

Utilizing Technology to Promote Food Sovereignty in Cuenca, Ecuador

An Interactive Qualifying Project Proposal

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Abstract

With the increased popularity of Information and Communication Technologies (ICTs) in agriculture, we focused our research about what ICTs could do for a rural Ecuadorian organization, Cultivando el Futuro (CeF). CeF is an initiative that distributes seedlings and hosts educational webinars for members to promote food sovereignty. Their current Facebook page is not an effective platform for distributing this information. Our goal was to evaluate CeF's current platform and then propose a platform to help more members develop their agricultural practices. Through Facebook Insights, surveys, and interviews, we were able to compare ICTs and decide a website would be the best fit for CeF.

Acknowledgements

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Executive Summary

Information and Communication Technologies (ICTs) have become increasingly popular in the agricultural industry. They have been deemed imperative to the growth of agricultural development because they offer access to real-time knowledge that can help to improve productivity and effectiveness in the agricultural sector (The Earth Institute & Ericsson, 2016; ICT in Agriculture, 2017). One organization that can benefit from implementing ICTs is Cultivando el Futuro (CeF). CeF is an agricultural initiative created by Councilwoman Marisol Peñaloza in the rural parish of Sayuquí, Ecuador. The goal of CeF is to support families and strengthen the local economy of this Cuenca community through seedlings donations and informative video webinars to promote food sovereignty.

Currently, CeF operates through a Facebook page that acts as a central hub for all the organization's information. For example, the recorded Zoom Webinars that CeF holds are located on this page, along with pictures from community events. Although the Facebook page has brought a lot of attention to CeF, the page is not suited for the organization and its level of growth. To combat this problem, we have researched various ICTs, such as websites, SMS messaging, automated calls, and e-learning webinars, that CeF could utilize. We integrated the principles of these ICTs with CeF's goals and objectives to create a holistic platform for the organization.

Our objectives for discovering what ICT(s) would work best for CeF are as follows:

1. Collect data from CeF Facebook Insights.
2. Gather information on the type, content, and features of a platform from members of CeF.
3. Consult experts on user experience and platform recommendations for CeF.
4. Identify and select the best platform suited for CeF.
5. Design a mockup website for CeF.
6. Develop a mockup website and user manual for CeF.

We accomplished our objectives by analyzing the Facebook Insights, survey data from community members, and expert interviews. The analysis provided some remarkable insights detailed below.

We immediately identified the need for a platform revamp when Councilwoman Marisol Peñaloza, reported to us that “*a new platform is a necessity.*” Members of the CeF page confirmed Peñaloza's statement through their survey responses, where half reported that they did not find the Facebook page easy to navigate. Drawing from our interviews, we had one expert explicitly explain that the Facebook page is “*not effective,*” especially considering some of the goals mentioned by Councilwoman Peñaloza, like creating a seed bank. **The Facebook page that CeF currently operates is not a sustainable platform for information dissemination to members.**

Not only did one expert confirm that a website would be the best approach for this initiative, but this was also confirmed by comments from current members. One CeF member

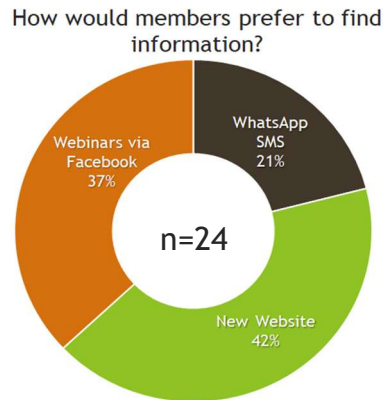


Figure 1. Comparing platform preference based on the survey responses (n=24).

stated anonymously in their survey response, “I like the content that is available, but it would be good to have your own site where you would be able to share experiences, knowledge, and to clarify any questions we might have.” This response was supported by data collected about how members prefer to find information, illustrated in Figure 1, seen on the left. Out of 24 responses, 10 members deemed a new website to be what they preferred to see most as a new platform. Considering the drawbacks of the Facebook page, **we made the decision that a website will be the most effective platform for CeF.** The purpose of the website is to push information out more effectively to members of CeF.

The Facebook Insights also provided noteworthy information. Facebook tracks the most popular days and

times for how often people engage with posts. This includes members of CeF, or any person who comes across this information on their timeline. **We found that Tuesdays and Saturdays at noon or 2pm are the most popular times to post based on how many people see the post per day or hour.** The final piece of data pulled from the Facebook Insights is what the people are accessing. Figure 2 displays the total amount of times people liked, commented, or shared any post over a six-month period. **Most people tend to gravitate to photos when on the Facebook page.** The second most viewed post type is videos. These two visual components of the organization and platform will be critical to include in our mock-ups to create an engaging website for current and prospective members.

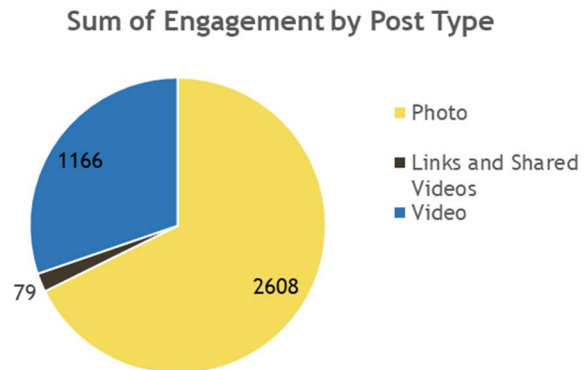


Figure 2. Summary of how many people interacted with the CeF Facebook page by post type.

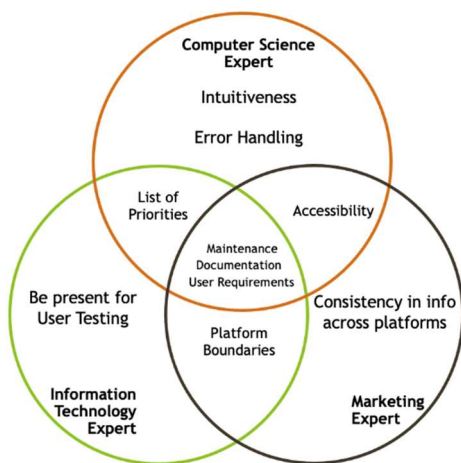


Figure 3. Comparison of themes discussed in expert interviews.

Alongside the Facebook data, we conducted three expert interviews. To analyze this qualitative data, we transcribed and coded each interview to categorize the information we learned. We created a Venn Diagram (Figure 3) to emphasize the main overlapping themes between the three interviews: maintenance, documentation, and user requirements.

Maintenance and documentation contribute to the efficiency and consistency of a website. The same can be said for documentation; detailed instructions pertaining to general upkeep of the website can increase the efficiency of the maintenance of the site by having a user guide for reference.

Additionally, user requirements emphasize efficiency and aesthetic engagement strategies. Even

though all our experts stated that aesthetics are not as important as the efficiency of the website,

it is still important to consider that learnability and intuition of a website can be affected by its appearance.

We used this information to create two deliverables: a user manual and a website mock-up. We found that all the experts in each of the disciplines encouraged creating a user manual so that when this IQP concludes, another IQP group or one of the CeF IT Technicians can pick up where we left off with ease. We summarized the user tasks recommended by the experts, survey responses, and our sponsor into a checklist of what beneficiaries want to see and what administrators would like to do. This checklist was accompanied by an additional checklist for creating a user manual and mock-up website. These checklists were used as guides in the deliverable design process. Below is a mockup of the homepage for a website in WordPress (Figure 4). We chose WordPress to create the mockups based on recommendations from our expert interviews and features WordPress offered within their free plan. Our mockup includes a:

- 🍃 Navigation bar with four tabs based on the user requirements.
- 🍃 Search bar to locate information easily.
- 🍃 Eye-catching cover page based off recommendations from our sponsor.



Figure 4. Website mockup of a potential homepage design using WordPress.

With this revamped digital presence, members of CeF will have a more central site to access everyday information about their organization. It will also be more accessible by providing easier searchability of content for prospective new members, which will help CeF expand its network. We suggest that CeF looks for potential partnerships with similar agricultural programs, in addition to the website, to broaden their scope and attract new members. Within the website itself, we suggest the use of YouTube to house all video webinars for easy access and simple embedding to their new site or any other future sites.

Cultivando el Futuro is a great example of how rural communities can grow together using ICTs. For this organization, ICTs will help to promote the production of rural farms and food sovereignty within their community. As of now, we have provided Cultivando el Futuro with a baseline from which they can grow into ICTs to aid their organization. The long-term implications of our work allow Cultivando el Futuro to continue to grow and adapt to more effective and convenient ways to engage its members.

Resumen ejecutivo

Las tecnologías de la información y la comunicación (TICs) se han vuelto cada vez más populares en la industria agrícola. Se han considerado imprescindibles para el crecimiento del desarrollo agrícola porque ofrecen acceso a conocimiento en tiempo real que pueden ayudar a mejorar la productividad y la eficacia en el sector agrícola (The Earth Institute & Ericsson, 2016; ICT in Agriculture, 2017). Una organización que puede beneficiarse de la implementación de las TICs es Cultivando el Futuro (CeF). CeF es una iniciativa agrícola creada por la concejal Peñaloza en la parroquia rural de Sayuasí, Ecuador. El objetivo de CeF es apoyar a familias y fortalecer la economía local de esta comunidad Cuencana a través de donaciones de plántulas y seminarios webs informativos para promover la soberanía alimentaria.

Actualmente, CeF opera a través de una página de Facebook que actúa como un eje central para toda la información de la organización. Por ejemplo, los seminarios web grabados por Zoom que realiza CeF se encuentran en esta página, junto con imágenes de eventos comunitarios. Aunque la página de Facebook ha atraído mucha atención a CeF, la página no es adecuada para la organización y su nivel de crecimiento. Para combatir este problema, hemos investigado varias TICs, como sitios web, mensajes SMS, llamadas automáticas y seminarios web de aprendizaje electrónico, que CeF podría utilizar. Integramos los principios de estas TIC con las metas y objetivos de CeF para crear una plataforma holística para la organización.

Nuestros objetivos para descubrir cuales TIC(s) servirían mejor para CeF son:

1. Recopilar datos de CeF en Facebook Insights.
2. Recopilar información sobre el tipo, el contenido y las características de una plataforma de los miembros de CeF.
3. Consultar a expertos sobre la experiencia del usuario y las recomendaciones de plataforma para CeF.
4. Identificar y seleccionar la plataforma más adecuada para CeF.
5. Diseñar un bosquejo de un sitio web para CeF.
6. Desarrollar un bosquejo de sitio web y un manual de usuario para CeF.

Logramos nuestros objetivos mediante el análisis de Facebook Insights, los datos de la encuesta entregada a los miembros de la comunidad y las entrevistas a expertos. El análisis proporcionó algunos resultados y conclusiones notables detalladas a continuación.

Inmediatamente identificamos la necesidad de una renovación de la plataforma cuando la concejal Marisol Peñaloza, nos informó que *“una nueva plataforma es una necesidad.”* Los miembros de la página CeF confirmaron la afirmación de Peñaloza a través de sus respuestas a la encuesta, donde la mitad informó que no encontraron la página de Facebook fácil de navegar. A partir de nuestras entrevistas, un experto nos explicó que la página de Facebook *“no es efectiva,”* especialmente considerando algunos de los objetivos mencionados por la concejal Peñaloza, como la creación de un banco de semillas. **La página de Facebook que opera CeF actualmente no es una plataforma sostenible para la difusión de información a los miembros.** Un experto no sólo confirmó que un sitio web sería el mejor enfoque para esta iniciativa, sino que también fue confirmado por comentarios de miembros actuales. Un miembro de CeF declaró anónimamente en su respuesta a la encuesta: "Me gusta el contenido que está disponible, pero sería bueno tener su propio sitio donde usted sería capaz de compartir

experiencias, conocimiento, y para aclarar cualquier pregunta que tengamos." Esta respuesta fue apoyada por los datos recopilados sobre cómo los miembros prefieren encontrar información,

¿Cómo los miembros prefieren encontrar información?



Figura 1. Comparación de la preferencia de plataforma basada en las respuestas de la encuesta (Respuestas = 24).

ilustrada en la Figura 1, vista a la izquierda. De las 24 respuestas, 10 miembros consideraron que un nuevo sitio web era lo que más preferían ver como una nueva plataforma. Teniendo en cuenta los inconvenientes de la página de Facebook, tomamos la decisión de que un sitio web será la plataforma más eficaz para CeF. El propósito del sitio web es enviar información más eficazmente a los miembros de CeF.

Facebook Insights también proporcionó información útil. Facebook rastrea los días y horarios más populares sobre la frecuencia con la que las personas interactúan con las publicaciones. Esto incluye miembros de CeF o cualquier persona que encuentre esta información en su línea de tiempo. **Descubrimos que los martes y sábados al mediodía hasta las 2 pm son los horarios más populares para publicar en**

función de la cantidad de personas que ven la publicación por día u hora. El último dato extraído de Facebook Insights es a lo que acceden las personas. La Figura 2 muestra la cantidad total de veces que las personas presionaron, “Me Gusta,” comentaron o compartieron cualquier publicación durante un período de seis meses. **La mayoría de la gente tiende a gravitar hacia las fotos cuando está en la página de Facebook.** El segundo tipo de publicación más visto son los videos. Estos dos componentes visuales de la organización y la plataforma serán fundamentales para incluirlos en nuestros bosquejos para crear un sitio web atractivo para los miembros actuales y potenciales.

Agregado de participación por tipo de publicación

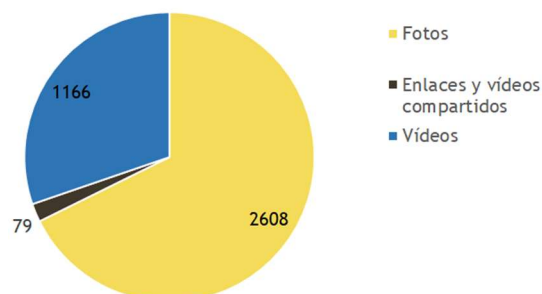


Figura 2. Resumen de cuántas personas interactuaron con la página de Facebook de CeF por tipo de publicación.



Figura 3. Comparación de temas tratados durante las entrevistas con expertos

Junto a los datos de Facebook, realizamos tres entrevistas a expertos. Para analizar estos datos cualitativos, transcribimos y codificamos cada entrevista para categorizar la información que aprendimos. Creamos un diagrama de Venn (Figura 3) para resaltar los principales temas compartidos entre las tres entrevistas: mantenimiento, documentación y requisitos del usuario.

El mantenimiento y la documentación contribuyen a la eficiencia y coherencia de un sitio web. Lo mismo puede decirse de la documentación; Las instrucciones detalladas relativas al mantenimiento general del sitio web pueden aumentar la eficiencia del mantenimiento del sitio al tener una guía del usuario como referencia.

Además, los requisitos del usuario enfatizan la eficiencia y las estrategias de participación estética. Aunque todos nuestros expertos

afirmaron que la estética no es tan importante como la eficiencia del sitio web, es importante considerar que la capacidad de aprendizaje y la intuición de un sitio web pueden verse afectadas por su apariencia.

Usamos esta información para crear dos formas de productos que entregaríamos a nuestros patrocinadores: un manual de usuario y un bosquejo del sitio web. Descubrimos que todos los expertos en cada una de las disciplinas favorecieron la creación de un manual de usuario para que cuando este IQP concluya, otro grupo de IQP o uno de los técnicos de CeF pueda retomar el lugar donde lo dejamos con facilidad. Resumimos los requerimientos de usuario recomendadas por los expertos, las respuestas de la encuesta y nuestro patrocinador en una lista de verificación de lo que los beneficiarios quieren ver y lo que les gustaría hacer a los administradores. Esta lista de verificación fue acompañada de una lista de verificación adicional para crear un manual de usuario y un sitio web modelo. Estas listas de verificación se utilizaron como guías en el proceso de diseño del producto. A continuación, se muestra un bosquejo de la página de inicio de un sitio web en WordPress (Figura 4). Incluye:

- Barra de navegación con cuatro pestañas según los requisitos del usuario.
- Barra de búsqueda para localizar información fácilmente.
- Portada llamativa basada en las recomendaciones de nuestro patrocinador.



Figura 4. Bosquejo del sitio web de un diseño potencial para la página de inicio utilizando WordPress.

Con esta presencia digital renovada, los miembros de CeF tendrán un sitio más central para acceder a la información diaria sobre su organización. También será más accesible al proporcionar una capacidad de búsqueda más fácil de contenido para los nuevos miembros, lo que ayudará a CeF a ampliar su red. Sugerimos que CeF busque posibles asociaciones con programas agrícolas similares, además del sitio web, para ampliar su alcance y atraer nuevos miembros. Dentro del sitio web en sí, sugerimos el uso de YouTube para albergar todos los seminarios web en video para un fácil acceso y una integración simple en su nuevo sitio o en cualquier otro sitio futuro.

