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A Community Development Program Framework for Higher Education Institutions in Society 5.0

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ABSTRACT

Higher Education Institutions (HEIs) are mandated to come up with projects that empower community partners to be self-reliant for their future through collaboration. With the surge of the COVID-19 pandemic, most of the communities are now facing challenges, which primarily include good health, poverty, hunger, climate change, sanitation, and quality education. To solve these challenges, Society 5.0 aims to produce a better quality of life for the communities by incorporating ICT frameworks and tools in social innovations. A community engagement office should be established to institutionalize the community engagements of every HEI. It shall serve as a venue for students, faculty members and administrative staff to share various resources. However, change is inevitable; a new era of society will soon rise, as aforementioned, thereby causing the need for an additional significant framework. This study focuses to establish a framework in engaging the members of a rural community and the HEIs and integrate Community Development Program (CDP) to the adopted community for "Society 5.0". ICT Framework for Qualitative Data gathering which is Web Engineering Process Framework was utilized. In addition, Human-Centered Design (HCD), Modified Significant Stories of Change (MSSC), Focus Group Discussions (FGDs), Survey & Analogous Studies were also used. Respondents were volunteers who came from different HEIs. Volunteers were fulfilled, joyful, and happy after their activity in community engagement. However, they all felt that the activity was incomplete because they can do more, and they can do better. ICT tools for Society 5.0 needs to be introduced to all volunteers for better results in community engagement. These volunteers think that if there are more resources, like knowledge, manpower, and more ICT tools, there will be a greater chance of success in engagement. To institutionalize the engagement of various stakeholders, all entities must take an active role in building not just sustainable, but resilient communities. In-depth discussion took place and DNA Community 5.0 Framework was created. To institutionalize the engagement of HEIs in the community for Society 5.0, all entities aforementioned must participate. The DNA Community 5.0 Framework must also be discussed for its significance. Society 5.0 must introduce a guide for social development. It can bring about a broad impact on societies at all levels.

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RESUMO

As Instituições de Ensino Superior (IES) são obrigadas a desenvolver projetos que capacitem os parceiros da comunidade a serem autossuficientes para o seu futuro por meio da colaboração. Com o aumento da pandemia da COVID-19, a maioria das comunidades enfrenta desafios, que incluem principalmente saúde, pobreza, fome, mudanças climáticas, saneamento e educação de qualidade. Para resolver esses desafios, a Sociedade 5.0 visa produzir uma melhor qualidade de vida para as comunidades, incorporando estruturas e ferramentas de TIC em inovações sociais. Um escritório de engajamento comunitário deve ser estabelecido para institucionalizar os engajamentos comunitários de cada IES. Ele deve servir como um local para alunos, docentes e funcionários administrativos compartilharem vários recursos. No entanto, a mudança é inevitável; uma nova era da sociedade surgirá em breve, como mencionado anteriormente, causando a necessidade de uma estrutura adicional significativa. Este estudo se concentra em estabelecer uma estrutura para o engajamento dos membros de uma comunidade rural e das IES e integrar o Programa de Desenvolvimento Comunitário (CDP) à comunidade adotada para a "Sociedade 5.0".". Foi utilizada a Estrutura de TIC para coleta de dados qualitativos, que é a Estrutura de Processos de Engenharia Web. Além disso, foram utilizados o Design Centrado no Ser Humano (HCD), Histórias Significativas de Mudança Modificadas (MSSC), Discussões em Grupo Focal (FGDs), Pesquisas e Estudos Análogos. Os entrevistados eram voluntários de diferentes IES. Os voluntários estavam satisfeitos, felizes e contentes após sua atividade de engajamento comunitário. No entanto, todos sentiram que a atividade estava incompleta, pois poderiam fazer mais e melhor. Ferramentas de TIC para a Sociedade 5.0 precisam ser apresentadas a todos os voluntários para melhores resultados no engajamento comunitário. Esses voluntários acreditam que, se houver mais recursos, como conhecimento, mão de obra e mais ferramentas de TIC, haverá uma chance maior de sucesso no engajamento. Para institucionalizar o engajamento de diversas partes interessadas, todas as entidades devem assumir um papel ativo na construção de comunidades não apenas sustentáveis, mas resilientes. Discussões aprofundadas ocorreram e a Estrutura de DNA da Comunidade 5.0 foi criada. Para institucionalizar o engajamento das IES na comunidade para a Sociedade 5.0, todas as entidades mencionadas devem participar. O Marco da Comunidade DNA 5.0 também deve ser discutido por sua importância. A Sociedade 5.0 deve apresentar um guia para o desenvolvimento social. Ela pode gerar um amplo impacto nas sociedades em todos os níveis.

