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Graphic Design

GRAPHIC DESIGN AND SUSTAINABLE DEVELOPMENT

SUPPORTING AGRICULTURE IN DEVELOPING COUNTRIES THROUGH AN ADAPTABLE DIGITAL ASSISTANT: DEMETER

Lucía Sanz Torres(*)

Abstract. This work aims to design a digital assistant that supports the sustainable development of agriculture in developing countries, especially focused on rural producers. This is a project that includes all the research and analysis of the current situation of farmers in these countries, the prototyping and design of a digital assistant and the development of an appropriate image for this fictitious project.

This project aims to defend graphic design as an effective tool within the action plans of the United Nations (UN) seeking to promote its Sustainable Development Goals (SDGs).

In the first part of the work the project, its objectives and the topic are contextualized. Here we justify the real need for a project of these characteristics and the role of graphic design in it. Then we move on to the development phase of graphic design applied to a digital assistant: from the first sketches to the final interface.

The evolution of this work corresponds to the graphic conclusions drawn from the research and its respective chromatic, typographic and conceptual application. Also, with the development of a virtual assistant prototype, the development of a corporate identity and the presentation of the final results.

Keywords: Graphic design, sustainable development, adaptable digital assistant, agricultural support, developing countries, digital innovation in agriculture; human-centered design.

Resumen. Este trabajo tiene como objetivo diseñar un asistente digital adaptable que apoye el desarrollo sostenible de la agricultura en los países en vías de desarrollo, especialmente de los productores del medio rural. Se trata de un proyecto que recoge toda la investigación y análisis de la situación actual de los agricultores en dichos países, del prototipado y diseño de un asistente digital y de la elaboración de una imagen adecuada para este proyecto ficticio.

Este proyecto pretende defender el diseño gráfico como una herramienta eficaz dentro de los planes de acción de la Organización de las Naciones Unidas (ONU) buscando impulsar sus Objetivos de Desarrollo Sostenible (ODS).

En la primera parte del trabajo se define el proyecto, sus objetivos y se contextualiza el tema, aquí se justifica la necesidad real de un proyecto de estas características y el papel del diseño gráfico en él. Después pasamos a la fase de desarrollo del diseño gráfico aplicado a un asistente digital: desde los primeros bocetos a la interfaz final.

La evolución del trabajo corresponde con las conclusiones gráficas extraídas de la investigación y su respectiva aplicación cromática, tipográfica y conceptual, con la elaboración de un prototipo de asistente virtual, el desarrollo de una identidad corporativa y la presentación de los resultados finales.

Palabras clave: *Diseño gráfico, desarrollo sostenible, asistente digital adaptable, apoyo a la agricultura, países en desarrollo, innovación digital en la agricultura; diseño centrado en el usuario.*

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1. INTRODUCTION AND OBJECTIVES

The world population, which will exceed 9 billion by 2050, faces a major challenge in agricultural production. According to the International Fund for Agricultural Development (IFAD), it will be necessary to double agricultural production, reduce food waste and create sustainable and efficient food systems (IFAD, 2024). In developing regions such as sub-Saharan Africa and parts of Asia, small-scale production accounts for up to 80% of total production, but most rural residents lack resources, finance, education and infrastructure.

Climate change particularly affects crops in these rural areas, where residents have limited options for adaptation. In response to these needs, the United Nations Sustainable Development Goals (SDGs) emerged in 2015 with the mission on ending poverty, protecting the planet and ensuring peace and prosperity for all by 2030. Their goal number 4, quality education, is of vital importance to ensuring sustainable development (UN, 2018).

Despite the efforts of organisations such as IFAD to support rural producers and connect them to markets, agricultural education has not been sufficiently integrated into their action plans.

It is necessary to promote agriculture in rural areas through an effective, practical and understandable educational system. This education would promote rural economic development, adaptation to more complex technologies and action effectiveness against climate change.

This paper is the result of a Bachelor's Degree Final Project developed from February until June 2024.

The conclusions obtained from the state of the art will guide the graphic development, highlighting the importance of a personalized user experience through artificial intelligence and the use of visual elements that facilitate user identification and trust.

1.1. OBJECTIVES

Main objective:

- To design a prototype of a customizable digital assistant that advises and supports farmers in rural areas of developing countries.

Secondary objectives:

- Use graphic design as an effective tool in UN action plans.
- Promote the UN Sustainable Development Goals through graphic design.
- Contribute to the DIGITALISATION of agriculture.
- Design an identity and corporate image suitable for the project and the assistant.
- Adapt the design of the digital assistant to the users.
- Develop an effective and understandable line of communication between the assistant and the user.
- Promote access to information for rural communities.