Cultivando el Futuro es un gran ejemplo de cómo las comunidades rurales pueden crecer juntas usando las TICs. Para esta organización, las TICs ayudarán a promover la producción de pequeños agricultores y la soberanía alimentaria dentro de su comunidad. A de este momento, ya hemos proporcionado a Cultivando el Futuro una línea de base a partir de la cual pueden crecer en TIC para ayudar a su organización. Las implicaciones a largo plazo de nuestro trabajo permiten a Cultivando el Futuro seguir creciendo y adaptándose a formas más efectivas y convenientes de involucrar a sus miembros.

1. Introduction

Information and Communication Technologies (ICTs) have become increasingly popular in the agricultural industry. Research shows that the use of ICTs improves the agricultural outcomes of smallholder farms. Accessibility between information platforms and rural farmers leads to more success in agricultural production. There are many forms of ICTs that have been used to improve the crop yields and business endeavors of smallholder farms. For example, websites, SMS messaging or automated voice calls, mobile app systems, and video conferencing/e-learning are different types of ICTs that agricultural programs use to disseminate information. Technology use is proven to increase the productivity of rural farmers (ICT in Agriculture, 2017) (Sivabalan et al., 2013).

Latin America is a vast region with a variety of cultures and differing landscapes in which agriculture has become a major influence in the lives of Latin American citizens. In 2018, the Food and Agriculture Organization of the United Nations estimated that thirty-eight percent of land in Latin America is used for agriculture alone, allowing for Latin America to become a leading exporter in agricultural products. As the fifth largest agricultural exporter in Latin America, Ecuador is a vital contributor to the economy of the region (FAO, 2017). However, for a region heavily involved in agriculture, issues with food insecurity still occur. Over forty percent of rural Ecuadorians live below the poverty line (*Ecuador World Food Programme*, n.d.), and many of the members of smallholder farming families in rural Cuenca use their crops as both their source of food and income (M. Peñaloza, personal communication, November 18th, 2020).

Although food insecurity is a current issue in rural Ecuadorian areas, community leaders are organizing programs and initiatives to combat it. One notable example is Cultivando el Futuro (CeF), an organization operating out of Sayausí, Ecuador. CeF is an organization started by Cuenca Councilwoman Marisol Peñaloza to increase food sovereignty during the COVID-19 pandemic. The organization uses ICTs to organize seedling distributions, host webinars, and post pictures from their events. Even though CeF is actively using different ICTs, some areas of their technology use can be improved to consolidate and disseminate information more effectively for farmers of this region. CeF could utilize ICTs as communication platforms to effectively inform and connect their community.

The goal of this project was to support CeF in promoting food sovereignty and improving information dissemination within their organization's community. With ICTs' potential to improve agricultural outcomes, our project assists CeF in improving their methods of connecting with its members.

2. Background

In this section, we describe different Information and Communication Technologies (ICTs) and how they can benefit rural communities. We then highlight the impact of ICTs on smallholder farms in rural areas, and we detail the economic effect of smallholder farms on a global, national, and local scale. Finally, we discuss how ICTs can benefit Cultivando el Futuro (CeF) in their endeavors to connect their community to promote food sovereignty.

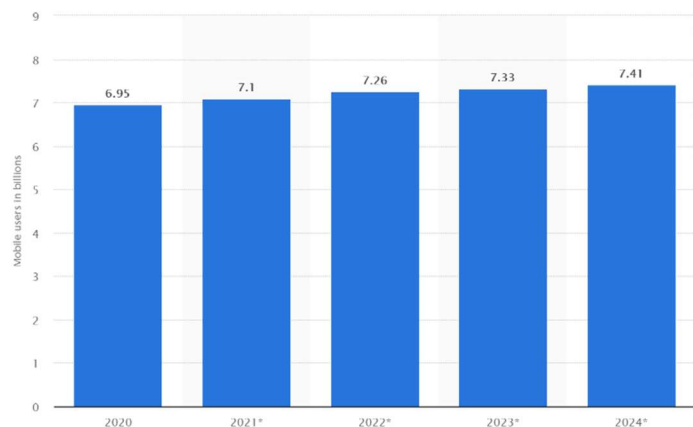
2.1. Information and Communication Technologies

Digital technologies, such as Information and Communication Technology, or ICTs, are rapidly reaching and connecting rural communities to the internet (Food and Agriculture Organization, 2019). Harnessing the potential of these technological tools can provide real-time knowledge to these disadvantaged members of society. The connectivity provided by the ICTs, which can give access to financial services, local and international markets, and the vast amount of knowledge available online, can increase their livelihoods (Sivabalan et al., 2013). The examples below show how rural communities can utilize ICTs to encourage growth and stability within their local economies.

Websites can be a central source of information for participants, interested members, and potential partners, while simultaneously aiding in marketing and outreach (Leprich, 2019). Organizations that utilize a website approach are reported to have an increase in engagement compared to organizations without (Kirk & Abrahams, 2017). A great example of an educational website for the dissemination of information is Lifelines India. Its slogan is “Knowledge services over your phone.” Users can visit their website to see blog posts regarding innovative agriculture, a photo gallery from the farms involved, and a section of frequently asked questions in order to provide immediate help to farmers (Food and Agriculture Organization, n.d. & Life Lines India, n.d.).

Another example is the use of SMS messaging or voice calls. These methods are an easy way to disseminate information for development because of the increasing access and convenience of mobile devices noted in Figure 5. This figure projects the number of mobile users over the next four years. In

Ghana, the Farmerline service has seen a positive impact in information distribution through automated voice calls and texts (Farmerline, 2020). They utilize these methods to send out weather information, farming advice, and recently shifted to notifying communities about COVID-19 (Farmerline, 2020). In Kenya, FarmIT is another SMS service that uses text messaging as one of its main communication sources (*FarmIT*, n.d.). The service provides farmers with information based on the crops they intend to grow and offers agronomic information based on the crop’s stage of growth (*FarmIT*, n.d.).



Details: Worldwide; The Radicati Group; 2020

© Statista

Figure 5. Forecast number of mobile users worldwide from 2020 to 2024 (in billions) (The Radicati Group, 2020).

Some ICTs also combine the use of voice calls with mobile app systems. The increased popularity of mobile apps directly correlates to the data presented above about mobile device usage. For example, KenCall Farmers' Information Service is a Kenyan service that provides agricultural advice and information from experts. Users can also ask questions, and answers are distributed either through the app itself, or through returned phone calls (Zhenwei Qiang et al., 2012). E-Price App is a Chinese-based app used to allow farmers and agri-businesses to compare prices of crops to surrounding businesses. It also provides real-time agriculture news and bidding, acting as a mobile marketplace for the community (Zhang et al., 2016).

Video conferencing and e-learning are additional, accessible ICTs. In a survey among female farmers in the rural area of Karnataka, India, sixty-six percent of surveyed individuals favored receiving agricultural information through television due to the audio and visual aspect of learning (Richa Govil & Garima Rana, 2017). These learning tools allow for agricultural communities to problem-solve common issues, as well as supplying educational content (Sultana et al., 2018). A successful outcome of e-learning is the Indian organization Vidiyal, partnered with UNESCO. This organization implemented an online learning system among three hundred rural women, providing them with a cellular phone and the capital to purchase a flock of goats. Informational sessions were provided through online learning seminars. The test group fared better in agricultural production and subsequent business efforts when they participated in seminar learning, along with their agricultural activities (ICT in Agriculture, 2017).

2.1.1. Engagement Strategies

The dissemination of information to rural areas through ICTs has proven to improve the productivity and lifestyle of rural farmers. There are various, recurring strategies that we have found in our research detailing the best ways to distribute information. We have categorized the main themes within these strategies to be efficiency, aesthetics/consistency, and flexibility.

Efficient platforms give clear directions where-users do not need to go to excessive lengths to navigate (Nielsen, 2020). The combination of system, information, and service quality are also to be highlighted in an efficient platform because these features lead to increased user satisfaction and intention to use (Zhang et al., 2016). Various reports determined that platform success rates have positive correlations when customers are strongly oriented with the site (Strotmann et al., 2017).

Aesthetics and consistency must also be considered when enticing viewers. Valuable and accurate information should be offered using common terms over technical jargon to increase the consistency of a site (Shen et al., 2019; Nielsen, 2020). Consistent information is more likely to satisfy users (Shen et al., 2019), but Nielsen notes that too much information presented on a page begins to compete with other information (Nielsen, 2020). Information needs to be prioritized and then sorted in a clean and navigable manner to create an appealing aesthetic (Nielsen, 2020). A user-friendly platform with an organized aesthetic promotes information access and use (Zhang et al., 2016). By creating this sense of uniformity through content and appearance, the platform begins to appeal to target-audiences (Strotmann et al., 2017).

Flexibility encompasses the idea of an adaptable platform. Highly interactive sites that involve more communication create an interpersonal environment, like how humans interact in real life (Shen et al., 2019). The user interaction and site reaction highlight ample flexibility in a platform. This also relates to keeping a site current and making sure users are always receiving up-to-date information (Nielsen, 2020). This is a strategy called content life cycle, which emphasizes the management of the content directly by ensuring that content aligns with what people are saying and doing (Wan Ahmad et al., 2018).

We must note how each of these features overlap and encompass the importance of a reliable platform. Information and communication technology is most effective when users can interact with ease. Now we will portray how rural economies exhibit characteristics that show how ICTs can improve the output of smallholder farms.

2.2. Local Economy and Agriculture

“There are an estimated 500 million smallholder farming households globally, who comprise a large proportion of the world’s poor living on less than \$2 a day” (World Bank, 2016). In order to increase the earnings of the poorest quintile of the population, it is two and a half times more effective to improve the productivity of the agricultural sector than the non-agricultural sector (World Bank, 2008). ICTs are imperative to the growth and sustainment of agricultural development because they offer access to real-time knowledge that can help to improve productivity and effectiveness in the agricultural sector (The Earth Institute & Ericsson, 2016; ICT in Agriculture, 2017). Today, more than half of Ecuador’s agricultural production, which represents 11.4 percent of the Gross Domestic Product (GDP), comes from smallholder farms. One of the most important aspects of smallholder farms is that they are an example of food sovereignty within Ecuador because they produce for themselves. The importance of food sovereignty is ingrained in Ecuadorian ideals, to the extent that the Ecuadorian Constitution denotes that “The Ecuadorian State shall promote food sovereignty,” (*Ecuador: 2008 Constitution in English*, n.d.). In the region of Cuenca, agriculture is of great importance to the community because it symbolizes their ideals (M. Peñaloza, personal communication, November 18th, 2020) and, in most cases, it is their only source of income (World Bank Group, 2013). *Cultivando el Futuro* highlights the significance that smallholder farms have in Ecuador, which is why its main objective is to promote food sovereignty.

2.3. Cultivando el Futuro (CeF)

Cultivando el Futuro (CeF) is supported by the World Connect USA², non-governmental organizations (NGOs), and the private sector (M. Peñaloza, personal communication, November 18th, 2020). The goal of CeF is to support families and strengthen the local economy of the rural communities of Cuenca. This initiative originally sought to help the local parishes most accessible from its base at Sayausí outlined in Figure 6.

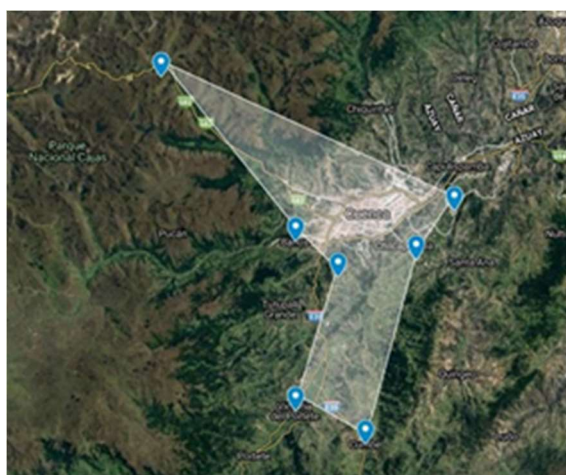


Figure 6. Locations of the original seven parishes (Looney, 2020).

Some of the ways in which CeF has been able to help smallholder farmers have been through seedlings donations and informative video webinars. As a result of these services, CeF has attracted active members from six different parishes (M. Peñaloza, personal communication, February 2nd, 2021). Peñaloza wants to increase the scope of CeF’s impact to support even more rural families by refining the system needed to disperse information and provide this integral support.

The current system CeF operates through is a Facebook page, and is used as a central hub for all information regarding CeF (M. Peñaloza, personal communication, November 18th, 2020 & *Cultivando El Futuro - Home*, n.d.).

Workshops, which are hosted on Zoom, are also live streamed and posted on Facebook. Some of the most recent workshops include titles such as “The Harmony of farms through medicinal plants,” “Healthy cuisine,” and “Finance education and Elaboration of Agroecological fertilizers” (*Cultivando El Futuro - Home*, n.d.). These workshops are directed towards rural families of Cuenca, and they teach methods and offer strategies to better cultivate and manage their agricultural capital.

Although the Facebook page has brought a lot of attention to CeF, Marisol and her team have noted that the Facebook page is not suited for the organization and its level of growth (M. Peñaloza, personal communication, November 18th, 2020). Integrating the themes we outlined above, of information and communication technologies, with CeF’s goals and objectives will create a holistic platform for the organization. Considerations regarding the cultural and agricultural foundations of the Cuenca area will be woven throughout our platform design to create an organic product for the community. We will dive into our methods on how we plan to utilize technology to promote food sovereignty in Cuenca, Ecuador in the following section.

3. Methodology

The goal of this project is to create an efficient and effective platform for the Cultivando el Futuro (CeF) initiative. The platforms currently used to connect with the rural communities of Cuenca are a Facebook page (589 member following) that houses local resources for the community, Zoom webinars, and a WhatsApp group. We plan to explore and provide ways for CeF to reach more Ecuadorian cultivators and connect with local parishes. To achieve this, we outlined the following objectives:

- **Objective 1:** Collect data from CeF Facebook Insights.
- **Objective 2:** Gather information on the type, content, and features of a platform from members of CeF.
- **Objective 3:** Consult experts on user experience and platform recommendations for CeF.
- **Objective 4:** Identify and select the best platform suited for CeF.
- **Objective 5:** Design a mockup website for CeF.
- **Objective 6:** Develop a mockup website and user manual for CeF.

3.1. Objective 1: Collect data from CeF Facebook Insights.

To achieve this first objective, we utilized the Facebook Insights available to the administrators of the CeF Facebook page. We extracted the following data from the Facebook Insights: post popularity by day and time, device usage, and age and gender of the users. Knowing that we could obtain this information from the Facebook Insights allowed us to condense our survey to avoid asking questions that resulted repetitive information.

3.2. Objective 2: Gather information on the type, content, and features of a platform from members of CeF.

For information we could not obtain from Facebook Insights, we developed a survey to ask more informative and qualitative questions to identify media and content preferences. This survey was conducted through Qualtrics. At the end of the Qualtrics survey, we shared our contact information if anyone wanted to provide more insights. Questions pertaining to members' opinions and suggestions about what/how they want to find, share, and receive content about CeF can be found in Appendix A. We distributed this anonymous survey following WPI's IRB standards (see Section 3.7) through the CeF Facebook page and their corresponding WhatsApp groups.

3.3. Objective 3: Consult experts on user experience and platform recommendations for CeF.

We contacted experts in media design and user experience to aid us in deciding what kind of information users prefer to see based on the type of platform they are using. Interviews were conducted with experts selected from the WPI faculty. We searched the directory for professors in the Foisie Business School and Computer Science department. Our focus was on professors with knowledge in Human-Computer Interactions and user behavior. We contacted six professors through email, and we connected with three of them. Interviews were conducted through Zoom calls and were recorded for us to refer to after the interview ended.

3.4. Objective 4: Identify and select the best platform suited for CeF.

Combining the input of experts alongside the personalized survey feedback and Facebook analytics, we were able to select a platform that will meet members' specific needs with the

essentials of platform design. Before the data from the survey feedback and Facebook analytics could be compared to the interview data, the interviews were analyzed.

To analyze the interviews, we transcribed them using Microsoft’s audio file to text transcription feature. These interview transcripts were then moved into a Google Doc to undergo an interview coding system. We developed a list of codes (found in Appendix B) for groups of information/sentences from the interviews based on themes from our background research. Two of our team members were assigned to each interview to code the information using the Google Docs comment feature. Once the interviews were coded, the information was reorganized by code into an Excel spreadsheet. Once the information was sorted by these codes, the information pertaining to each code was summarized using *Suggestion*, *Neutral*, and *Information* tags. The *Suggestion* tag pertains to recommendations from the expert, *Neutral* pertains to statements regarding good practices in platform development, and *Information* pertains to facts or thought processes the experts shared relating to our project. Table 1 shows a visual representation of how we organized the information where interview excerpts are the quotes from interviews and the summary column summarizes the information within the given tag. Once the data from the interviews were summarized, the information was compared to the results of the survey feedback and Facebook analytics.