Keywords:
Sociedade 5.0, Programa de Desenvolvimento Comunitário, Instituições de Ensino Superior, Design Centrado no Ser Humano, Tecnologia da Informação e Comunicação

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Introduction

Higher Education Institutions (HEIs) are mandated to develop initiatives that empower the community to become self-reliant and prepared for the future through collaboration. Llenares and Deocaris (2018) emphasize that one of the core functions of academic institutions is to develop positive societal change. HEIs draws experiences and perspectives among the stakeholders to examine its contribution toward the development of society and economics (Wang, 2020). This kind of change is often facilitated by extension programs and services that provide real benefits to local communities. Fatima and Elbanna (2022) indicated that when Corporate Social Responsibility (CSR) is strategically implemented, these initiatives encourage organizations to engage in collaborations that benefit the community and company. CSR plays a vital role, equipping companies to establish partnerships with communities not only to uplift them but also to contribute to the company's growth. This approach fosters a culture of civic responsibility among students and strengthens the link between education and social development.

The COVID-19 situation raised challenges that were faced on a global level, such as poverty, health disparities, hunger, climate change, and limited access to quality education of which are directly connected with the UN's 17 Sustainable Development Goals (SDGs). The Higher Education Institutions (HEIs) are asked to embed these goals to respond to the needs into the community development programs (CDPs) to make an inclusive and sustainable recovery. Avelar et al. (2023) observed the analysis of 37 reports regarding Sharing Information on Progress (SIPs) from HEIs, where the majority of higher education institutions integrated the SDGs into their curricula, research, and partnerships to encourage interdisciplinarity and sustainable development. Chankseliani and McCowan (2020) considered evolving as part of a new university role to support the attainment of SDGs through education, innovation, and community engagement. These readings prove that SDG embedment into CDPs run by HEIs can address pressing societal needs while entrusting the institutions with leadership roles in a post-pandemic world, in which a real transformation can only take place.

Society 5.0 offers a solution to sociotechnological challenges, putting advanced technologies, such as Internet of Things (IoT), Artificial Intelligence (AI), robotics, blockchain technology, and big data. Society 5.0 aims to improve the quality through innovation that would directly impact individuals and communities. Ferreira and Serpa (2018) indicated this shift by emphasizing people's core position in technological development, contrasting with Industry 4.0's focus on production. Society 5.0 technologies use the social, environmental, and economic dimensions of sustainability (Alimohammadlou & Khoshsepehr, 2023). These studies confirm that Society 5.0 is an inclusive development model, not only a theoretical model but a practical pathway toward equitable and sustainable community development.

This concept underscores the significant role humans play in driving community development through innovative technologies.

Figure 1.

