

Gamification in Gastronomic Tourism: Study Case of Culinary Anthropology

¹Francisco Torres-Oñate, ²Cristina Páez-Quinde, ³Sonia López-Pérez, ⁴Xavier Sulca- Guale

Abstract

This current research aims to develop a Software Art product based on gamification in order to promote the creativity of culinary anthropology of the students of the Tourism and Hospitality Major of Universidad Técnica de Ambato, as well as implementing a visual digital-artistic communication medium that allows creating new recipes, techniques, and assemblages of Ecuadorian gastronomy while maintaining the authenticity of the Ecuadorian food heritage. This research work is the compilation of the most consumed and traditional recipes of the four regions of Ecuador; Coast, Andean, Amazon, and Insular, so that the implementation of gamification is proposed to make artistic creations combining ingredients and innovative techniques based on technological tools that promote gastronomic tourism. Cooks guided by their instinct, good taste and interest in experimentation will decide which combinations they want to develop. Within the gamification in gastronomic tourism, the starting point begins from a food database which has been characterized through their basic organoleptic properties (color, solidity, sweet, salty, acid taste, etc.) so that the ingredients susceptible to certain techniques are identified. The purpose of this research project is that all undergraduates of the Tourism and Hospitality Major obtain greater academic, artistic and professional progress through the creation of new recipes, techniques, and assemblies of dishes without altering their traditions and values. Software Art is the name of this project because it arises from both the educational and gastronomic potential of the Tourism and Hospitality Major. In addition to the great creativity that students have to make a product based on culinary anthropology.

Keywords- Gastronomy, Culinary Anthropology, ICT (Information and Communication Technologies), Gamification, Software Art and, Technological Acceptance Model (TAM).

^{1,2,3,4}Facultad de Ciencias Humanas y de la Educación, Universidad Técnica de Ambato, Ecuador. E-mail: ¹cf.torres@uta.edu.ec, ²mc.paez@uta.edu.ec

I. INTRODUCTION

Tourism is a field that is in constant growth, therefore the appearance of new technologies especially within gastronomic tourism has had a great impact among tourism experts and in all different areas [1]. Also, the search and quality of the information that exists on the web have given rise to the appearance of creativity in cooking classes. This allows any cooking expert to

start an innovative process, based on new cooking techniques, creating new recipes through the ancestral study of traditional dishes[2]. When talking about the creation of new recipes based on culinary anthropology, it is taken into account that this discipline studies the everyday phenomenon of food, as well as its preparation and presentation; combining the flavors that represent the culture of people in a certain way. Ecuadorian culinary richness, colors, flavors, cooking methods, and especially the products allow cooks to describe an economic, social, and cultural framework that faces several changes such as innovation through technological tools so that this set of elements will not disappear, but ancestral knowledge will be recognized through new techniques and procedures. Information and communication technologies based on the creation of new digital communication programs have been playing a very important and fundamental role in the field of gastronomy tourism for some years, thereby promoting the ability to offer products with greater complexity that can also satisfy the demand of the different types of diners regardless of each of their preferences [3], therefore, it is necessary to examine various sources of information before offering the diner a new food proposal, primary or elaborated product, lists of cultural, ancestral, or leisure activities [4]. From this perspective, all the available information is combined in this research work of Ecuadorian culinary anthropology for the development of a Software Art that promotes gastronomic tourism. This will allow positioning the flavors of Ecuador, recognizing the identity that products have not in a traditional way, but through the use of ICT [5]and the development of applications that promote new trends in recipe creation as well as in the use of new procedures both in cooking and in preparation. Throughout the ages, gastronomy has been considered as art history. Chefs and good food lovers state that Gastronomy is an art, in addition, a concept of this discipline is constituted as artistic, giving it a double meaning as artistic work that pleases the sensitivity evoking a set of meanings. The gastronomy of each of the regions of the world lies in the fact that it represents the culture of each people to which it belongs. Gastronomy provides us with delicious flavors and unique dishes. It can indirectly talk to us about customs and lifestyles [6]. The influence that gastronomy has in our society is very important. Our entire environment revolves around dishes and casseroles at all levels, both in children's nutrition, as in healthy diets, or in large haute cuisine restaurants [7].