Table 1. Model table for the interview coding process using the Maintenance/Documentation code.

| Interview Excerpt | Tag | Summary |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>“I think you have the capabilities on your team to develop it, but one of the things people don’t think to do is leave a user manual.”</p> <p>...</p> <p>“User studies. OK. Have to you have to do them early and often so if you have a draft of. ... here's the path that someone will go through.”</p> | <p><i>Suggestion</i></p> | <p>All of the professors emphasized leaving a user manual or some form of documentation for successors to reference. Part of the maintenance of the site will also be asking for users feedback constantly. Every page should include help for users. There should be different access levels</p> |
| <p>“it doesn't matter what platform you choose, it's going to be about the maintenance of it.”</p> <p>...</p> <p>“but if the end user the farmers are using mobile then it needs to be adapted in a way so that they're the ones who can see all the stuff,”</p> <p>”</p> | <p><i>Neutral</i></p> | <p>Being able to understand and maintain the site is important otherwise the site will become irrelevant.</p> |
| <p>“It wasn't technical maintenance, it was content maintenance. Right, so that might be something you gotta think about how easy that is gonna be to do.”</p> <p>...</p> | <p><i>Information</i></p> | <p>Both technical and content maintenance will be important however, content maintenance will be more relevant to future admins. Getting user feedback on functionality will uncover errors more quickly so they can</p> |

“You know you should try to
make the user.
Not be able to make errors so
prevent errors.
”

be addressed. Having someone
maintain the site won't be just a
cost to the organization it could
be a benefit to the organization
in terms of efficiency.

3.5. Objective 5: Design a mockup website for CeF.

After the platform type was decided, we created several mockups. Our sponsor sent us websites she liked for reference. These mockups were created using PowerPoint to emulate these sites. During the creation of these mockups, the themes discussed in our background were referenced to make sure proper design methods were used.

3.6. Objective 6: Develop a mockup website and user manual for CeF.

In our final objective, we transferred our PowerPoint website mockup to WordPress. This mockup website is unpublished because it is a template. Information on how this mockup website was created in WordPress can be found in our user manual in Appendix D. This user manual details how to get started with a free website through WordPress. It also details how to create YouTube playlists that can be easily embedded within the free website.

3.7. Ethical Implications

This project was approved by the Worcester Polytechnic Institute's Human Subjects Research and Academic Programs for the Right of Human Participants in Research and Training Programs (IRB). Refer to Appendix C to find more information about this approval.

4. Results and Analysis

In this section, the information we gathered from Facebook Insights, the survey responses, and expert interviews is compiled and analyzed. We organized our findings based on user insights from the Facebook Insights and survey data, followed by expert interviews. Finally, our analysis of this data was compiled to create a checklist that served as a guide in creating user manuals for the website mockup and other resource recommendations.

4.1. User Insights

4.1.1. The Current Platform

The Facebook page that CeF currently operates is not a sustainable platform for information dissemination to members. We immediately identified the need for a platform revamp when our sponsor and CeF founder, Councilwoman Marisol Peñaloza, reported to us that *“a new platform is a necessity.”* Members of the CeF page confirmed this statement from Peñaloza through their survey responses. Of the 24 members who submitted the survey, half of the responses reported that they did not find the Facebook page easy to navigate. Drawing from our interviews, we had one expert explicitly explain that the Facebook page is *“not effective,”* (E.V. Wilson, personal communication, February 9th, 2021) especially considering some of the goals mentioned by Councilwoman Peñaloza, like creating a seed bank.

Figure 7, presented on the right, contributes to the above claims about the inefficiency of Facebook. This graph displays how often users accessed the CeF Facebook page over the last eight months, while

comparing what device was used to access the site. We see a steep decline from phone users that begins in December 2020 and levels off through February 2021. This decline could be attributed to a few different reasons. It is possible that this decline could be due to the inactivity of CeF on Facebook throughout these months, due to holidays or a change in farming season. It could also be due to users losing interest due to the difficulty of navigability. No matter the circumstance, this decline in page access will have an impact on CeF’s post and information delivery.

4.1.2. The New Platform

Considering the drawbacks of the Facebook page, we have compiled data and made the decision that **a website will be the most effective platform for CeF.** Not only did one expert suggest that a website would be the best approach for this initiative, but this was also confirmed by comments from current members. One CeF member stated anonymously in their survey response, *“I like the content that is available, but it would be good to have your own site where you would be able to share experiences, knowledge, and to clarify any questions we might have.”*

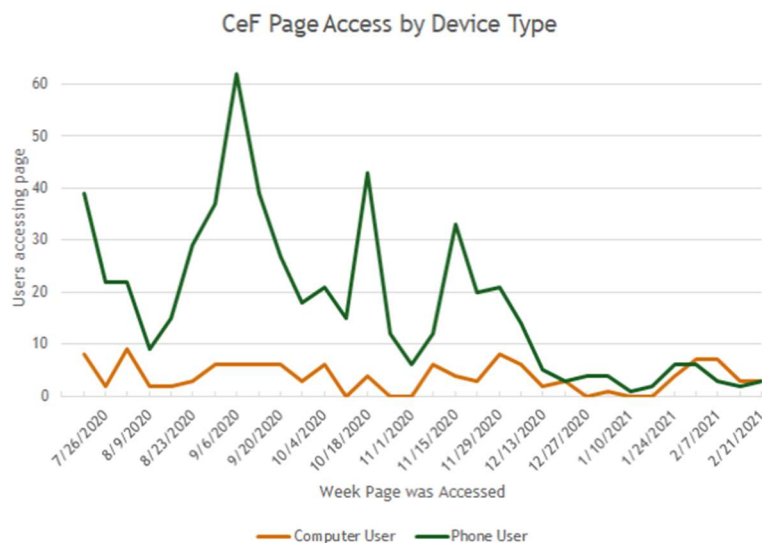


Figure 7. CeF page access over time by device type.

How would members prefer to find information?

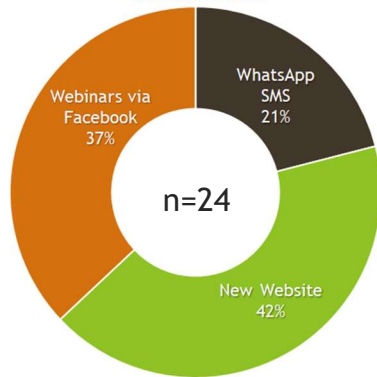


Figure 8. Comparing platform preference based on the survey responses (n=24).

This response was supported by the data collected about how members preferred to find information, illustrated in Figure 8, seen on the left. Out of 24 responses from CeF members, 10 responses deemed a new website to be what they preferred to see most as a new platform. Webinars via Facebook follow as the second most popular, but it must be noted that this is one of the current methods of delivery. We interpret this information to mean that members will want to see these webinars continued in the future, which is why we plan to integrate them into the new website.

To craft this website, we gathered information about who is currently accessing the Facebook, how and when they are accessing it, and what they are accessing. This data has been extracted from the Facebook Insights of the CeF page. These analytics are all based on 589 CeF Facebook followers. First,

we see below in Figure 9, that **the member demographic consists mostly of men and women between the ages of 25 and 34.**

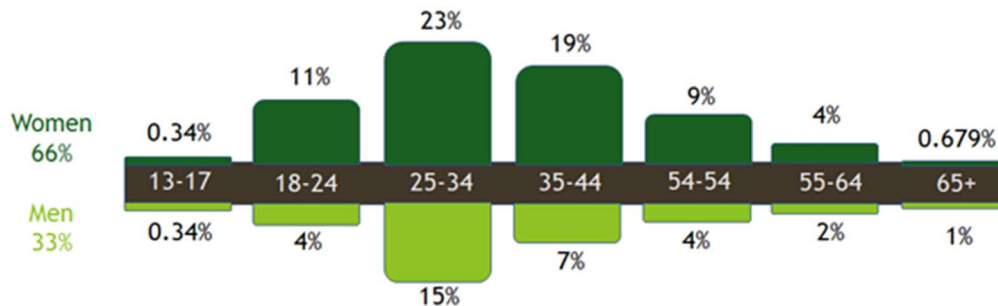


Figure 9. CeF Facebook page follower distribution by age and gender.

It is no surprise that **the overwhelming majority of this younger demographic most often accesses**

the CeF Facebook page with their smart phones, as seen in Figure 10. Of the 24 responses received, 19 members use smart phones. This graph also breaks down the shared and personal device profiles, with most members owning their own smart phone. Looking at the data from this perspective, 16 of 24 members own their own smart phone.

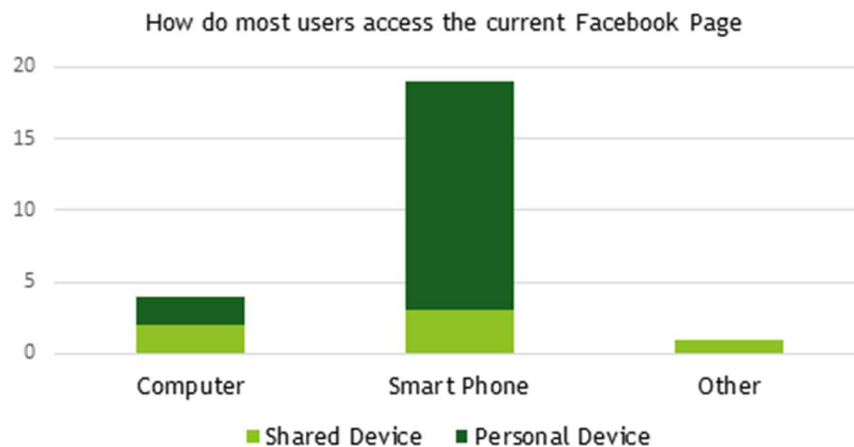


Figure 10. How CeF users access the current Facebook page by device (n=24).

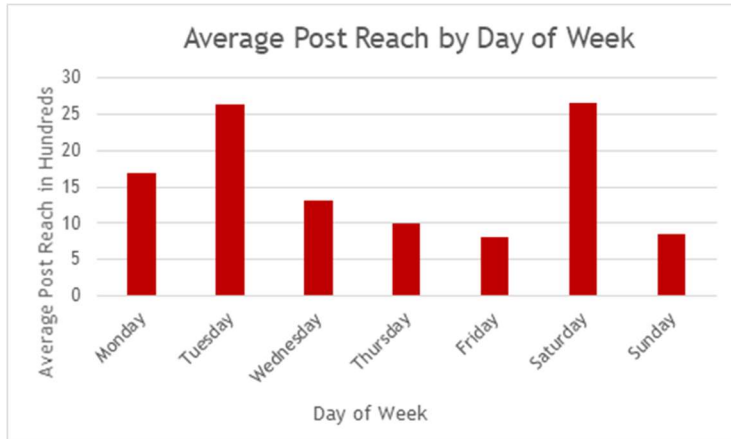


Figure 11. Average amount of people who viewed a CeF Facebook post by day of the week.

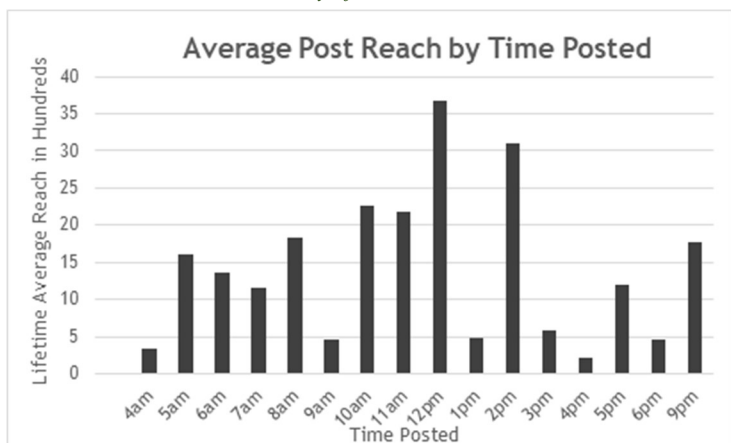


Figure 12. Average amount of people who viewed a CeF Facebook post by hour of day.

We can see when the most popular days and times people engage with posts by viewing the Facebook Insights. This information can be used by our sponsor to push information out at more popular times during the week. We see in Figure 11 that **Tuesdays and Saturdays are the most popular days to post based on how many people see the post per day.** Figure 12 breaks down the time popularity, where we see that **noon and two in the afternoon are the most popular time to post based on how many people see the post per hour.** The website administrators' insights provide data on when to push out event information, make announcements, or to host and post their webinars and photos.

The final piece of data pulled from the Facebook Insights is what information the members are accessing. Figure 13 displays the breakdown of what types of content people engaged with, or left a comment, like, or share

on, the most. This figure shows that photos on the Facebook page are interacted with the most. The second most viewed post type is videos, which also aligns with the conclusion drawn earlier that many members wanted to see the continuation of webinars in the new platform. These two visual components of the organization and platform will be critical to include in our mock-ups to create an engaging website for current and prospective members. displays the breakdown of what types of content people engaged with, or left a comment, like, or share on, the most. This figure shows that photos on the Facebook page are interacted with the most. The second most viewed post type is videos, which also aligns with the conclusion drawn earlier that many members wanted to see the continuation of webinars in the new platform. These two visual components of the organization and platform will be critical to include in our mock-ups to create an engaging website for current and prospective members.

Sum of Engagement by Post Type

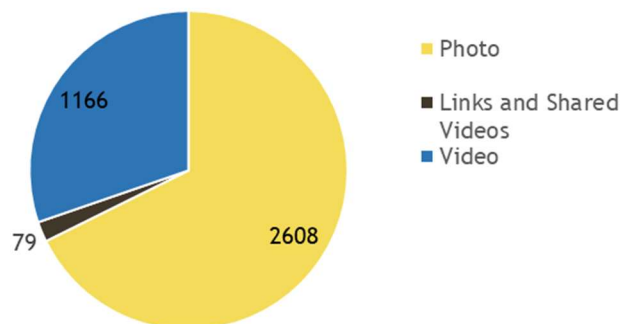


Figure 13. Summary of how many people interacted with the CeF Facebook page by post type.

The preceding data introduces what users are doing currently and what they want to see in the new platform. We use this information to introduce user requirements, which are items or actions that the users of a platform, in our case a website, need to see and or be able to accomplish. **User requirements emphasize efficiency and aesthetic, two engagement strategies defined in our background.** An example of this could be phrased as: "As a member of CeF, I want to be able to search for recorded webinars," or "As a member of CeF, I want to be able to find information about the organization's leaders." By creating a list of the essential user requirements, products can be created to suit the needs of the users. After meeting with our sponsor and combing through written survey responses, we created a list of the components that members and administrators want to see in a website.

User Requirements

Members want to be able to:

1. Read about CeF and its leaders.
2. Learn about the seeds offered through CeF.
3. Search, view, and rewatch the webinars that CeF holds.
4. Connect with other users.
5. Get help with an agricultural or technical issue.
6. Request seedlings from CeF (in a checkout/marketplace style).
7. Contact leaders in CeF about the organization.
8. Know what and when events are taking place.
9. Search for information they are seeking.
10. Sign-up for a "newsletter" to receive automatic information.

Administrators want to be able to:

1. Update/post information about events going on.
2. Link beneficiaries to the webinar videos.
3. View seedling requests from beneficiaries.
4. Fulfill seedling requests from beneficiaries.

Being able to emulate these wants provides a unique and beneficial user experience. In order to effectively integrate these user requirements into a website, we need to make sure the website is intuitive for users to navigate. Our computer science expert highlighted, "We can call it learnability if you like. How easy is it to learn? So, that usually maps [mentally] the concepts that the user already has," (D. Brown, personal communication, February 23, 2021).

4.2. Website Development Strategies

In this section, we elaborate on our findings about how to develop a website. This data is mainly extracted from our expert interviews and the subsequent coded interview transcripts. We interviewed three WPI professors whose research focuses were in three different disciplines: Computer Science, Information Technology, and Marketing. Each professor provided a unique insight into how we should develop a website.

Interviews were transcribed and then coded using the list of codes found in Appendix B. Breaking down interviews by codes and then summarizing each code allowed us to more effectively analyze the themes each expert was emphasizing.

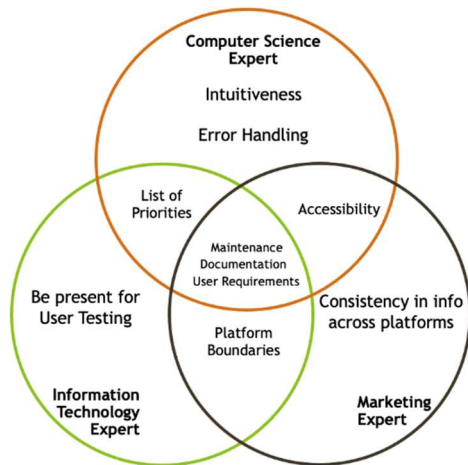


Figure 14. Comparison of themes discussed in expert interviews.

We found that the three overlapping themes from our expert interviews were **Maintenance, Documentation, and User Requirements**, as seen in Figure 14. Maintenance revolves around the upkeep of the technical and content aspects of a website. Documentation is focused on creating a library of instructions centered around the maintenance and content management of the website. Lastly, User Requirements are items or actions that the users of the website need to see and/or be able to perform.

Maintenance and documentation contribute to the consistency and efficiency of a website, as discussed in our background research. Through proper maintenance, content distributed to CeF members will remain consistent across all media types (on the website, via

flyers, by word of mouth, etc.). The efficiency of the website to distribute information to CeF members is directly correlated to the content that is being displayed. If the currency of the content on the website is not maintained, then the website will not efficiently disseminate information to CeF members. Technical maintenance may not be as important when the website framework is developed. One expert stressed that:

“It wasn’t technical maintenance, it was content maintenance, right? So [updating content] might be something you got to think about how easy that is going to be to do.”