Timeline of the Society up to present

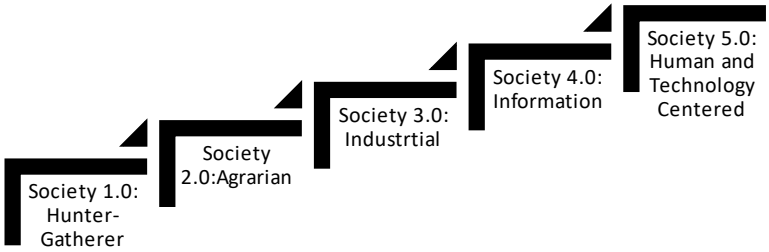


Figure 1 represents the evolution of human society through economic and social innovation. Society 1.0 marks the beginning of human survival, characterized by minimal technological advancements. Society 2.0, also known as the Agrarian Society, introduced agricultural technologies that enabled large-scale planting of crops and trees, particularly for trading purposes. By the late 18th century, motorized machines were invented, leading to Society 3.0, or the Industrial Society, which focused on mass production for trade. In September 1945, the first electronic data processing computer, Aiken Mark I, was developed, ushering in Society 4.0 or the Information Society, where information dissemination became more efficient (Fukuyama, 2018).

Society 5.0 aims to integrate three core elements: ICT innovation, social innovation, and placing people at the center as key contributors. Fukuyama (2018) noted that this new era of society is inevitable and driven by enabling technologies such as cloud services, artificial intelligence (AI), big data, blockchain, and the Internet of Things (IoT). These advancements bring significant economic and social benefits. However, to ensure sustainability and inclusivity, it is crucial to prioritize humans at the center of every project (Shiroishi et al., 2019).

To institutionalize community engagement within Higher Education Institutions (HEIs), establishing a dedicated community engagement office is essential. This office serves as a platform where students, faculty members, and administrative staff can contribute various resources such as skills, finances, and expertise. Rubio et al. (2016) emphasized this principle in their study. However, given the unstoppable progression of societal change toward Society 5.0, additional frameworks are necessary to adapt effectively.

This study focuses on creating a framework to engage rural communities and HEIs in integrating Community Development Programs (CDPs) aligned with Society 5.0 principles. Specifically, it aims to: Identify metrics and entities involved in establishing a CDP framework for HEIs within Society 5.0; Assess the current status of HEIs' community developers regarding their knowledge of ICT tools for community engagement. Develop a CDP framework for HEIs tailored to Society 5.0.

Methodology

The methodology employed a multi-faceted approach to qualitative data gathering, integrating two primary frameworks. First, the Web Engineering Process Framework guided the ICT infrastructure development and systematic initial engagement. Second, Human-Centered Design (HCD) principles were implemented through a design thinking approach, utilizing five key techniques: (1) Expert Interviews to gather specialized insights, (2) a Modified Most Significant Stories of Change (MSSC) method to document impactful narratives, (3) Focus Group Discussions (FGDs) to explore community perspectives, (4) Surveys for quantitative validation, and (5) Analogous Inspiration to draw insights from comparable literature reviews. While these methods provided rich and context-specific insights, the relatively small respondent sample size (n = 14) is acknowledged as a limitation of the qualitative assessment. This combined approach ensured both technological rigor and human-centered design validation techniques for data collection and analysis throughout the research process.

ICT Frameworks for Qualitative Data Gathering: Web Engineering Process Framework

Communication and planning are the components of Web Engineering (WebE) framework that facilitated the documentation of the web site making. This was presented in WebE Process Framework in Figure 2. These components are also the initial engagement technique that can be used for community engagement projects. This was shown and stated in (De Guzman, 2012).

Figure 2.