In F. Farrelly et.al , they had modified their diet and palate through the years to find new flavors and new culinary techniques. Humankind is also in an era whose gastronomy is richer. They claimed that experts mix all possible flavors, sweet with salty, textures of different substances so that the culinary art of different countries around the world was very interesting for people's nutrition because the kind of food people eat, how it is cooked and where people eat it has to be taken into account. [7].

Culinary Anthropology studies the understanding of the tradition and culture of a particular place, encompassing food, food, and nutrition. A closely linked activity is the act of cooking that involves sharing the preparation of food, where the choice of these foods will be motivated by special dates and festivities where the inheritance or heritage of that certain society intervenes [8].

The culinary heritage of a country determines its identity, customs, and cultural expressions, aspects that have been an attraction from the tourist perspective so that it imposes a gastronomic trend throughout the world. Food is not only tasted by the organs of the senses but by its history, value, and tradition, the experience itself that accompanies the act of eating [9].

Creativity is a conjunction of two key elements, the "will" to do something new and the "ability" to carry it out. The will encompasses a way of life, a state of mind, an eagerness to search,

perseverance at work; will is called "the soul of creativity." The ability is the professionalism of the creator, i.e. the conjunction of the technique and the knowledge that the creator possesses. Culinary techniques [10] are creative ways of preparing food and the way you make it depends a lot on culture. They are also adequate procedures to avoid losing your food. Within the process of creating a new dish [8] mention that the evolution of an idea, flavor, texture, or temperature can lead to unexpected places, finding wonderful or perhaps intangible possibilities for the diner. The emergence of a new dish can come from a new technique, concept, texture, or ingredient, through the adaptation or deconstruction of an existing dish. Eating habits and patterns, as well as culinary and gastronomic practices, have changed considerably [11].

The arrival of virtual reality augmented reality and mixed reality technologies are configuring a new environment in which physical and virtual objects are integrated at different levels, [12]. Customers experience the panorama is evolving into new types of hybrid experiences with the development of portable and corporate devices, along with highly interactive and virtual connections. Research allows academics and managers to rank all current and potential technologies that can support or enhance customer experiences, but it can also generate new experiences along the customer journey [13]. Recent technological developments are changing the ways that people experience the physical and virtual environments. Specifically, Virtual Reality (VR) is likely to play a key role in various industries. [5]. The wave of megatrends, including rapid change in globalization and technological advancements, is creating new market forces. For any organization to survive and thrive in such an environment, innovation is imperative. Innovation is about the actual implementation of new ideas or technologies to create new value in fundamentally different ways than in the past [14]. The use of smart tourism technologies.

II. MATERIALS AND METHODS

This project was supported by an experimental investigation based on the ADDIE methodology, focused on five phases: analysis, design, development, implementation, and evaluation. An analysis of the definitions related to gastronomic tourism was carried out as well as the approach by parts to obtain new knowledge in the area of culinary anthropology. In addition, the situations and needs of the kitchen were studied. A software art design was developed for the implementation of the gastronomic creativity of the student. Any user is able to elaborate and create a new product or recipe in the field of gastronomy through this program.

The experimental research approach rationally explains the functions of the Software Art Program that helps in the development of intellectual qualities in the students of the Tourism and Hospitality Career as well as in the discipline, analysis and logical reasoning, positive values facilitating the development of their creativity in accordance with intellectual and technological advances. Table 1 depicts materials used by undergraduates for the development of their graduation research projects.

Table 1. Materials used by undergraduates for the development of their graduation research projects

Materials	Description
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Software	Krita Software is the digital painting and illustration software based on the libraries of the KDE platform (international community that develops free software); designed as a digital illustration and drawing suite
Research sheets on primary food heritage products	The primary products research sheets collect all the necessary information to develop a recipe where quantities, products, preparation procedures, etc. are detailed. It is also an extremely important document in the kitchen because anyone who takes the technical sheet must make the dish under an established standard.
Research Population	Gastronomic laboratory of the Tourism and Hospitality Major of Universidad Tecnica de Ambato.

Research files on food heritage recipes.	Within the recipe files, the products, quantities and elaboration processes are detailed, in some cases much more information is included with an emphasis on the tradition of the dish; In addition, within the recipe file, all the necessary information is collected to standardize information on the processes to be carried out to successfully make the dish that any establishment develops.
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Source: Ministry of Culture and Heritage.