(D. Brown, personal communication, February 23rd, 2021)

The same can be said for documentation; **detailed instructions pertaining to general upkeep of the website can increase the efficiency of the maintenance of the site by having a user guide for reference.** An example that each of the experts had mentioned was to create a user manual detailing procedure for editing the website as well as managing content. One expert highlighted the importance of documentation by saying,

“[Plan] to leave information of how to do everything. That’s what seems to help, cause boy there’s nothing worse than feeling lost in taking over something that you don’t understand. That’s where a lot of projects fail.”

(E.V. Wilson, personal communication, February 9, 2021)

The greatest takeaway from these findings is **the decision to create a website mockup.** Our surveyed members and interviewed experts both supported this claim. Our experts also contributed information about how to formulate this site, highlighting **the most important tasks of maintenance, documentation, and user requirements.** In the next section, we discuss how we incorporated this feedback into our deliverables and created recommendations based on this data.

5. Recommendations

In this section we outline our recommendations for CeF to take regarding utilizing current and new ICTs for information dissemination. Our recommendations include maintaining the Facebook page, electing a content manager, and implementing a budget. To aid in the development of a website, we have crafted a website mockup and a user manual, found in Appendix D, to help kickstart an official website in the future. Throughout the development of our project, we curated various recommendations for CeF to consider after we part ways.

5.1. Facebook Upkeep

Even though we are recommending a website for CeF to continue expanding their organization, the Facebook should still be maintained. The website would be an addition to what already exists. The Facebook is crucial to CeF because it offers a place for community members to connect with one another. The website will be used strictly to deliver information to members, while the Facebook should be emphasized as a place for members to interact with one another. Another way to frame this concept is labeling platforms as push versus pull. As seen in Table 2, a website pushes information out, while Facebook is more of a 2-way communication platform.

As previously discussed, we are not trying to replicate existing sites. We are instead offering an additional port for information to be distributed. Our focus was not as targeted at the social connection aspect as it was the delivery of information, which is why a social network, like Facebook is crucial.

Table 2. Comparison of Push versus Pull platforms.

| | Pushing Information | Pulling Information | 2-way communication |
|--------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Definition | When CeF wants to send/push information to the community. | When CeF members want to obtain specific information, so they request it from the system. | When a conversation is necessary to accomplish the goal of the user. |
| Old System | Through Facebook – ineffective, users being able to receive information relied on too many factors. | Little to no pull of information. It relied on 2-way communication. | For clarifying information and community discussion. |
| Recommended System | Push out information consistently throughout the platforms, primarily a website. | Good searchability mechanic for previous post/webinars. | Continue to have open channels acquire feedback from the community and answer any questions. |

5.2. Electing a Content Manager

One of our most important recommendations for CeF is to assign someone to the role of content manager. This individual would have the specific tasks of content management and updating the communication platforms. This can include the current Facebook page, webinars, YouTube account, and the future website. Experts revealed that content management is very time consuming, yet it is vital to keeping a platform effective and current. This content manager will review the procedures laid out in our user manual deliverable. They will use the manual along with the mockups to bring the official website to fruition.

5.3. Webinar Management

The content manager will contribute to recommendations regarding webinar management as well. We recommend CeF to transition their video storage from Facebook to YouTube. Both are free platforms; however, YouTube has many more features which can help CeF easily categorize and distribute the videos to members. Once in YouTube, CeF can organize the videos via playlist or keywords. This makes videos searchable, which is not a Facebook feature. We have included a User Manual for uploading content to YouTube in Appendix E. Experts recommended content be searchable within a platform to increase user navigability. We also recommend CeF to have a more frequent and consistent approach to the delivery of webinars. There are a considerable number of members who were interested in receiving more frequent webinars covering a broader number of topics.

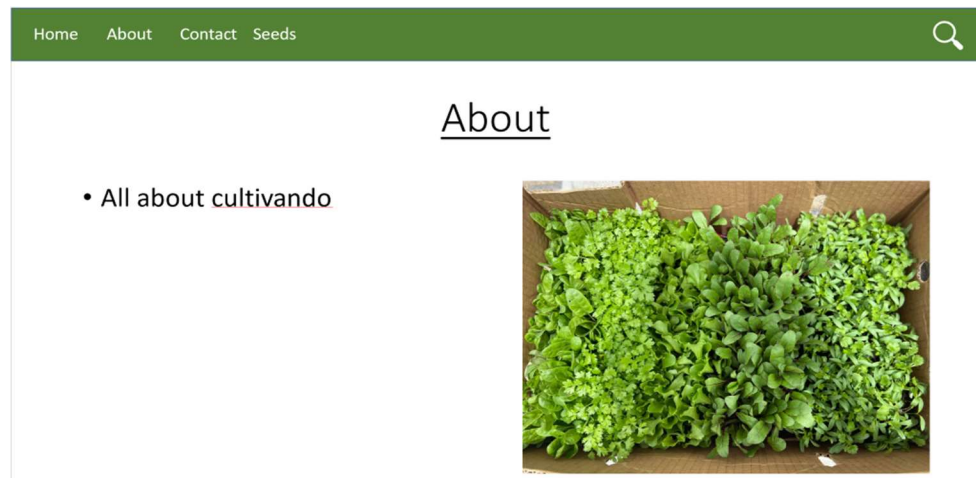
5.4. Implementing a Budget

The organization currently has no plan to implement a budget for a website. We recommend CeF reconsider their budget to create a website with the necessary features. The goal of the mockup is to convince the CeF administration to consider allotting some of their budget for a website. We received recommendations from our expert interviews and past IQP groups that identified three main website building platforms that are the most frequently used: Wix, WordPress, and Squarespace. In addition to these suggestions, we also knew that CeF did not plan to allot money to a website. Therefore, we were able to rule out Squarespace since there are no free website options. We decided to create our mockups through WordPress because of the free plan option that includes many of the features our sponsor was looking for. Although Wix has a similar free plan option, one notable quality that WordPress has over Wix is better Search Engine Optimization. This means that WordPress will do a better job of showing CeF's website as a result when entered in a search engine ("Wix vs. Squarespace vs. WordPress," 2019).

We recommend including the following section in the future website, to make sure to tackle all the requirements of an effective website:

- **Home and About page** – The home page of the website is in charge of setting up the expectations of the rest of the website for the user. It should inform its audience where they can find every task from a quick scan of the site's organization.
- **Seed Bank page** – This page would hold a database of the type of seeds available to CeF members. Here, members can learn about the seeds' information. With further development, users will also be able to request seedlings through this page.
- **Educational page** – This page would be used to distribute the videos within the website, so that members can easily search a webinar by topic or keyword.
- **Contact Us page** – This page is used to communicate with leaders of CeF. This is vital to receive feedback from the users in the iterative testing process of the website and to receive questions about other relevant/agricultural topics. This page will also include hyperlinks to corresponding CeF social media pages.

Below are screenshots of our mockup designs :



¡Aplicando lo aprendido compartiendo conocimiento ! [L](#) [I](#) [I](#) Laura Criollo...



¡Desde Chiquintad ! 🐛 Cultivando el futuro tiene entre sus objetivos trabaja...



¡Vamos a salir adelante! Seguimos trabajando por la soberanía alimentari...



"Cultivado el futuro" Ya nos encontramos en el taller sobre...

Figure 15. Screenshots from mockup website designs made in PowerPoint.

Further research and recommendations to consider:

- 🍃 Look for more partner organizations to help and collaborate with CeF.
- 🍃 Create a prioritization system to distribute seedlings.
- 🍃 Be able to connect outside users with a marketplace of produce.

Many rural communities around the world can utilize ICTs to promote food sovereignty. Cultivando el Futuro is a great example of how rural communities can grow together through the use of ICTs. For this organization, ICTs will help to promote the production of rural farms and food sovereignty within their community. As of now, we have provided Cultivando el Futuro with a baseline from which they can begin to utilize ICTs to promote their goals in an effective way. The long-term implications of our work allow Cultivando el Futuro to continue to grow and adapt to more effective and convenient ways to engage its members. Although our work benefits Cultivando el Futuro directly, it can be used as an example of how ICTs can have a positive impact on rural, agricultural communities across the globe.

6. References

- Ecuador | *World Food Programme*. (n.d.). Retrieved March 8, 2021, from <https://www.wfp.org/countries/ecuador>
- Ecuador - unemployment rate 2009-2021. (n.d.). Statista. Retrieved November 22, 2020, from <https://www.statista.com/statistics/451274/unemployment-rate-in-ecuador/>
- Ecuador: 2008 Constitution in English. (n.d.). Retrieved December 12, 2020, from <https://pdba.georgetown.edu/Constitutions/Ecuador/english08.html>
- FAO. (2018). *The impact of disasters and crises on agriculture and food security 2017*. Food and Agriculture Organization of the United Nations.
- FarmIT. (n.d.). Retrieved December 6, 2020, from <https://farmit.co.ke/>
- ICT in agriculture: connecting smallholders to knowledge, networks, and institutions*. (2017). World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/27526/9781464810022.pdf>
- Kirk, K., & Abrahams, A. S. (2017). Evaluating public charity websites. *Nonprofit Management and Leadership*, 27(4), 475–491. <https://doi.org/https://doi.org/10.1002/nml.21256>
- LTD, F. (2020, April 6). *COVID-19; how we are working to keep farmers and employees safe*. <https://farmerline.co/2020/04/06/covid-19-how-we-are-working-to-keep-farmers-and-employees-safe/>
- Nielsen, J. (2020, November 15). *10 usability heuristics for user interface design*. Nielsen Norman Group. <https://www.nngroup.com/articles/ten-usability-heuristics/>
- Richa Govil, & Garima Rana. (2017). *Demand for Agricultural Information among Women Farmers: A Survey from Karnataka, India*. Review of Agrarian Studies. http://ras.org.in/demand_for_information_on_agriculture_among_women_cultivators
- Shen, X.-L., Li, Y.-J., Sun, Y., Chen, Z., & Wang, F. (2019). Understanding the role of technology attractiveness in promoting social commerce engagement: Moderating effect of personal interest. *Information & Management*, 56(2), 294–305. <https://doi.org/10.1016/j.im.2018.09.006>
- Sivabalan, K. C., B Swaminathan, & Muthiah Manoharan, P. (2013, May). *Agricultural Knowledge Transfer and Role of ICT Tools*. Proceedings of the First Agricultural Graduate Student Conference 2013 on Food Safety and Food Security. https://www.researchgate.net/publication/313366706_Agricultural_Knowledge_Transfer_and_Role_of_ICT_Tools
- Strotmann, C., Niepagenkemper, L., Göbel, C., Flügge, F., Friedrich, S., Kreyenschmidt, J., & Ritter, G. (2017). Improving transfer in the food sector by applying a target audience-centered approach—the development of a nonprofit marketing campaign guide based on a case study of the LAV platform. *Sustainability*, 9(4), 512. <https://doi.org/10.3390/su9040512>
- Sultana, N., Jahan, F. N., Bokhtiar, S. M., SAARC Agriculture Centre, AccessAgriculture (Organization), Institute of Policy Studies (Colombo, Sri Lanka), & Winrock International (Eds.). (2018). *Innovative agricultural technologies in South Asia*. SAARC Agricultural Centre.
- The Earth Institute, C. U., & Ericsson. (2016). *ICT: A catalyst for achieving the SDGs (ICT & SDGs, pp. 18–19)*. Sustainable Development Solutions Network. <http://www.jstor.org/stable/resrep15879.6>
- The Radicati Group. (2020). *Forecast number of mobile users worldwide 2020-2024*. Statista.

- <https://www-statista-com.ezpxy-web-p-u01.wpi.edu/statistics/218984/number-of-global-mobile-users-since-2010/>
- Wan Ahmad, W. A. Z., Mukhtar, M., & Yahya, Y. (2018). Exploring Elements and Factors in Social Content Management for ICT Service Innovation. In F. Saeed, N. Gazem, S. Patnaik, A. S. Saed Balaid, & F. Mohammed (Eds.), *Recent Trends in Information and Communication Technology* (pp. 851–859). Springer International Publishing.
https://doi.org/10.1007/978-3-319-59427-9_88
- Wix vs. Squarespace vs. WordPress. (2019, May 15). *The Good Alliance*
<https://thegoodalliance.org/articles/wix-v-squarespace-v-wordpress/>
- World Bank. (2016). *A Year in the Lives of Smallholder Farmers* [Text/HTML]. World Bank.
<https://www.worldbank.org/en/news/feature/2016/02/25/a-year-in-the-lives-of-smallholder-farming-families>
- World Bank Group. (2013). *Agriculture for Nutrition in Latin America and the Caribbean: From Quantity to Quality*. 68. <https://openknowledge.worldbank.org/handle/10986/17281>
- Zhang, Y., Wang, L., & Duan, Y. (2016). Agricultural information dissemination using ICTs: A review and analysis of information dissemination models in China. *Information Processing in Agriculture*, 3(1), 17–29. <https://doi.org/10.1016/j.inpa.2015.11.002>
- Zhenwei Qiang, C., Chew Kuek, S., Dymond, A., & Esselaar, S. (2012). *Mobile Applications for Agriculture and Rural Development* (No. 96226-GLB; ICT Sector Unit, p. 414). World Bank.
<https://openknowledge.worldbank.org/bitstream/handle/10986/21892/Mobile0applica0nd0rural0development.pdf?sequence=1&isAllowed=y>

Appendix A: Qualtrics Survey Questions for CeF Members

Qualtrics Survey Questions for CeF Members:

General User Satisfaction

1. Are you at least 18 years old?
 - a. Yes
 - b. No
2. What language would you prefer to take this survey in?
 - a. Spanish
 - b. English
3. What parish are you from?
4. How did you hear about Cultivando el Futuro?
 - a. Through a friend
 - b. Through a seedling distribution
 - c. Through an event
 - d. I found it online
 - e. Other: _____
5. What type of device do you typically use to access the internet?
 - a. Smart phone
 - b. Laptop/computer
 - c. Tablet
 - d. Other: _____
6. Is your device a
 - a. Personal device
 - b. Individual family member's device
 - c. Shared device for the whole family
 - d. Public device (i.e. library computer)
 - e. Other: _____
7. What activities do you like the most while on the internet? (Select all that apply)
 - a. Connecting on social media
 - b. Using Facebook
 - c. Watching a video
 - d. Commenting in an online forum
 - e. Using WhatsApp
 - f. Looking up information
 - g. Other: _____
8. How easy was it for you to navigate the Facebook page?
 - a. Extremely easy
 - b. Somewhat easy
 - c. Neither easy nor difficult
 - d. Somewhat difficult
 - e. Extremely difficult
9. When using the Facebook page, how often do you find the information you are looking for?
 - a. Always
 - b. Most of the time

- c. About half of the time
 - d. Sometimes
 - e. Never
10. What is your favorite feature on the Facebook page?
- a. Photos
 - b. Posts
 - c. Webinar recordings
 - d. Other: _____
11. Are there any features you would like to see added to the page to enhance your experience?
12. How would you rate the organization of the Facebook page? (Sliding scale 0, extremely inadequate to 5, extremely adequate)
13. Where and how would you like to see the informational content from Cultivando el Futuro?
- a. Facebook group webinars (current)
 - b. Instagram post with infographics
 - c. WhatsApp/SMS info messages
 - d. Cultivando el Futuro's own (new) website
 - e. Other: _____
14. What type of information do you want to see more of? (Choose all that apply)
- a. Donation announcements
 - b. Peer-learning opportunities and Zoom webinars
 - c. Educational content (Financial Advice, COVID safety measures, etc.)
 - d. Progress Post from our community members
 - e. Other: _____

Appendix B: Interview Codes

| Basic Codes: | Suggestion, Neutral, Information | |
|-----------------------------|------------------------------------------------------------------------------------------------------|-------------------|
| Content Code | Description | Date Added |
| Expert_Knowledge | Knowledge from an expert. | Feb 19 |
| Expert_Example | Example shared by an expert. | Feb 19 |
| Interview_Prompt | Information brought up by interviewers. | Feb 19 |
| Tech_Effectiveness | Information regarding quality of technology and how to improve it. | Feb 19 |
| Tech_Mobile | Information regarding mobile apps as platforms | Feb 24 |
| Tech_Social_Media | Information regarding social media as platforms | Feb 19 |
| Tech_Video | Information regarding video usage in platforms | Feb 19 |
| Tech_Website | Information regarding website usage/development | Feb 19 |
| Tech_Facebook | Information regarding Facebook analytics and operations | Feb 19 |
| Networking | Information regarding connecting people or who to connect with | Feb 19 |
| Quote | Possible useful quote | Feb 19 |
| Target_Audience | How to identify an audience and who CeF is targeting | Feb 19 |
| Accessibility | Information about how to create an inclusive and accessible platform for as many people as possible. | Feb 19 |
| Engagement_Strategies | Information regarding engagement strategies | Feb 19 |
| Human_Computer_Interactions | General HCI information | Feb 19 |
| HCI_Efficiency | Information regarding platform efficiency | Feb 19 |
| HCI_Consistency | Information regarding platform consistency | Feb 19 |
| HCI_Flexibility | Information regarding platform flexibility | Feb 19 |
| HCI_Aesthetics | Information regarding platform aesthetics | Feb 19 |
| Maintenance_Documentation | Information regarding how to document and maintain a platform in the future | Feb 24 |
| Priority_Recommendation | Information regarding prioritization of tasks or steps in platform development | Feb 24 |

Appendix C: IRB Approval Notice

WORCESTER POLYTECHNIC INSTITUTE

100 INSTITUTE ROAD, WORCESTER MA 01609 USA

Institutional Review Board

FWA #00015024 - HHS #00007374

Notification of IRB Approval

Date: 05-Feb-2021

PI: Elgert, Laureen

Protocol Number: IRB-21-0292

Protocol Title: Improving the Communication Platform for Development of Rural Communities in Cuenca, Ecuador Through Information and Communication Technology

Approved Study Personnel: Looney, Tyler~Smith, Eliza~Spratt, Allison~Gerov Armas, Alejandro~Kamara, Jermoh~Elgert, Laureen~Miller, Fabienne~

Effective Date: 05-Feb-2021

Exemption Category: 2

Sponsor*:

The WPI Institutional Review Board (IRB) has reviewed the materials submitted with regard to the above-mentioned protocol. We have determined that this research is exempt from further IRB review under 45 CFR § 46.104 (d). For a detailed description of the categories of exempt research, please refer to the [IRB website](#).