Web Engineering (WebE) Process Framework

Human Centered Design: Design Thinking

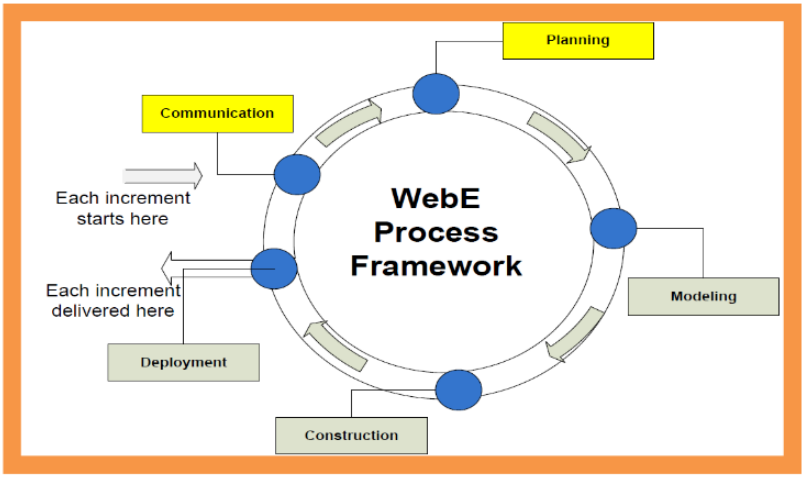
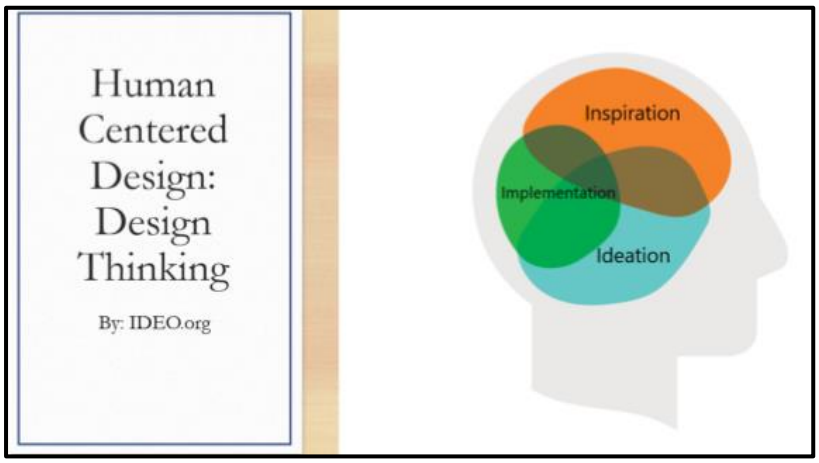


Figure 3.

Human Centered Design: Design Thinking



For every significant innovation, human-centered design (HCD), as illustrated in Figure 3, must be embraced. HCD operates on the belief that all problems, even those that seem insurmountable—such as many outlined in the Sustainable Development Goals (SDGs) are solvable. Since it is human-centered, it emphasizes that the people who face these challenges are best positioned to solve them. Moreover, HCD provides solutions by collaborating with those directly involved, thereby enabling a deeper understanding of the situation for inspiration, ideation, and implementation (IDEO.org, 2015).

1. Expert Interview - Experts provide a systems-level perspective of the project area by sharing insights into recent innovations, successes, and failures. They also offer diverse organizational perspectives and technical advice (IDEO.org, 2015).
2. Modified - Most Significant Stories of Change (MSSC) - Stories of change are similar to case studies but focus on significant positive changes or increments. These stories demonstrate how a project or program has contributed to meaningful changes in beneficiaries' lives or other areas such as policy or organizational shifts. Unlike case studies, which can be developed at any stage of a project, stories of change are typically created after a project has begun (Ngales & Astete, 2020).
3. Focus Group Discussion (FGD) - FGDs involve gathering six to eight individuals with shared interests or experiences to discuss a specific subject matter. These discussions can include strangers or pre-existing groups and are used to collect data collaboratively while employing observation techniques (Laws et al., 2003).
4. Survey - Surveys were conducted across different HEIs with a total of 14 volunteers. Research questions were designed to gather significant data for analyzing the outcomes of this research.
5. Analogous Inspiration - To generate better ideas, existing studies were re-evaluated using updated questionnaires tailored to the current context and values of the research (IDEO.org, 2015).