Software

Krita, a specialized program mainly in digital painting and graphic manipulation was used to make new designs of gastronomic dishes. It also helps to develop the chef's creativity in order to create new culinary techniques, both in the design of the presentation of the dish and in the ingredients. Krita supported this research, so the use of technology was done properly.

Research Population

Technology is strongly conditioned from its beginnings by the idea of development within innovation. The gastronomic laboratory of the Tourism and Hospitality Major at Universidad Tecnica de Ambato needed to incorporate the Software Art Program to encourage students creativity in the elaboration of new products or recipes. In addition to introducing the ideas of Futurism and showing certain ideas of visual presentation, the students requested to modify recipes according to their imagination, using the program to their interests.

Research files on primary products of the food heritage

The unit economic quantification by dishes allows budget control. This aspect is very complex in a traditional restaurant due to the diversity and dispersive references that are used, both in dishes and raw materials.

The product sheets are taken as a starting point in the preparation and cost of the final dish, in addition, these sheets standardized information for the preparation of a recipe such as; its scientific name, nutritional value, and uses. In the Cultural and Food Heritage webpage, the most used products and ingredients in the Ecuadorian cuisine are reported, so that they help to highlight its importance and care.

Research files on food heritage recipes

Traditional cuisine evolves towards a concept in which quality is increasingly important, that is why the recipe research sheet is necessary in order to know the way of preparation, nutritional value, and most representative uses. Also, it becomes valuable information on which the differentiation of a dish is based on.

Methods

This research project has a qualitative approach because it seeks the development of creativity in the kitchen for the development of gastronomic tourism with the undergraduates of the Tourism and Hospitality Major. The development of their creativity is sought through gamification in the service area due to the fact that the participants take cooking classes, making dishes, plating, and making new recipes.

III. RESULTS AND DISCUSSION

This current research turned into an innovative project which helps the growth of creativity so that it generates a hypothesis. In addition to developing new teaching methods that are related to technology and pedagogy, it facilitates the gastronomy Professor and students the development of new skills within the teaching and learning process. This will motivate and awaken students' interests, so it will allow the Gastronomy Professor to become a mediator by using the Art Software Program within gastronomy in student's own learning. Among the valid instruments for the evaluation of Software Art Technology, there is an extension called the Technological Acceptance Model (TAM)[15]. It provides a theoretical basis to understand and evaluate the acceptance of users towards new technologies. TAM is one of the most influential extensions due to its ease of use and usefulness. In addition, TAM focuses on the individual user of a computer with the concept of "perceived utility"[16] and with expansion on more and more factors to explain how a user "perceives utility" and ignores the essentially social processes of development and implementation of information systems.

TAM starts from the premise through the analysis. It can be inferred if a society is more predisposed to incorporate novelties or if on the contrary, it is conservative. It is a tool used to know the expectations and acceptance of a new introduction. Furthermore, TAM is a modified tool to determine the effects, the ease of use, and its usefulness of the dimensions of culture in the use of technologies. It also analyzes how the population reacts, satisfying the user's needs[17].

The results obtained by using Art Software in cooking classes are presented in Table 2 and Figure 1.

Table 2. Use of SoftwareArt in Cooking classes

Option	Frequency	Percentage
Never	0	0%
AlmostNever	1	2%
Occasionally	13	26%
Almostallclasses	25	50%
Allclasses	11	22%
Total	50	100%

As established in the following statistical graph, 50% of the students surveyed mention that they would like to use Software Art frequently in cooking classes because it would help the development of creativity and the implementation of new products, while 2% state that they would hardly use the program because it would take time away from them.