The study is approved indefinitely unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific approval must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue. You are also required to report any adverse events with regard to your study subjects or their data.

Changes to the research which might affect its exempt status must be submitted to the WPI IRB for review and approval before such changes are put into practice. A full IRB application may be required in order for the research to continue.

Please contact the IRB at irb@wpi.edu if you have any questions.

Appendix D: WordPress User Manual for Cultivando el Futuro

WordPress User Manual for Cultivando el Futuro

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| Templates WordPress Offers | 2 |
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| Adding Elements Based Off Existing Elements | 7 |
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| Formatting Elements Using Columns and Layout Grids | 12 |
| Navigation and Search Bars | 14 |
| Additional Plug-Ins | 17 |

Introduction

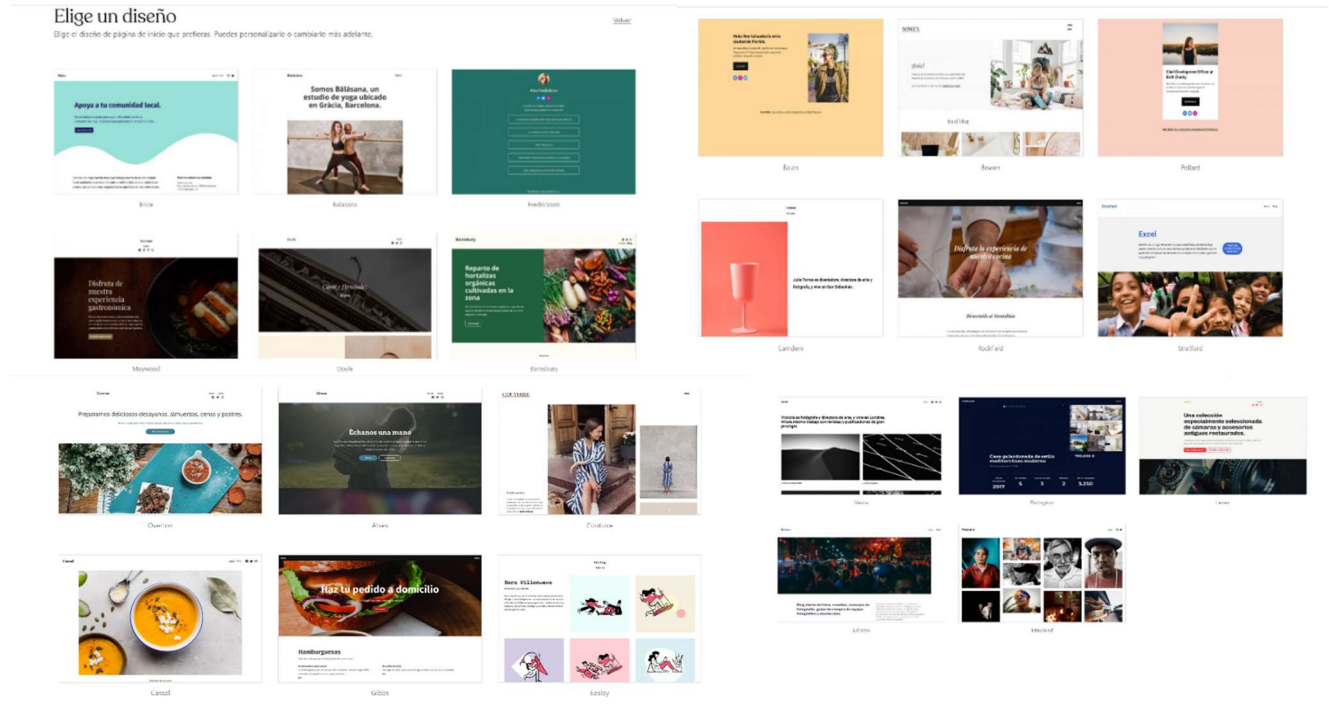
This manual will outline the basics needed to get started in creating your own WordPress Website. To start, WordPress offers different paid plans that unlock unique features that you can use. Below are all the paid plans WordPress offers. For this manual we will be utilizing the Personal plan which is free.

| Personal Lo mejor para uso personal | Prima Lo mejor para autónomos POPULAR | Negocio Lo mejor para pequeñas empresas | comercio electrónico Lo mejor para tiendas en línea |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>por mes, facturado anualmente</p> <p style="text-align: center; border: 1px solid #ccc; padding: 5px;">Empiece con Personal</p> <ul style="list-style-type: none"> ✓ Dominio gratis por un año ✓ El mejor alojamiento de su clase ✓ Eliminar anuncios de WordPress.com ✓ Cobrar pagos ✓ Soporte ilimitado por correo electrónico ✗ Soporte de chat en vivo ✗ Obtenga ingresos por publicidad ✗ Temas premium ✗ Subir videos ✗ Integración de Google Analytics ✗ Instale complementos y amplíe la funcionalidad de su sitio con acceso a más de 50.000 complementos de WordPress ✗ Herramientas avanzadas de SEO (optimización de motores de búsqueda) ✗ Copias de seguridad automatizadas del sitio y restauración con un clic ✗ SFTP (Protocolo de transferencia de archivos SSH) y acceso a la base de datos ✗ Acepte pagos en más de 60 países ✗ Integraciones con los principales transportistas de envío ✗ Opciones de diseño premium personalizadas para tiendas en línea | <p>por mes, facturado anualmente</p> <p style="text-align: center; background-color: #e91e63; color: white; padding: 5px; border: 1px solid #ccc;">Empiece con Premium</p> <ul style="list-style-type: none"> ✓ Dominio gratis por un año ✓ El mejor alojamiento de su clase ✓ Eliminar anuncios de WordPress.com ✓ Cobrar pagos ✓ Soporte ilimitado por correo electrónico ✓ Soporte de chat en vivo ✓ Obtenga ingresos por publicidad ✓ Temas premium ✓ Subir videos ✓ Integración de Google Analytics ✗ Instale complementos y amplíe la funcionalidad de su sitio con acceso a más de 50.000 complementos de WordPress ✗ Herramientas avanzadas de SEO (optimización de motores de búsqueda) ✗ Copias de seguridad automatizadas del sitio y restauración con un clic ✗ SFTP (Protocolo de transferencia de archivos SSH) y acceso a la base de datos ✗ Acepte pagos en más de 60 países ✗ Integraciones con los principales transportistas de envío ✗ Opciones de diseño premium personalizadas para tiendas en línea | <p>por mes, facturado anualmente</p> <p style="text-align: center; border: 1px solid #ccc; padding: 5px;">Empiece con el negocio</p> <ul style="list-style-type: none"> ✓ Dominio gratis por un año ✓ El mejor alojamiento de su clase ✓ Eliminar anuncios de WordPress.com ✓ Cobrar pagos ✓ Soporte ilimitado por correo electrónico ✓ Soporte de chat en vivo ✓ Obtenga ingresos por publicidad ✓ Temas premium ✓ Subir videos ✓ Integración de Google Analytics ✓ Instale complementos y amplíe la funcionalidad de su sitio con acceso a más de 50.000 complementos de WordPress ✓ Herramientas avanzadas de SEO (optimización de motores de búsqueda) ✓ Copias de seguridad automatizadas del sitio y restauración con un clic ✓ SFTP (Protocolo de transferencia de archivos SSH) y acceso a la base de datos ✗ Acepte pagos en más de 60 países ✗ Integraciones con los principales transportistas de envío ✗ Opciones de diseño premium personalizadas para tiendas en línea | <p>por mes, facturado anualmente</p> <p style="text-align: center; border: 1px solid #ccc; padding: 5px;">Empiece por el comercio electrónico</p> <ul style="list-style-type: none"> ✓ Dominio gratis por un año ✓ El mejor alojamiento de su clase ✓ Eliminar anuncios de WordPress.com ✓ Cobrar pagos ✓ Soporte ilimitado por correo electrónico ✓ Soporte de chat en vivo ✓ Obtenga ingresos por publicidad ✓ Temas premium ✓ Subir videos ✓ Integración de Google Analytics ✓ Instale complementos y amplíe la funcionalidad de su sitio con acceso a más de 50.000 complementos de WordPress ✓ Herramientas avanzadas de SEO (optimización de motores de búsqueda) ✓ Copias de seguridad automatizadas del sitio y restauración con un clic ✓ SFTP (Protocolo de transferencia de archivos SSH) y acceso a la base de datos ✓ Acepte pagos en más de 60 países ✓ Integraciones con los principales transportistas de envío ✓ Opciones de diseño premium para tiendas online |

To start creating a website with WordPress, go to www.wordpress.com, click on get started, and sign in with the Cultivando el Futuro Google Account.

Templates WordPress Offers

When you go to create a site, you get to choose a template to base your site on. Below are a bunch of templates that you will get to choose from.



Choose one of the templates about to start creating your site. Once you select a template you will also be prompted to select the font that the text will appear in.

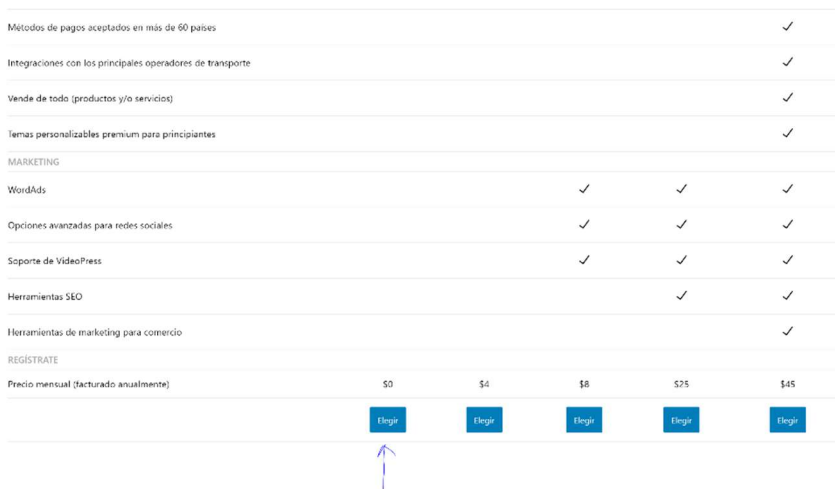


Selecting a Plan

WordPress will ask for what features you need and try to recommend a paid plan for you. For this manual we will use a free plan. Select continue.



Scroll down to the bottom and select \$0 plan



After you select a plan, you will be brought to this page where you can start creating your site.

Getting Familiar with the Page

1. Where it says “Inicio” will not show up on the page. This is the name of the page that is used by WordPress to know which page/information it is showing.
2. The vertical bar on the right side is the settings bar. It allows you to edit some of the details of the page.
3. The W in the top left corner when clicked will show you the list of pages you have.
4. The plus button at the top allows you to add elements to the page.

Addressing the User Requirements

Editing existing elements

Let's try doing some of the basics. By clicking on elements that are already on the page, you can edit them. An edit bar will appear around the elements block.



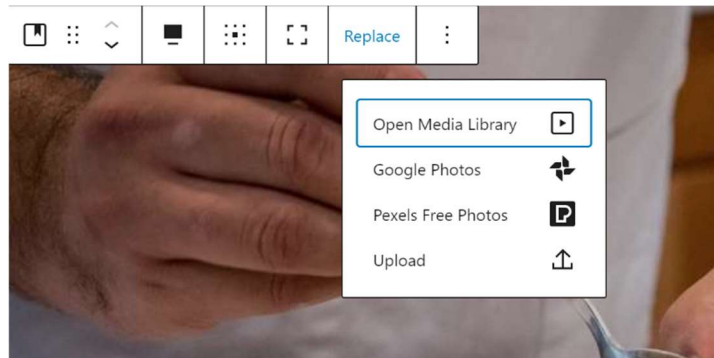
Let's change the text to say Cultivando el Futuro.



Now let's change the image in the background to be one of Cultivando's images. By doing the same thing we did for the text, if we click on the picture in the background this new edit bar appears over the block.



If we click on Replace, then we are presented with these options of where to get a photo to replace the current one.

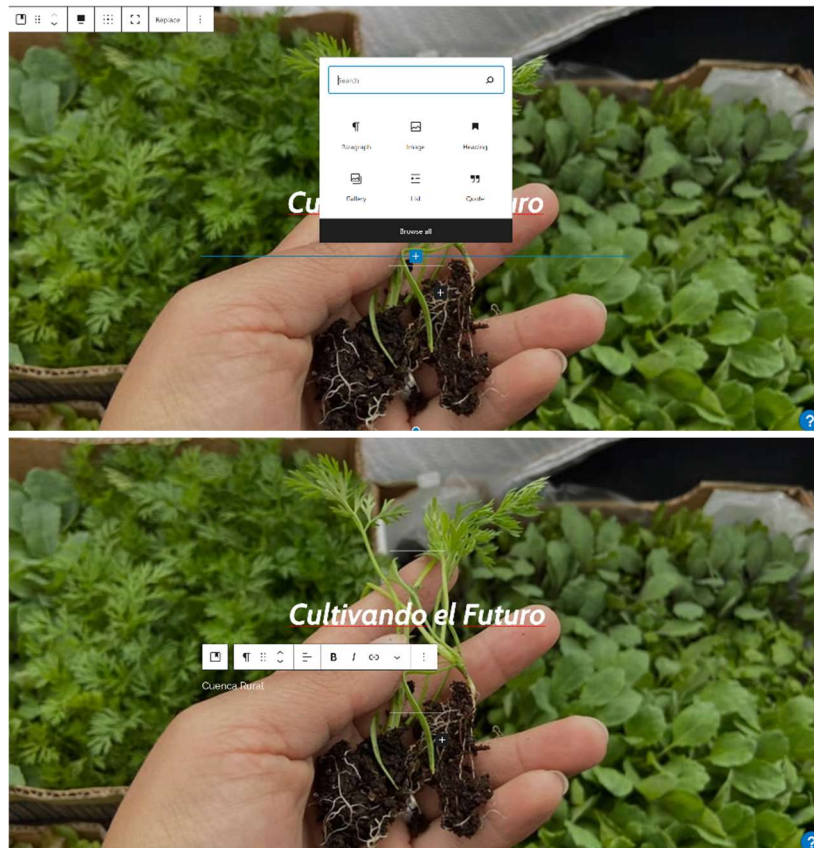


Let's upload one. Select upload and choose a photo from your files.



Adding Elements Based off Existing Elements

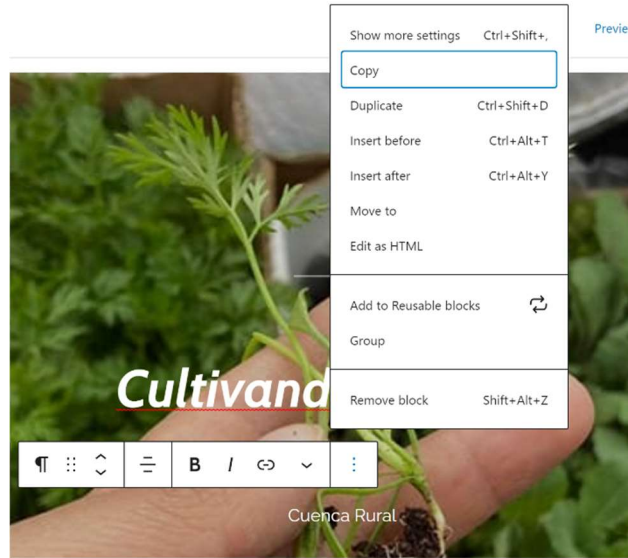
Let's add a text box underneath the Cultivando el Futuro to say Cuenca Rural. Adding text boxes can be done anywhere and can be any size you want. One way to add a text box where you want is to hover over the edges of existing elements on the page until a small + button appears. Click on this + button and a group of elements that you can add will appear. Let's click on Paragraph to add text.