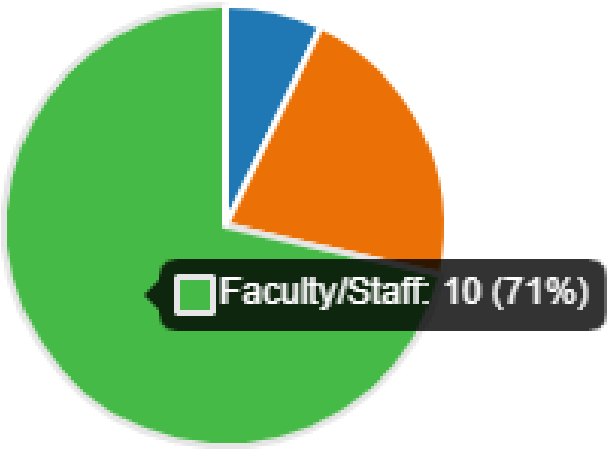
Results and Discussion

Profile of the Respondents

There were fourteen (14) respondents from different Higher Education Institutions (HEIs). Among them, 71.4% (10 respondents) were faculty or staff, 21.5% (3 respondents) held positions as supervisors, team leads, or coordinators, and 7.1% (1 respondent) were CEOs, COOs, deans, managers, or directors. Additionally, almost all respondents had either completed a master's degree or were at the master's level of education. These demographics are clearly illustrated in Figure 4.

Figure 4.

Profile of the Respondents



Feelings of the Volunteers after their Community Engagement

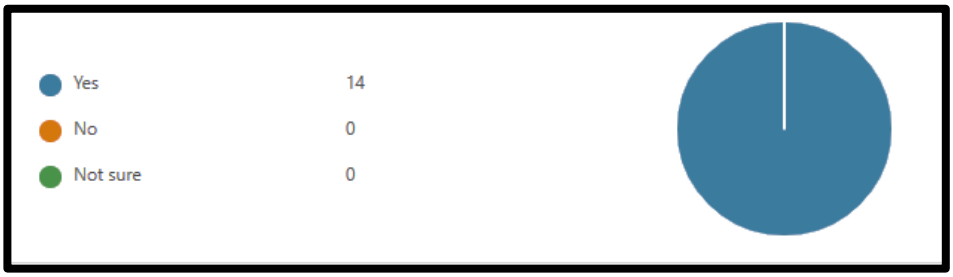
When asked about their feelings after conducting community engagements, the most common responses included terms such as "fulfilled," "joyful," and "happy." One respondent shared, "To be a volunteer and share the knowledge/talents with others is fulfilling. The chance to share is one way to pay it forward for the blessings God is providing." However, many respondents also expressed feelings of incompleteness and occasional anxiety, stemming from their belief that they could have done more during the engagements. They suggested that having additional resources—such as knowledge, personnel, and ICT tools—could lead to greater success in future engagements.

Usage of ICT tools in Community Engagement in preparation for Society 5.0

All respondents reported using ICT tools during their community engagements, as shown in Figure 5. However, interviews conducted during focus group discussions revealed that some participants were unaware they were utilizing ICT tools as part of preparation for Society 5.0.

Figure 5.