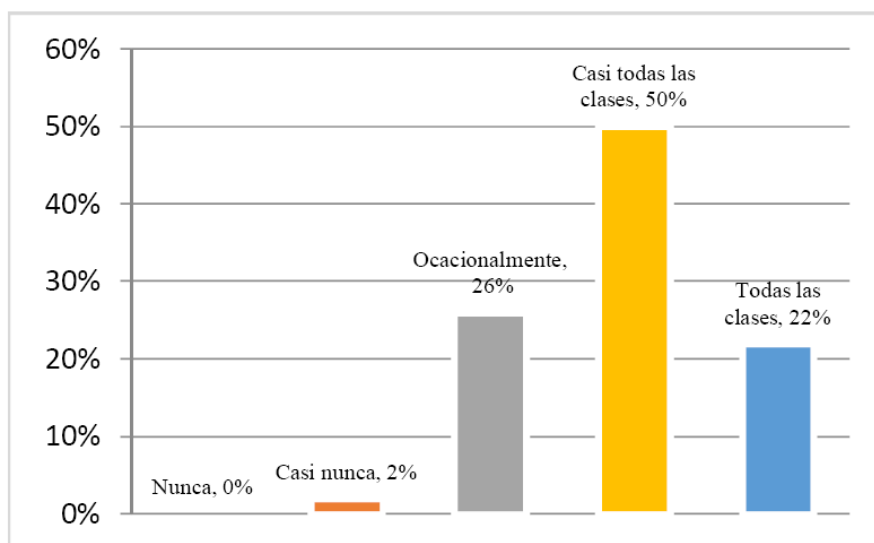


Figure 1. Use of Software Art in Cooking Classes

Most students’ state that the implementation of Software Art in the cooking classes will often help their academic development relatively as well as it motivates students to use new applications for their creative development.

How important do you consider creativity in the cooking classes for the development of gastronomic tourism?. Table 3 shows that the importance of creativity.

Table 3. Importance of creativity

Option	Frequency	Percentage
Not important	0	0%
Less important	0	0%
Neutral	2	4%
Important	4	8%

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Very important	44	88%
Total	50	100%

According to the statistical graph (Figure 2), 88% consider that creativity in the cooking classes is very important because new recipes and new dishes can be developed through creativity, while 4% consider that creativity is equitable and that it would not affect the cooking classes.

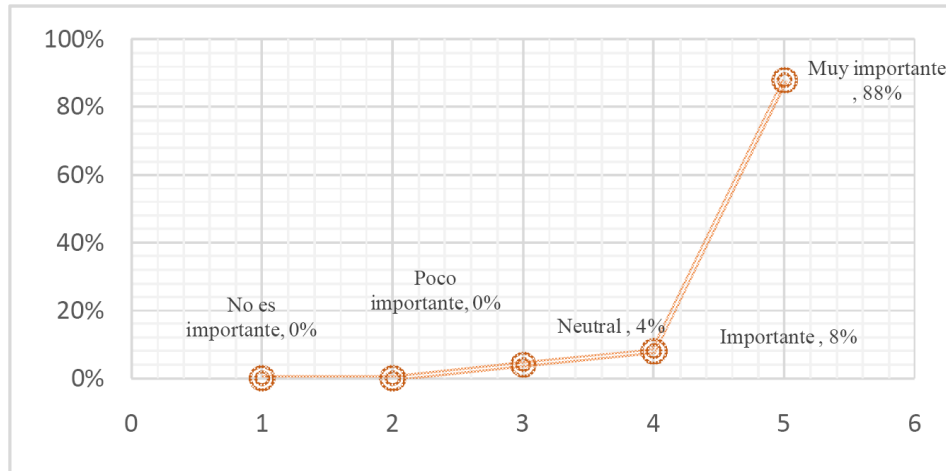


Figure 2. Importance of creativity

Source: Undergraduates of the Tourism and Hospitality Major.

Consequently, according to the data obtained, it is known that creativity in the cooking classes is very important. In addition, cooking is a complementary part of their studies, therefore, the importance of creativity is fundamental in their academic development.

How important do you consider the implementation of software art in the cooking classes?

Table 4. Software Art implementation in the cooking classes

Option	Frequency	Percentage
Notimportant	0	0%
Lessimportant	0	0%
Neutral	10	20%
Important	22	44%
Veryimportant	18	36%
Total	50	100%

According to the survey carried out to the students of the Tourism and Hospitality Major (shown in Table 4 and Figure 3), 44% consider that the implementation of Software Art within gastronomy is of great importance. They also mention that it will help in a large percentage to the development of creativity and the realization of new products and plate assemblies.