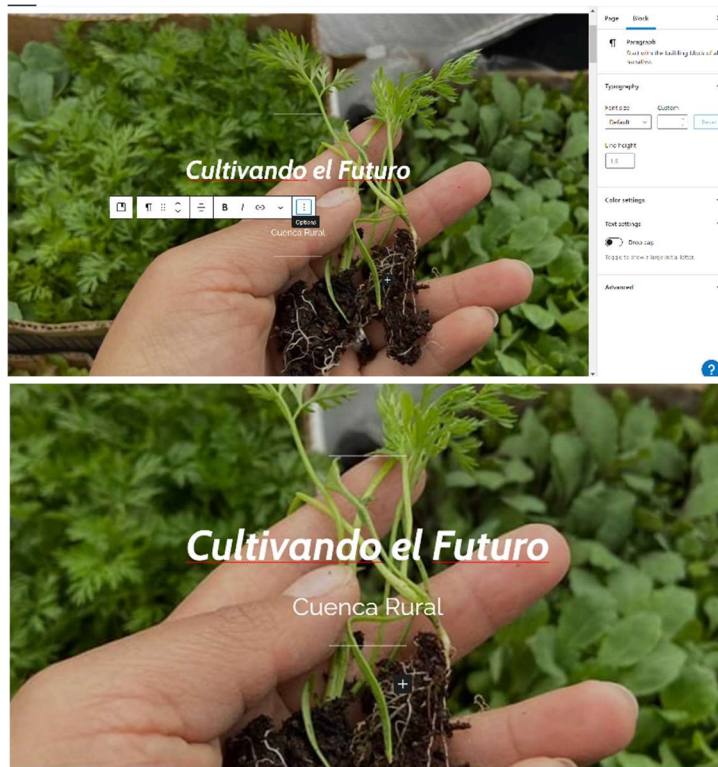
Here we can add Cuenca Rural. But it's small and not underneath Cultivando el Futuro. First let's get the words in the right place. By clicking the 3 lines in the edit bar we can change the alignment to be center.



Now to make the words a little bigger. Click on the 3 dots at the end of the edit bar, then click on Show more Settings.

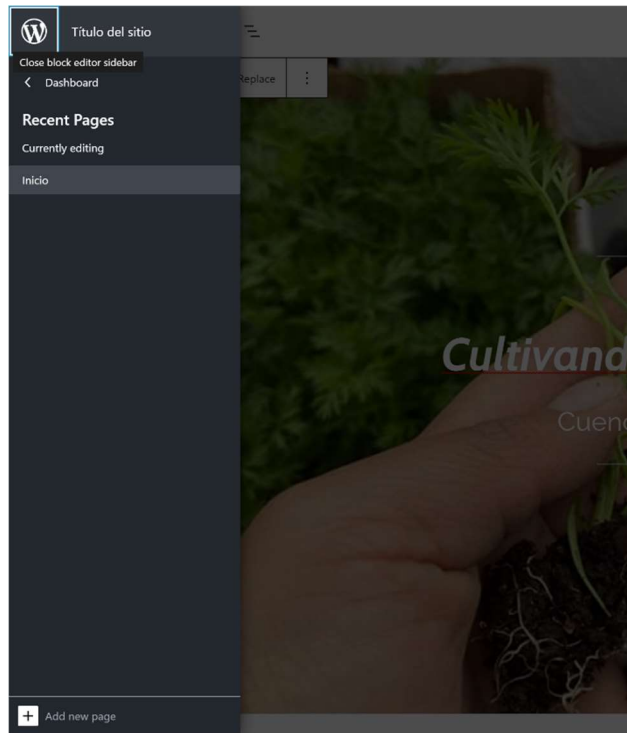


On the right-hand side of the screen, the settings bar will show up. It is already set to edit the element you chose to show more setting with. Here we can change the font.

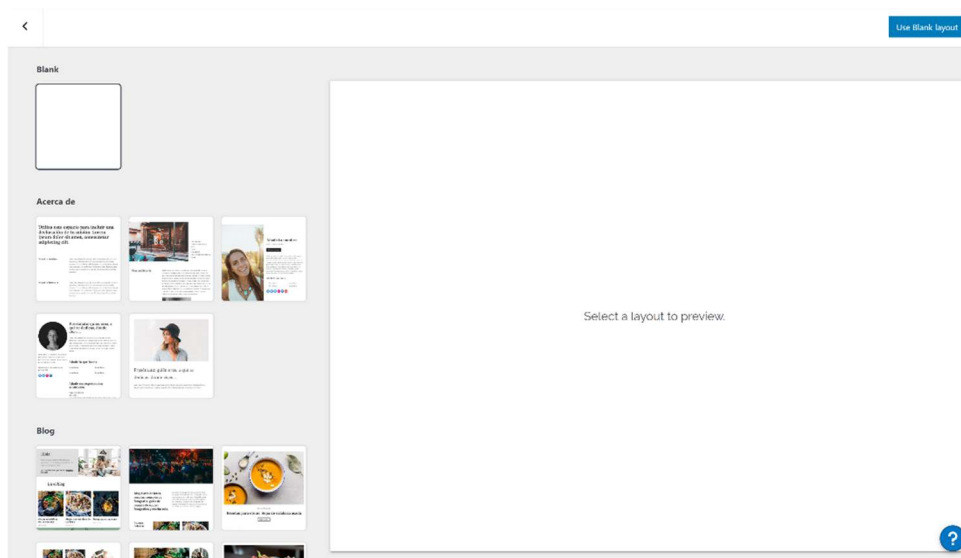


Creating a New Page

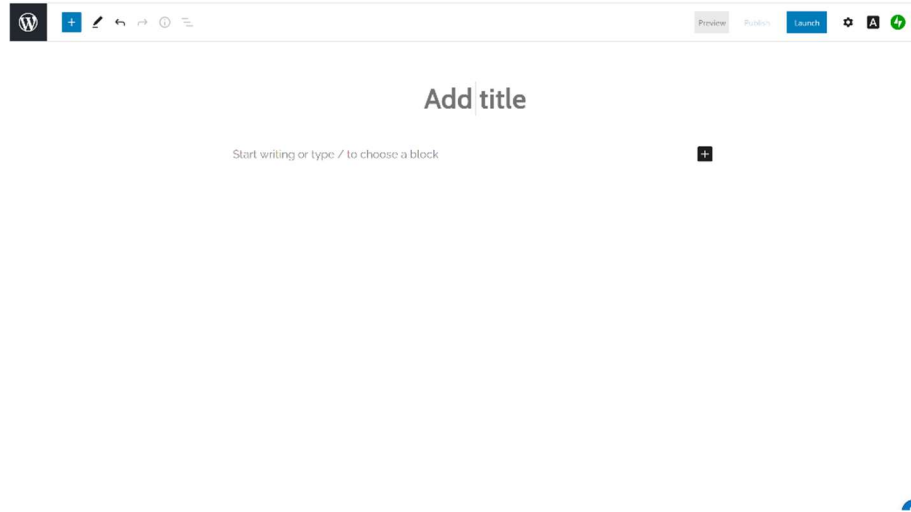
Next let's try creating a new page.



By Clicking on the WordPress logo in the top left corner, we can see what pages there are to edit. Here we can also add new pages. Click Add new page at the bottom left corner of the screen. You will be taken to a screen where you can select from several other templates for the blank page. Feel free to play around with ones you think would look best for your site! For now, we will stick to a blank page to show other important things you may want to add to your site.



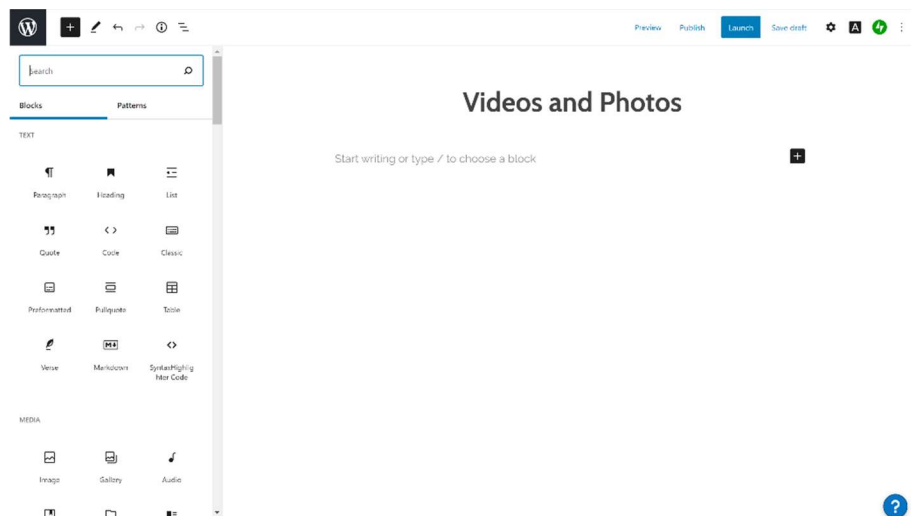
On the new page create the Title.



For our blank page, we are prompted to Add Title. Let's call this one videos and photos. This will show up at the top of your page.

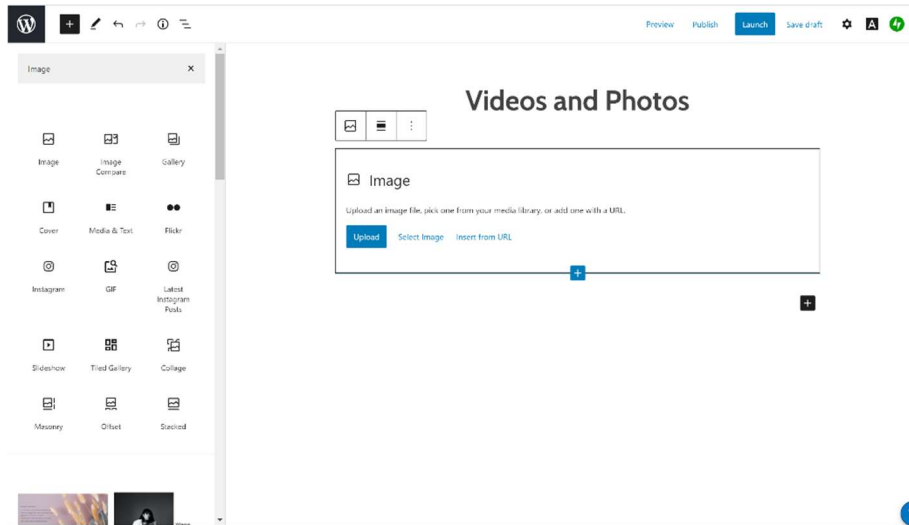
Adding New Elements from Scratch

Now let's see how to add photos and videos to our webpage! Click on the + button in the top left corner of the screen.

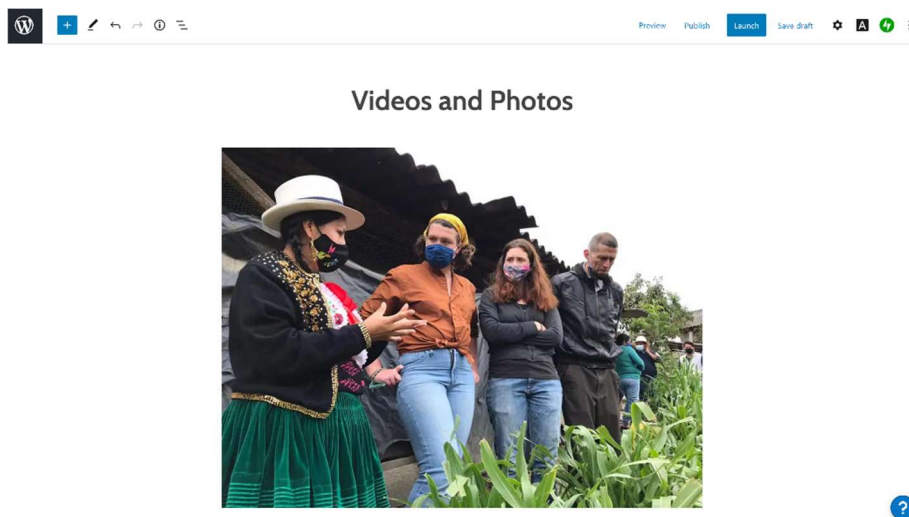


A new bar will appear on the left-hand side of the screen. Here you can find all your options of elements you can add to your screen.

Let's start off with an image. In the search bar at the top of this left-hand side bar, search Image and click on it.



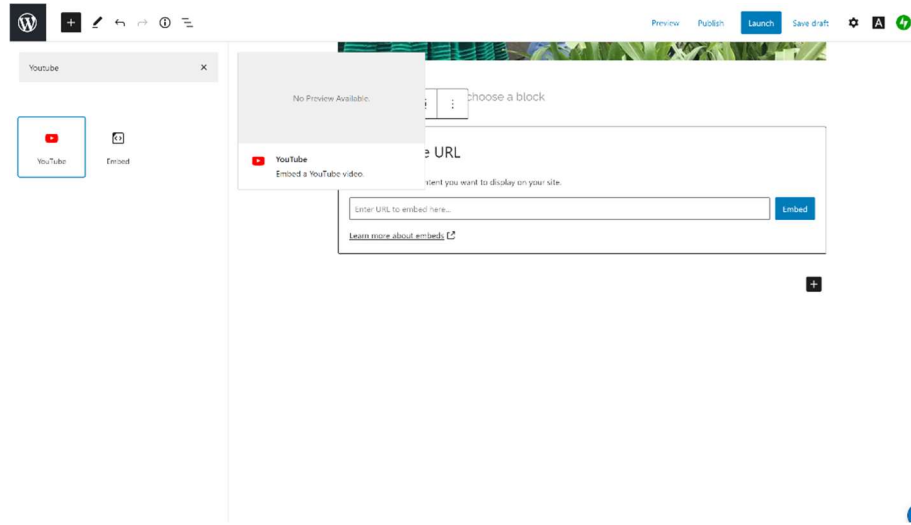
After you click on image, this new box will appear on your page. Select upload and choose an image you want to include.



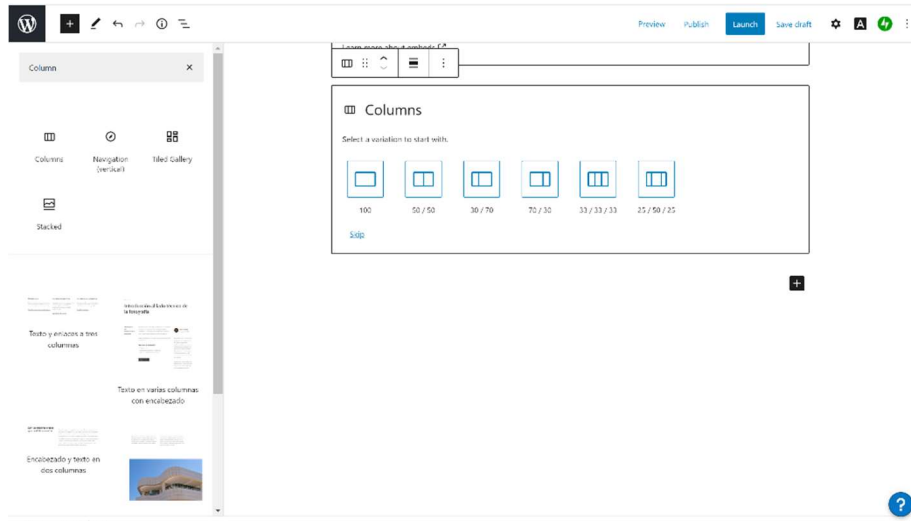
And now you have an image on your page! You can follow this same process to add videos. Let's try adding a YouTube video! Select the + button in the top left corner, search YouTube, and select YouTube. From here you can copy and paste any YouTube link you would like, and it will show up on the page.

Formatting Elements Using Columns and Layout Grids

Let's say you want to put a lot of them on the page, but you do not want them to take up as much room. Here is where a different element can help: Columns.



You can create columns by selecting the + button at the top left of the screen and then search for column.



From here, it will prompt you to select what kind of column format you prefer. Let's click on the 50:50 column (50% of the screen is 1 column, 50% of the screen is another column) Two columns will appear with a + button in them. Following the same procedure as described above you can click on those buttons and add images or YouTube videos.



Start writing or type / to choose a block

YouTube URL

Paste a link to the content you want to display on your site.

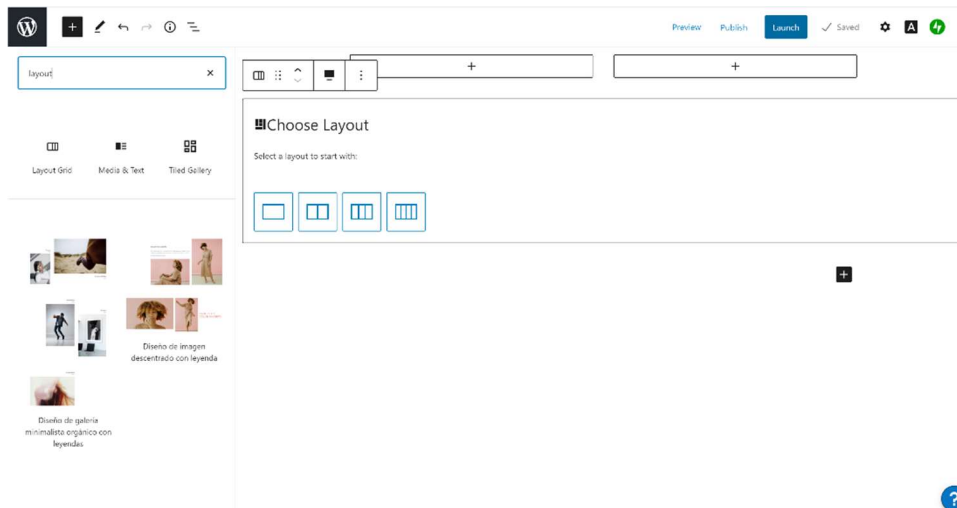
Enter URL to embed here...