Usage of ICT Tools in Community Engagement

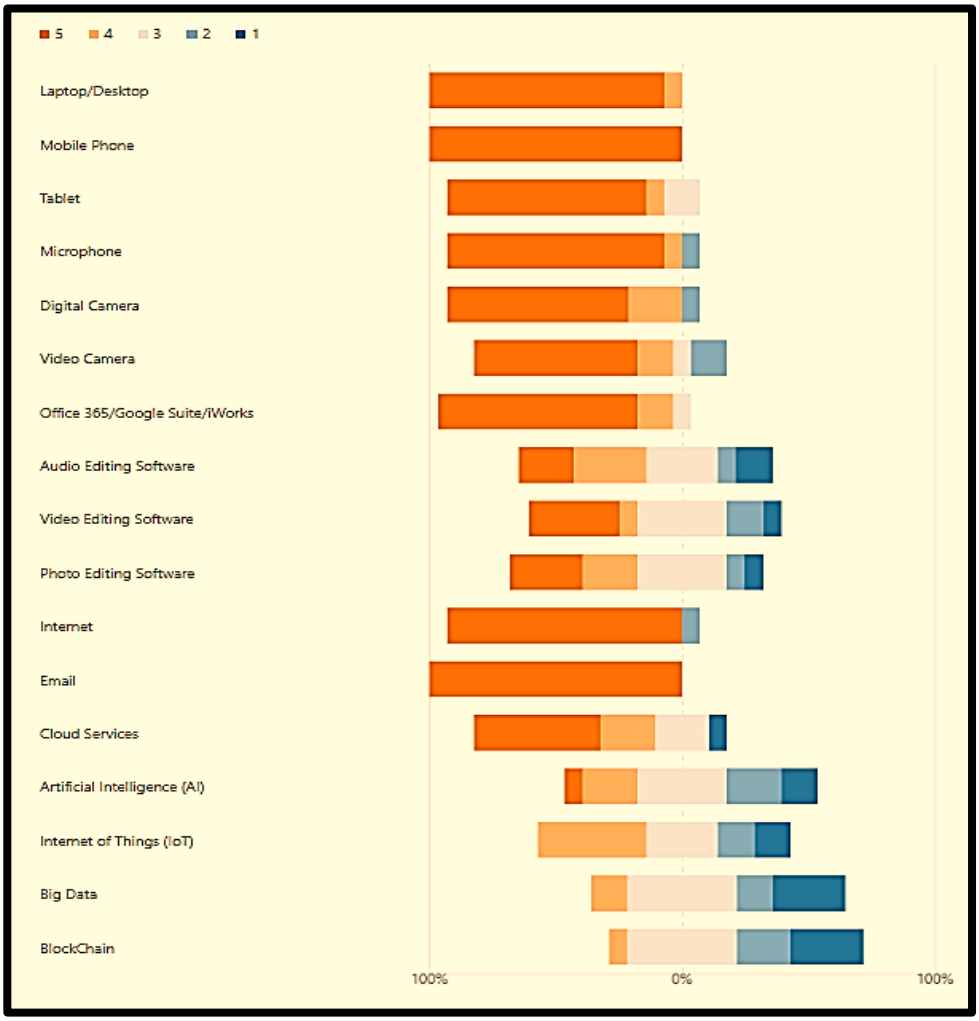


Rate level of usage of the following ICT tools based on the volunteers' present knowledge and skills (5 Exemplified, 1 No Knowledge)

Figure 6 highlights the top ICT tools currently known to respondents: laptops/desktops, mobile phones, microphones, Office365/Google Suite/iWorks, the internet, and email. These tools were prevalent nowadays and serve as foundational skills and knowledge necessary for transitioning into Society 5.0—a human- and technology-centered society.

Figure 6.

Level of usage in ICT tools based on the volunteers' present knowledge and skills.

