integral activity in the game development process (including serious or casual game development), which helps to identify any software defects, usability and gameplay problems [11,14]. For example, [3] reported that unit testing (testing game modules separately) was useful to uncover game design problems in their cooking game, and variety of content in the game was considered the most important testing issue. [15] points out that testing recipes and their ingredients in the cooking game and testing the game iteratively was important. However, there are a very few papers in the literature that describe cooking games testing, e.g. [3, 5]. The goal of this paper is to describe an overview of cooking games, their testing issues and suggestions for testing cooking games.

## II. REVIEW OF COOKING GAMES

There are dozens of cooking games that have been developed over the past decades. [2] reports 49 cooking games made between 1983 and 2021, including game remakes and newer versions. The following are reviews of some popular cooking games, including what players can learn about cooking while playing those games:

In the Cooking Fever game [6], players use many cooking ingredients to cook the best quality dishes. Players try different kitchen appliances and machines, from espresso machines and rice cookers to popcorn makers and pizza stoves. Players also try to draw in more customers into a cafe. In this game, players make their own edible gifts, like treats or cupcakes, to make players' experience more pleasant. Players can redesign a kitchen and produce a considerably a prominent assortment of dishes.

Good Pizza, Great Pizza [7] is a cooking game that features the Pizza News Network (PNN), where players report everything about pizzas that they make in the game. In it, players prepare many different pizza styles and toppings, including pepperoni, onions, etc., and that's only the tip of the iceberg. The game helps the player to become an expert pizza maker.

The game *Cooking Mama: Let's cook!* [8] allows players to cook virtual meals by completing cooking tasks such as slicing meat, frying ingredients and chopping vegetables. This game features almost 100 dishes to prepare, and each meal requires players to complete one or more short mini-games, for

*Cooking Mama* was developed for the Nintendo DS portable console and then ported to iOS, winning the "best of E3" award in 2006. The human-computer interactions of *Cooking Mama* have been analyzed by [9], highlighting the importance of gesture usage in the game.

In *Cooking Simulator: Chef Game* [10], players experience a realistic-looking cooking simulation, where they prepare more than 80 dishes using more than 140 ingredients. Players can become a virtual chef, where the players cook dishes such as a hearty tomato soup, salmon steak, roasted potatoes, prepared trout, pork slashes with heated potatoes, seared shrimp, quick pumpkin soup, flame broiled fish steak, steak with French fries, penne in broccoli sauce, duck stock, duck bosom with apples, and many more.

The overall experience of the above video games seems to be quite appealing and interesting with nice visual aesthetics, and all the games provide easy-to-use human-computer interfaces. It seems that both aspects (good usability+ attractive aesthetics) from those games contribute to a positive player experience. Most of the games present different levels with different dishes to be cooked, unlike in "Good Pizza, Great pizza". The different dishes and drinks have to be prepared in a given time. Timing in food preparation is important in cooking games, as stressed by [17]. In some these games, players take orders from virtual customers and also need to be served them in the games' virtual worlds. These cooking games can also teach their players about time management related to cook preparation, and players need to handle their stress as they should not disappoint their customers and leave their virtual restaurants with a sad face. In some of those games, players need to upgrade their cooking equipment, trays and machines for cooking more efficiently and prepare meals in shorter times, allowing the player to learn a bit about resource management. In some cooking games, players also need to learn how to decorate a cafe/restaurant, giving the surreal experience of running a virtual restaurant. The following section deals with suggestions on how to test out cooking games, based on our previous game testing experiences (e.g. [11]) and about testing video games in general.

### III. SUGGESTIONS FOR TESTING COOKING GAMES

According to the reviewed cooking video games and based on our previous video game testing analysis [11], we have devised the following suggestions for testing cooking games, taking into account their usability, learning and training aspects. These suggestions can be applied to all the stages of cooking game development, and some of them can be applied to the development of other game genres:

- Before testing a cooking game, train the testers on the cooking basics related to the game to be tested (for example, how to boil an egg in real life if that is depicted in the game). This will help the testers to identify potential usability problems in the game and compare and contrast real-life vs the video game cooking procedures, ingredients and recipes.

example, drawing parallel lines with the fingers on the cellphone screen in order to chop vegetables correctly.

- Analyze in the cooking game how its combination of colors could evoke positive feelings supporting the cooking experience in the game.
- When testing the cooking game's sound effects, see if they are played with the highest quality and if they convey the right information (for example, playing the sound of a mixer and showing a mixer machine) at the right location in the game scene, assuming that the video game plays the sound effects in stereo or simulated 3D sounds. Also, see if their timing is correct to avoid any audiovisual mismatch. The sound effects should positively complement the visual cooking experience.
- Test and analyze the accuracy of the virtual cooking recipe(s) in the game. The list of ingredients need to be very clear to the player [15].
- Test the cooking recipe(s) in the game including their procedure. Make it not too difficult and not too easy to perform. This should support the game flow [5].
- Test your cooking game prototype early and often. Do not rely just on the game developers' comments and initial testing. Define who your target audience will be and test your prototype a number of times with them [11].
- Ask people with different ethnic background to test the cooking game. Conduct a think aloud usability testing session to see what the players think about the game's look and feel and gameplay, and ask them about the game's overall player experience [12]. We believe that testers with different ethnicity could provide interesting comments about your cooking game, and suggestions on how to improve it, providing different points of view about the virtual ingredients, cooking recipes and preparation procedures.
- Create different levels with compelling rewards in each level. Cooking game players would like to see levels with different types of rewards [14]. This could consistently make players to perform better and grow interest in the game. Test the rewards with a sample from your target audience to see how the rewards relate to the virtual cooking experience and whether they provide the right motivation to play the levels.
- Include different categories of food and drinks in the game, offering a varied virtual menu so players would choose different meals from. For example, the first author, being from Nepal, would like to prepare and serve Nepali momos (a typical dish) to virtual customers in a cooking game. Customized menus would be a great way to make the game more interesting, fun, and ethnically diverse if that is one of the game objectives.
- Develop a multiplayer cooking game. We want it! We have not found any compelling multiplayer cooking game that we can play with friends. Socializing through games has an immense importance, especially

in this COVID-19 pandemic [13]. A group of friends playing a cooking game can virtually unite them and achieve familiar cooking goals together [13].

- Allow players to pick particular recipes from a recipe book, so they obtain a feeling of accomplishment and feel in control when they cook the recipe that they chose [15].

#### IV. CONCLUSIONS

Cooking games can be very interesting to play [3]. They can be useful for those players who do not know how to cook and want to learn how to do it, as cooking is an important life skill. Video games related to meal preparation could also be a good way to train people who want to be chefs and open any food business, helping them with experiencing cooking dishes virtually. Cooking games may also help people to learn a life skill beyond just playing any casual game. Cooking games appeal to players who prefer playing games and learn something while passing the time. In this COVID-19 pandemic, it is likely that this and other types of casual video games have helped people boost their mental health and spread positive issues about cooking [13].

Very few papers (e.g. [3, 5]) describe cooking games testing, where unit testing was useful to uncover game design problems in their cooking game, and testing recipes and their ingredients in the cooking game and testing the game iteratively was important. This paper presents some recommendations on testing cooking games, with the purpose of improving future cooking games.

Cooking games can be useful to represent specific food from different cultures, helping people learn traditional methods of cooking. Different people around the globe could exchange food recipes and cooking styles in some cooking games, as explained in [3]. In order to improve cooking games testing, testers should know the basics on cooking, and be aware of the importance of the game's look and feel to evoke meaningful and compelling culinary experiences.

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