Learn more about embeds.

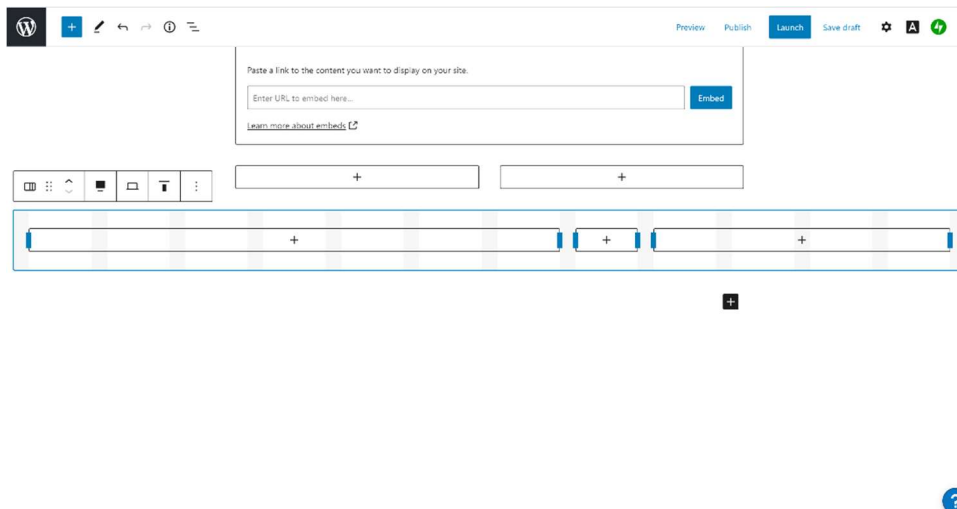


Navigation and Search Bars

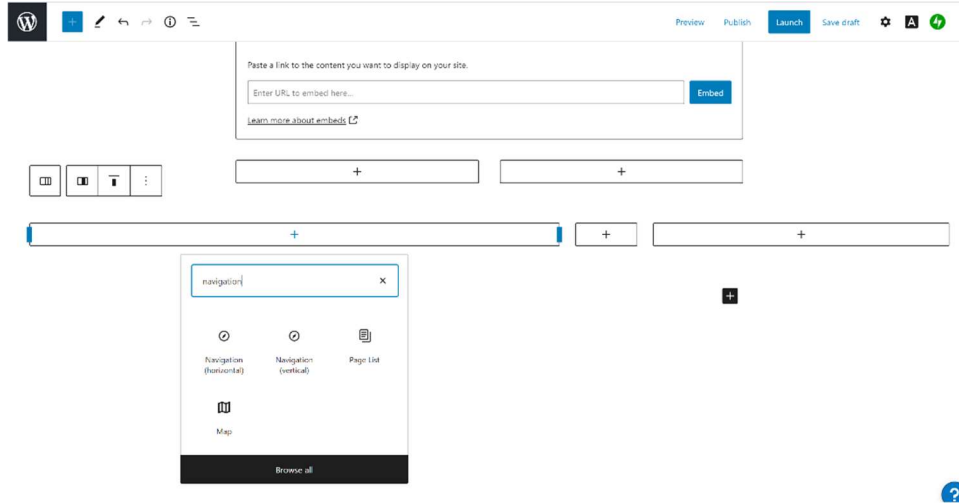
Finally, let's create a top navigation bar. To format it nicely we will use an element like columns, except this element spans the entire width of the screen. We will use a Layout Grid with three (3) columns. The first column will be the navigation, the middle column will act as a spacer, and the last column will be a search bar.



Using your mouse, you can change the size of each of the columns. Move the middle column all the way to the right like so.



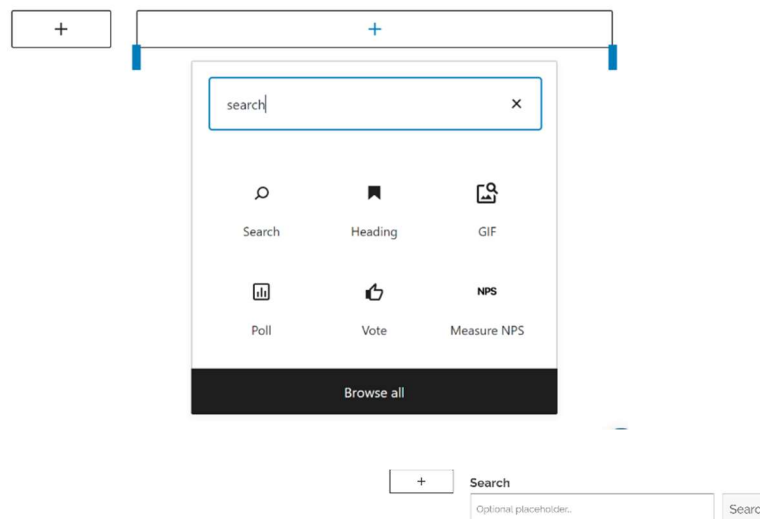
Then click on the left most column + button and search for navigation. Select the horizontal navigation bar.



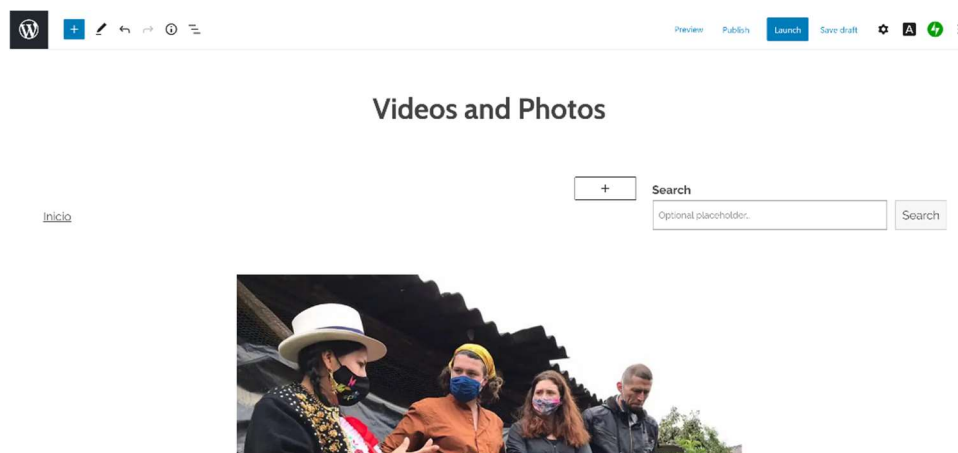
Then select Add All Pages. If only one page appears, then you will need to publish the other pages. Sometimes when WordPress creates new pages it creates it as a draft.



Now, select on the right most column + button. Here we will add a search bar. Search for “search” and select Search.



Now all we have to do is move this bar to the top of the page. Click on the border of the Layout Grid element and the edit bar should appear. On the edit bar, there are up and down arrows that allow you to move the element above or below surrounding elements. Click on the up arrow until it becomes the first element.



Additional Plugins

Some of the paid plans include the feature of adding additional plugins that allow your website to have more functionality. For example, some plugins that can be used with WordPress are bulletin boards/forums where community members can post to or even something like a banner to appear at the top or side of the screen to inform users of current events/updates that are occurring.

Appendix E: YouTube User Manual for Cultivando el Futuro

YouTube User Manual for Cultivando el Futuro

Contents

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| Livestreaming Videos | 5 |
| YouTube and Facebook | 6 |
| Embedding YouTube Videos in an HTML Website | 8 |
| Additional Support | 9 |
| Additional Recommendations | 9 |

YouTube

Account Creation

Computer / PC:

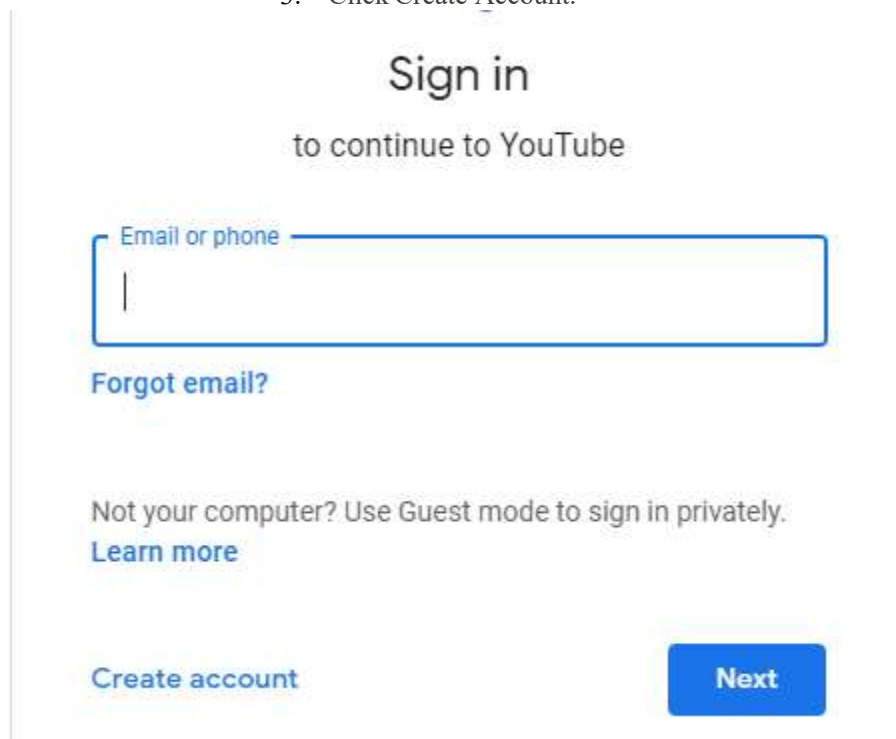
1. Go to [YouTube](https://www.youtube.com).



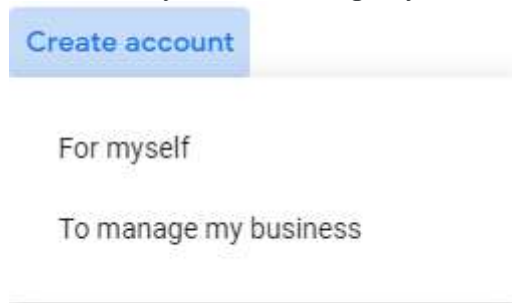
2. In the top right, click Sign in.



3. Click Create Account.



4. Choose For myself or To manage my business.



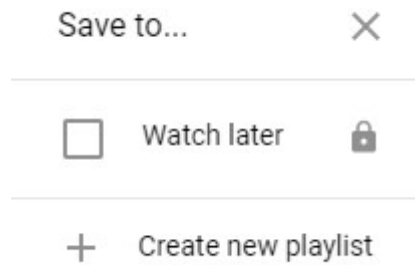
YouTube is signed into with your Google Account. Enter your Google account email and password to sign into YouTube.

Playlist Creation

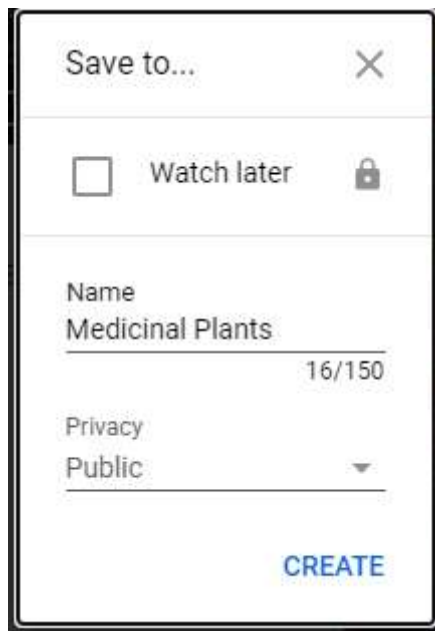
1. Find the video you would like to place in your new playlist.
2. Underneath the video, select “Save”.



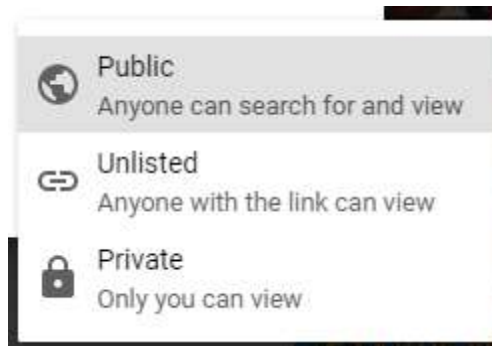
3. Select from: “Watch later”, “Create a new playlist”, or an existing playlist.



4. If making a new playlist (for example: “Medicinal Plants”), type the playlist name.



5. Select the playlist's privacy setting from Public, Unlisted, and Private.

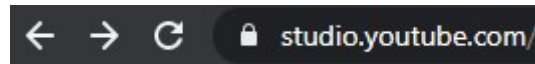


6. Click Create.



Uploading Videos

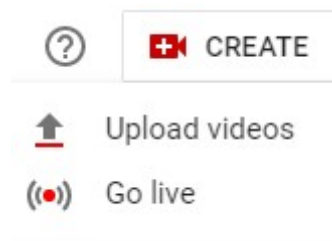
1. Go to studio.youtube.com.



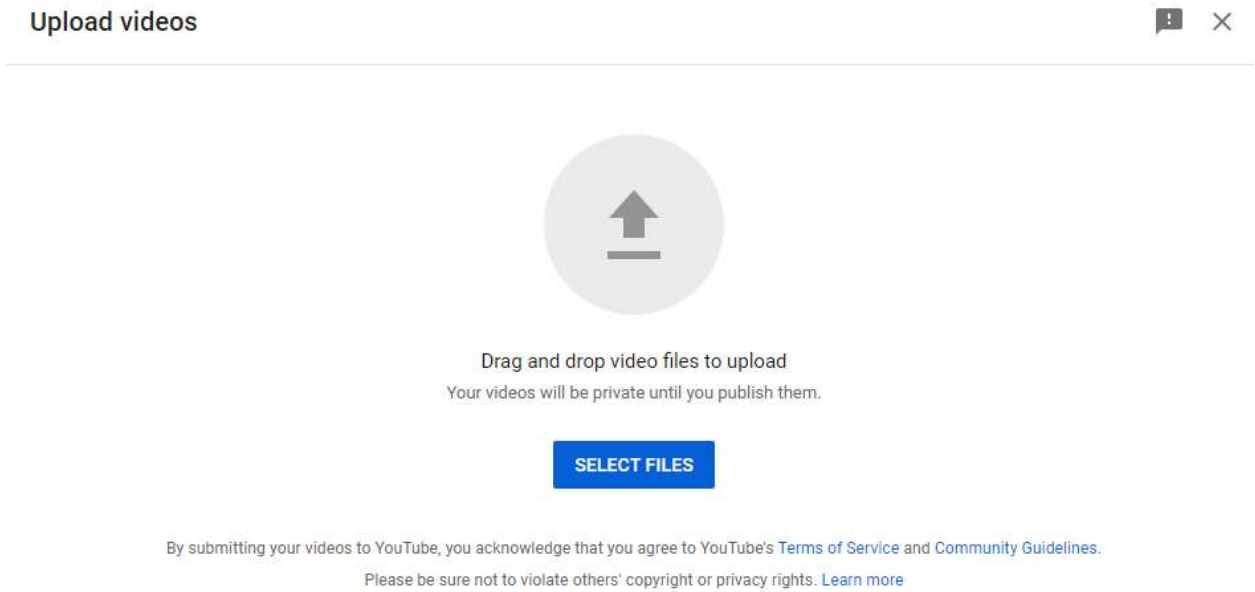
2. Choose either “upload videos” in the center of the screen, OR “create” at the top right of the screen.



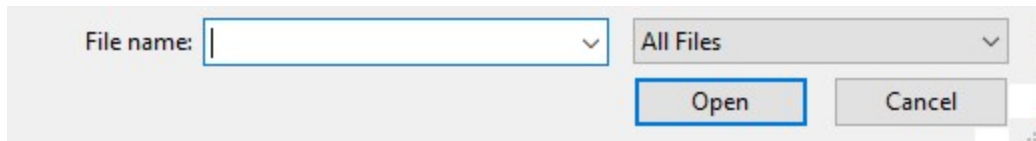
3. If you selected “create”, click “Upload videos”. If not, skip to step 4.