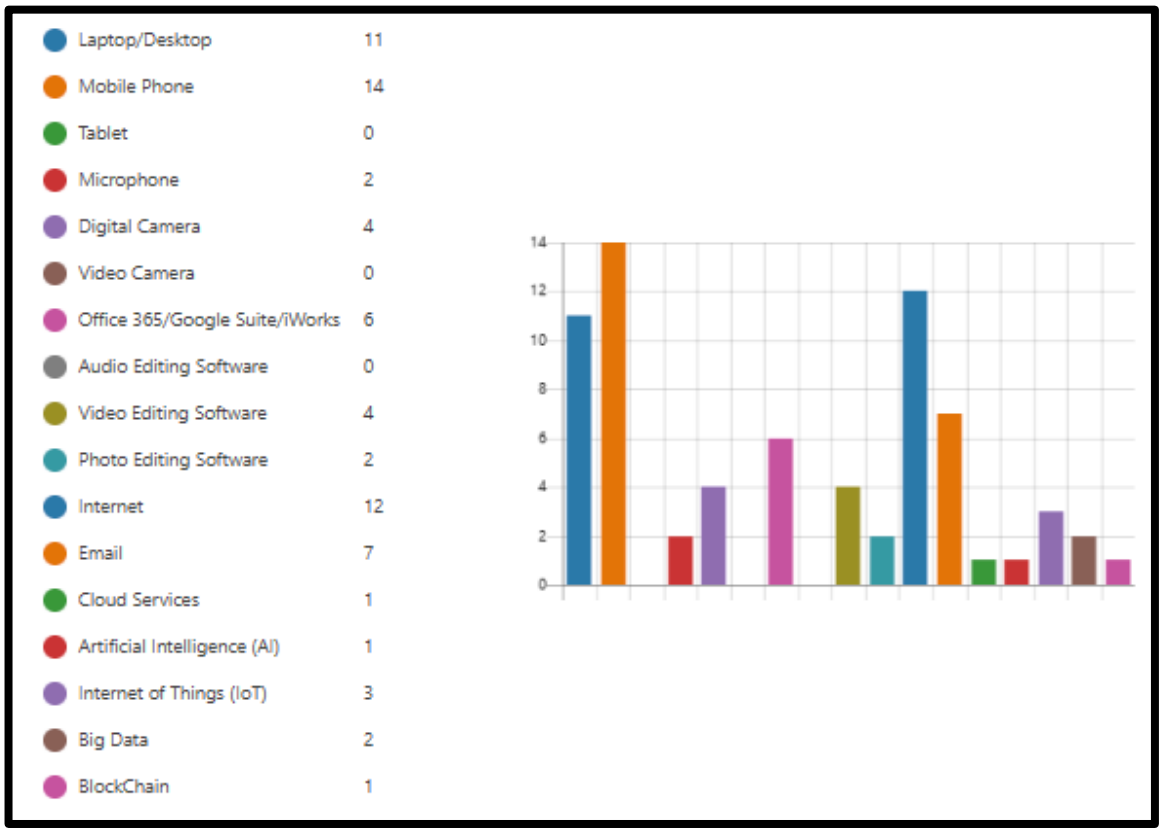


Top ICT Tools that will Greatly Help to Addressed Community Related Problems for Society 5.0

Figure 7 further identifies the top five ICT tools used by respondents: mobile phones, the internet, laptops/desktops, email, and Office365/Google Suite/iWorks.

Figure 7.

ICT Tools that will Greatly Help to Addressed Community Related Problems for Society 5.0



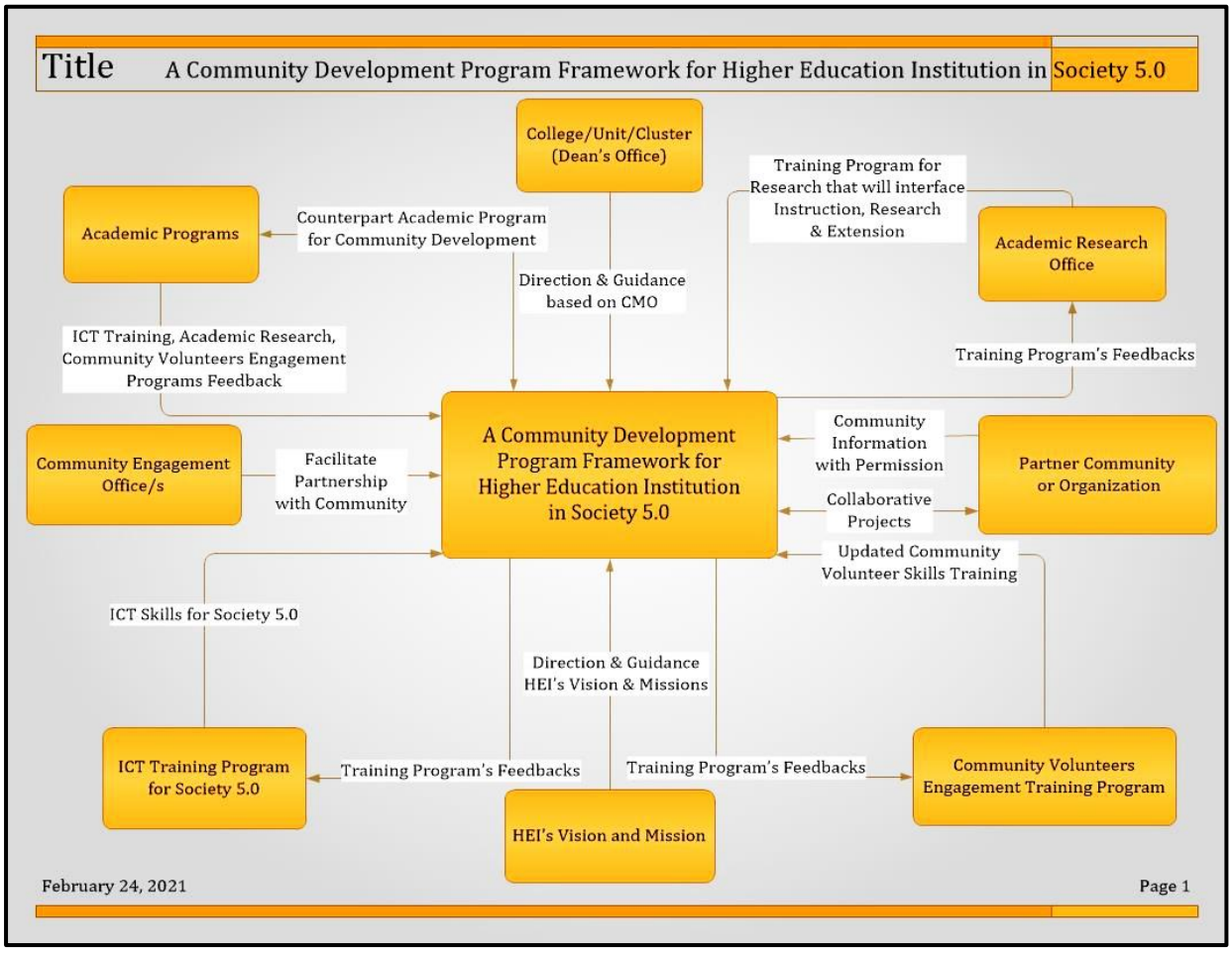
Community Development Program Framework for HEI in Society 5.0