2. METHODOLOGY

To achieve the established objectives, it is necessary to propose a strategy that helps organize the work phases necessary to achieve an optimal result. This proposal consists of three fundamental phases that have helped carry out this project:

First is the research phase about the situation of farmers in developing countries, their needs and the active projects that are being carried out in terms of education. To do this we base ourselves on the reports published by International Fund for Agricultural Development (IFAD) and the United States Agency for International Development or any successor agency (USAID). Once the data obtained in the previous phase has been analysed, a strategy for developing a digital assistant prototype and defining the technical specifications of this work are established. The last phase corresponds to the final development of the project, in which the entire visual part of said assistant is created, its corporate image, web design and its possible applications in different formats.

During the research process of this project, several different alternatives were analysed to achieve the best result within the time constraints of the project.

Initially, the design of the assistant was thought to be 3D modeled in Blender. The Blender software is a tool for creating 3D graphics. This software enables the production of high-quality animations, simulations, rendering, and video editing (blender.org). After carrying out several modeling tests, it was concluded that the expected results were not being obtained. So, we switched to the Adobe Illustrator program, in which most of the graphic development of this project was carried out.

Figma is another graphical tool that allows you to create, prototype and collaborate on user interface designs in real time (figma.com). In our case was used to prototype the application, some graphic resources and images were processed in Photoshop and the final dossier was laid out in Adobe InDesign.

After researching the theoretical framework and the state of the art it is necessary to increase agriculture in rural areas of developing countries through an effective, practical and understandable agricultural education system.

This education would favor rural economic development, adaptation to more complex technologies and facilitate action against climate change.

There is a real need in the world for a project like this and graphic design can be used as an effective tool in the creation of a new training system to assist the most vulnerable farmers.

The aesthetic concept of this project is inspired by the classic symbols of agriculture. The figure of the Greek goddess Demeter has been used as a reference for the naming. The rest of the image has been decided to revolve around the symbol of this goddess: the bee. The bee has been used as a reference in the color palette and the creation of the geometry of the graphics, with a grid inspired by the shape of honeycombs.

3. RESULTS

Image 1: Own elaboration.

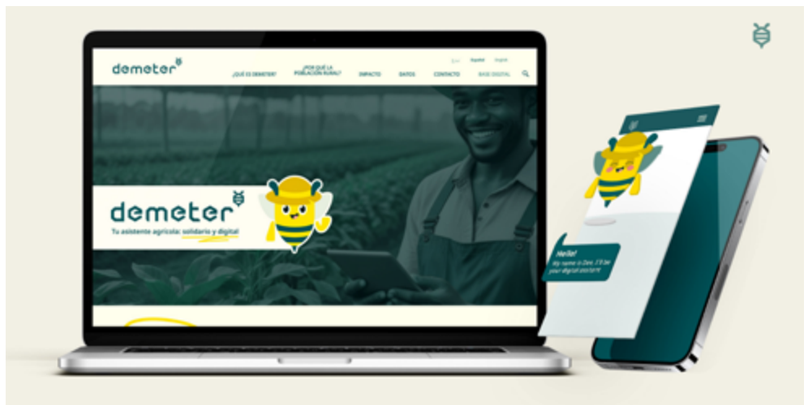

Image 2: Own elaboration.

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Image 3: Own elaboration.

Image 4: Own elaboration.

4. CONCLUSIONS

After completing the project, the objectives established at the beginning have been reviewed in order to design a prototype of an adaptable digital assistant, to be able to correctly transmit the values, mission and vision of the project and contribute to the support of farmers in rural areas.

It should be noted that in this project only a prototype could be developed since doing a detailed investigation requires much more time and resources. This project is intended to be continued in the future and opens a possible new line of action.

However, it is concluded that all established objectives have been achieved, creating a digital assistant that helps boost the crops of the most vulnerable farmers. Extensive research has been developed that supports the project, its technical aspects have been defended properly and the final graphic results have been successfully developed

4.1. PERSONAL APPRAISAL

It will end with a personal critique of the work, highlighting possible aspects to improve or develop in the future. Highlight aspects of the work that have been surprising and should be highlighted.

This work has been a challenge from the beginning. Web design and development, as well as UX design, were not branches of graphic design that we had mastered. However, with time and dedication we have learned a lot about these disciplines and this knowledge has helped me have a more multidisciplinary vision of design.

As mentioned in the Resources section, a 3D design course was also carried out at Domestika. Before starting this project, we only had the most basic notions of Blender. However, and despite not having finally developed the 3D assistant, this research process has been very useful for me to improve my skills in Blender.

We can say that this task has been very enriching on a professional level and has served as practice for future jobs and working life.

Finally, one of my main personal motivations for carrying out this project was to demonstrate that graphic design can be used as a tool to intervene and improve people's lives. We feel very satisfied to be able to say that we have defended these ideas correctly.

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