4. Click “select files” in blue in the center of the pop-up window.

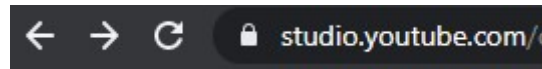


5. Choose the video file from your device.

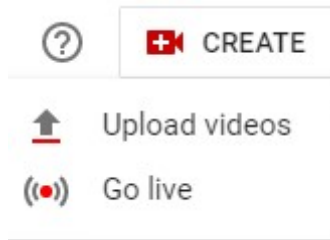


Livestreaming Videos

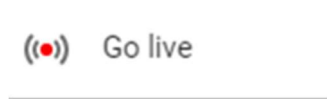
1. Go to studio.youtube.com.



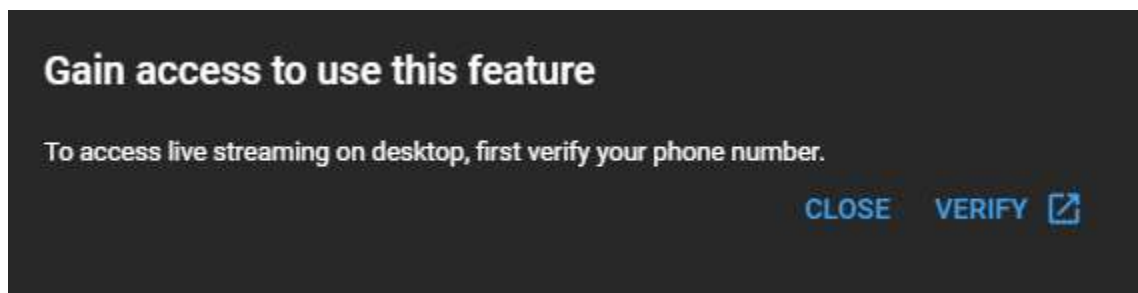
2. Choose "create" at the top right of the screen.



3. Choose "go live".



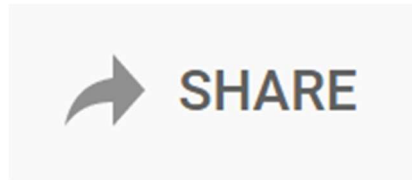
4. If you are unable to stream, you may need to verify your mobile phone number associated with the YouTube Account.



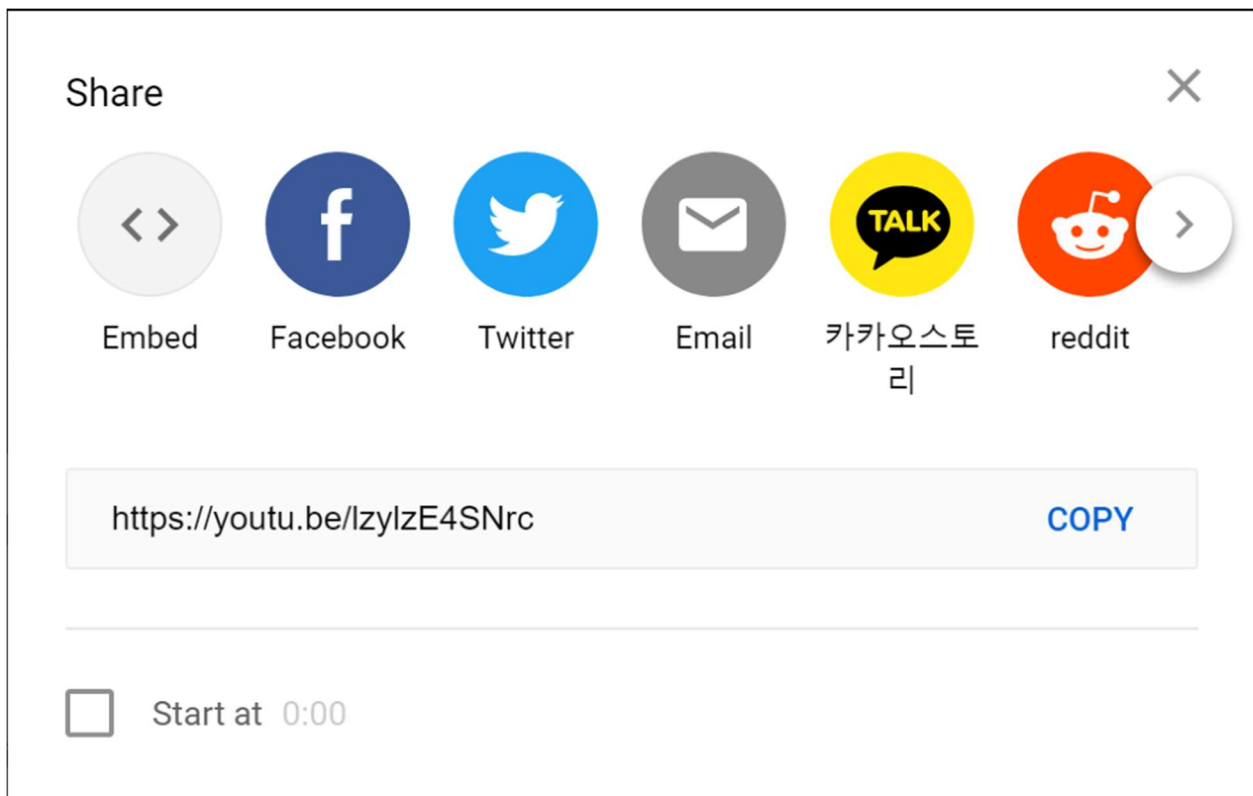
YouTube and Facebook

Adding a YouTube Video Link in a Facebook Post:

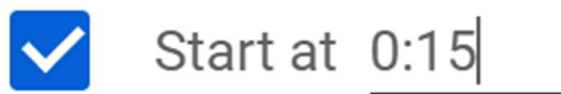
1. Click the “share” icon below the video.



2. Choose the “Facebook” icon.



3. If you would like the video to start at a certain time, enter this time in the “start at 0.00” box. For the example, this video starts 15 seconds in.



4. Add a caption where “Say something about this...” is prompted.









Allie Spratt

Say something about this...

5. Choose the privacy setting for the video, most likely “public”.

Who should see this?

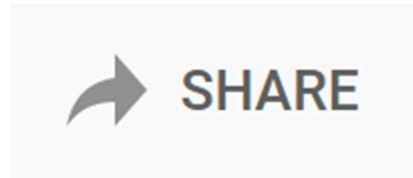
-  **Public**
Anyone on or off Facebook
-  **Friends**
Your friends on Facebook
-  **Friends except...**
Don't show to some friends
-  **Specific friends**
Only show to some friends
-  **Only me**
Only me
-  See All

6. Post the video with the “post to Facebook” button at the bottom.

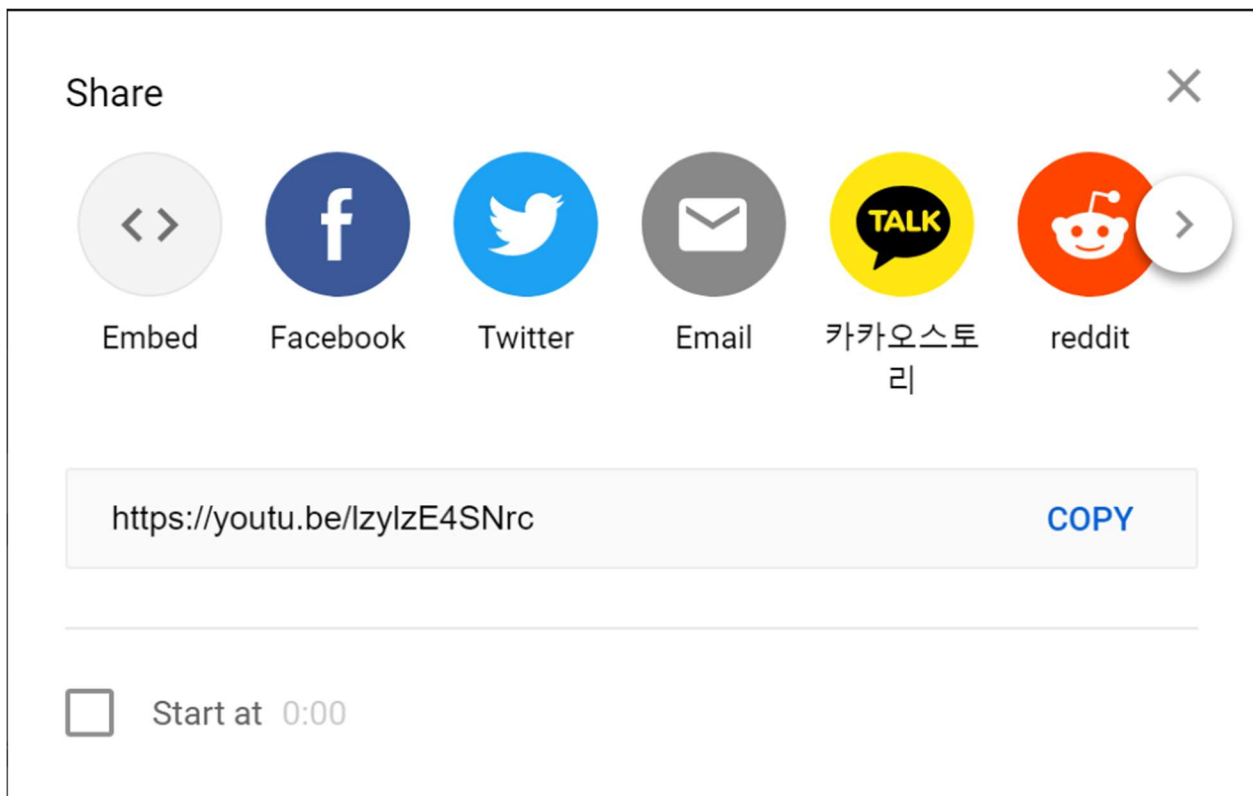


Embedding YouTube Videos in an HTML Website

1. Click the “share” icon below the video.



2. Choose the “Embed” icon, marked with “<>.”



3. Add the HTML code that appears into the website.

Embed Video ✕

```
<iframe width="560" height="315"
src="https://www.youtube.com/embed/
lzylzE4SNrc?start=15"
frameborder="0"
allow="accelerometer; autoplay;
clipboard-write; encrypted-media;
gyroscope; picture-in-picture"
allowfullscreen></iframe>
```

Start at 0:00

EMBED OPTIONS

Show player controls.

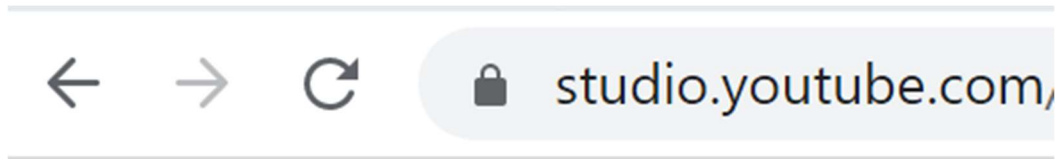
COPY

4. You may change the time at which the video begins playing with the “start at 0:00” button.

Start at 0:15

Channel Customization

1. To edit the customization and aesthetic of the channel, go to studio.youtube.com.



2. Go to the “Branding” tab.

Branding

There, you can edit the profile picture, banner picture, and watermark featured on the videos.

Profile picture

Your profile picture will appear where your channel is presented on YouTube, like next to your videos and comments. Changes you make here will be reflected across other Google services.

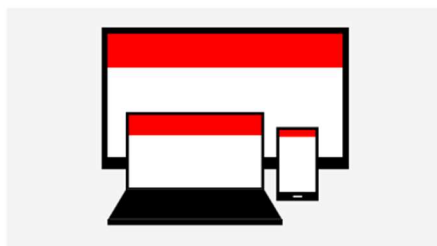


It's recommended to use a picture that's at least 98 x 98 pixels and 4MB or less. Use a PNG or GIF (no animations) file. Make sure your picture follows the YouTube Community Guidelines. [Learn more](#)

[UPLOAD](#)

Banner image

This image will appear across the top of your channel



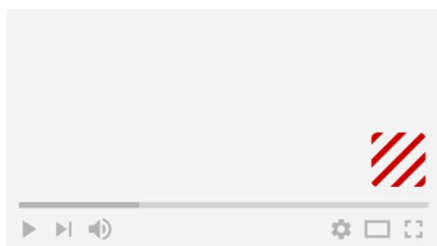
For the best results on all devices, use an image that's at least 2048 x 1152 pixels and 6MB or less.

[Learn more](#)

[UPLOAD](#)

Video watermark

The watermark will appear on your videos in the right-hand corner of the video player



An image that's 150 x 150 pixels is recommended. Use a PNG, GIF (no animations), BMP, or JPEG file that's 1MB or less.

[UPLOAD](#)

Under “Basic Info”, you can add a channel description, links to outside sites (such as the Facebook or website) and add contact information for the organization. You can also customize the URL of the channel.

Channel name and description

Choose a channel name that represents you and your content. Changes you make to your channel name will also show on your Google Account.

[Learn more](#)

First name (required)

Cultivando

Last name (required)

el Futuro

Channel description

Tell viewers about your channel. Your description will appear in the About section of your channel and search results, among other places.

[+ ADD LANGUAGE](#)

Channel URL

This is the standard web address for your channel. It includes your unique channel ID, which is the numbers and letters at the end of the URL. [Learn more](#)

<https://www.youtube.com/channel/Uckk9Q0DGJek2tj2YAYmR08w>



Links

Add links to sites you want to share with your viewers

[+ ADD LINK](#)

Contact info

Let people know how to contact you with business inquiries. The email address you enter may appear in the About section of your channel and be visible to viewers.

Email

Email address

You will also gain access to the channel’s analytics, and once video content is posted, you will be able to see data on who is viewing the content.

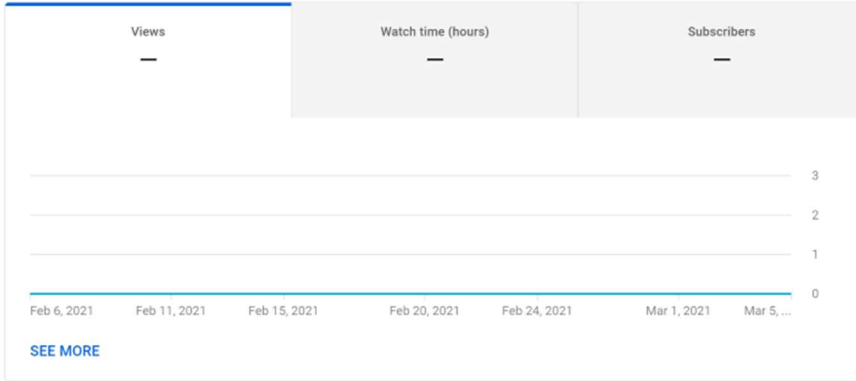
Channel analytics

ADVANCED MODE

- Overview
- Reach
- Engagement
- Audience

Feb 6 – Mar 5, 2021
Last 28 days

Your channel didn't get any views in the last 28 days



Realtime

Updating live

0

Subscribers

0

Views · Last 48 hours

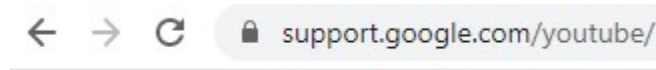
-48h

Now

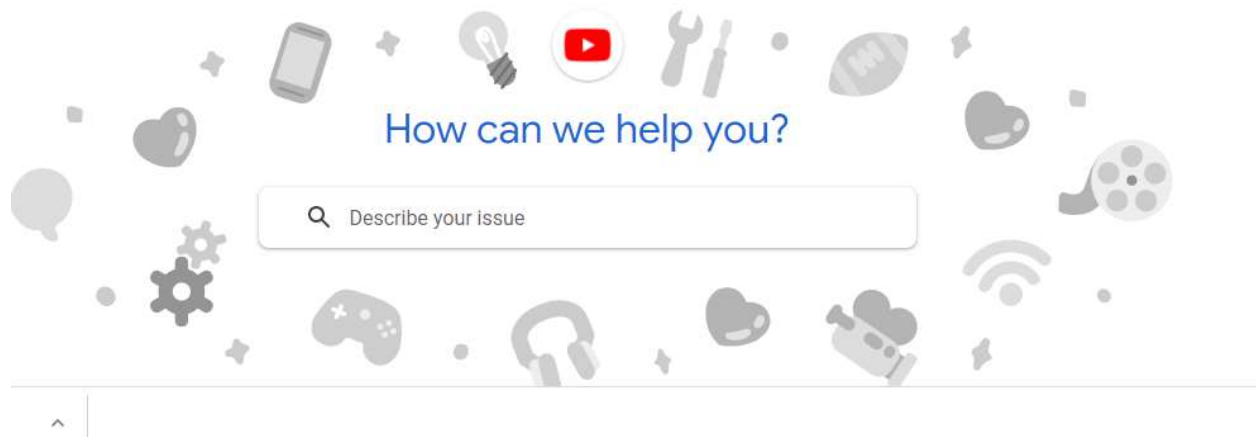
SEE MORE

Additional Support

Additional channel settings and help settings can be accessed at YouTube Help, at support.google.com/YouTube.



Here, you can type search queries into the search bar and YouTube provides step-by-step lists of how to troubleshoot the issue.



Additional Recommendations

- Uploading videos first to YouTube and then embedding the videos in Facebook allows users to search between titles of videos or playlists.
- Playlists should reflect the themes of videos:
For example: Medicinal plants, Financial learning, animal husbandry, farming crops, etc.