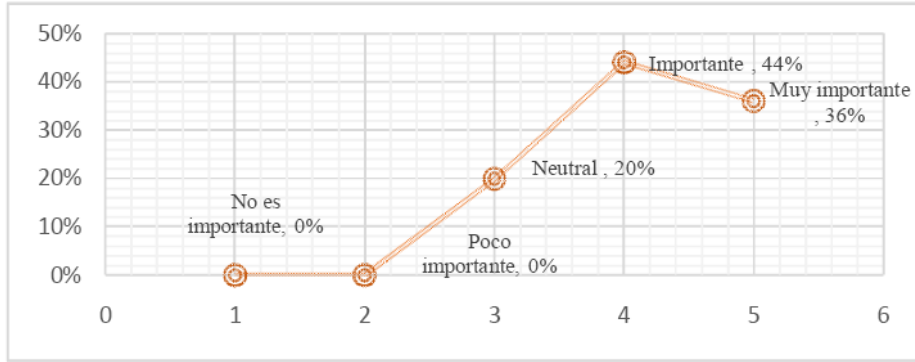


Figure 3. Implementation of Software Art in the cooking classes

In summary, the people surveyed state that the implementation of Software Art within gastronomy is of great importance because it helps the development of creativity and motivates students to make new products to contribute to the kitchen. With the result of the data of the survey, it is known that undergraduates of the Major are motivated to carry out Software Art. They also state that the implementation of this application is of great importance for the development of creativity within the gastronomy area.

CONCLUSIONS

Krita software was the tool applied for the development of the Software Art which allows designing, creation, and innovation products. Furthermore, this program helps to develop new working styles by modifying different techniques used during the preparation of a dish. On the other hand, any chef can develop new recipes and implement them in his/her work. The creativity of cooking classes is very important for the development of gastronomic tourism based on an analysis of new culinary techniques. Among these techniques, the avant-garde and molecular gastronomy (use of edible chemicals) stand out. This research seeks to apply in a practical way, as well as explain, the physical and chemical transformations that occur in the ingredients when cooking, it is a modern style of cooking that is practiced in laboratories. In addition, the new culinary techniques used are carried out by the user's creativity with the support of new technologies. Finally, a visual artistic-digital communication medium was implemented for the expression of new creations; artistic expression is in some way a response to the need to communicate or express an idea or concept on the part of the artist, a style, a particular vision of the products that are made; explaining that visual-artistic communication is the emergence of new inspirations, so it was necessary to implement Software Art.

Acknowledgment

Thanks to the Technical University of Ambato, to the Department of Research and Development (DIDE, acronym in Spanish) for supporting our research project, Sustainable Innovation of Ecuadorian Local Cuisine with a Focus on Culinary Anthropology and Gastronomic Tourism.

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AUTHORS' INFORMATION FORM

First Author – Information

Name : Francisco Torres-Oñate
Designation : Research teacher
Department : Facultad de Ciencias Humanas y de la Educación
University : Universidad Técnica de Ambato
Mail ID. : cf.torres@uta.edu.ec
Contact No. : 593999765533
Course : Magister
Residential Address : Santa Rosa, Ambato-Ecuador

Second Author – Information

Name : Cristina Páez Quinde
Designation : Research teacher
Department : Facultad de Ciencias Humanas y de la Educación
University : Universidad Técnica de Ambato
Mail ID. : mc.paez@uta.edu.ec
Contact No. : 593995301659
Course : Magister
ResidentialAddress : Letamendi y San Cristóbal, Ambato-Ecuador

Note: Should indicate corresponding author as CA



Francisco Torres Oñate (Francisco Torres O.) obtained his Bachelor's degree in Gastronomic Management from Escuela Superior Politécnica de Chimborazo. Then he obtained his Master's degree in Food processing from Agrarian University of Ecuador. Currently, he is a **lecturer at the Faculty of Human Sciences and Education, University Technical of Ambato**. His specializations include Heritage cooking, Enology. His current research interests are Gastronomic Tourism, culinary anthropology, Gastronomic Trends



Cristina Páez-Quinde obtained her Bachelor's degree in Computer Science from Catholic University of Ambato. Then she obtained her Master's degree in Tools for university teaching management and practice, Research professor at the Facultad de Ciencias Humanas y de la Educación of the Universidad Técnica de Ambato. Currently, she is the main coordinator of the research Techno-Emotional Cuisine And The Human Senses Laboratory Case Study: Ecuadorian Food Heritage. Her specializations include Tourism and semantic web, Education and technology, Big Data, artificial intelligence.

***Date of Birth:10/Oct/1988**

***Year of Registration: 2020**

***Designation, Working details (Department, College Name &address), photographs are required**

***Author's full name must (i.e, Expansion of initials)**