Finally, Figure 8 presents the DNA Community 5.0 Framework (De Guzman et al., 2021). This framework consists of eight entities surrounding its central elements. It serves as a communication tool connecting community partners, HEIs, and Society 5.0. The framework was developed based on the researchers' extensive experiences, the materials and methods employed in their studies, institutional support, and their significant knowledge of Society 5.0.

The DNA Community 5.0 Framework illustrates the interconnected entities and processes involved in implementing community development programs within Higher Education Institutions (HEIs) in alignment with Society 5.0 technologies to address societal challenges. This framework ensures collaboration between HEIs, community partner, and other stakeholders shown in figure 8 to achieve sustainable and impactful HEI community engagement.

Figure 8.

DNA Community 5.0 Framework (De Guzman, Ngales & Astete)



The Community Development Program Framework for Higher Education Institutions in Society 5.0 or simply DNA Community 5.0 Framework serves as the guide, connecting all entities and ensuring alignment with Society 5.0 principles. It functions as a communication hub for data flow, decision-making, and feedback mechanisms to ensure good outcomes. The College/Unit/Cluster (Dean's Office) provides direction and guidance based on the Commission on Higher Education (CHEd) Memorandum Order (CMO), ensuring that academic programs align with institutional policies and community engagement goals. Academic Programs act as counterpart entities for community development initiatives, receiving training feedback from the engagements, academic research initiatives, and community volunteer engagements. They serve as the implementing body for projects, contributing resources such as personnel and expertise.

The Academic Research Office develops training programs for faculty and staff volunteers, facilitating projects that integrate instruction, research, and extension which is core functions of faculty members in HEIs. It also continuously provides feedback to improve training programs modules. The Partner Community or Organization plays a crucial role in establishing collaborative projects through a two-way beneficiary system where HEIs and communities actively participate throughout project or program implementation. It ensures community involvement in all decision-making processes.

The Community Engagement Office/s facilitates partnerships between HEIs and communities or organizations while overseeing programs, projects, and activities across the institution rather than focusing solely on specific academic programs. The Community Volunteers Engagement Training Program (CVETP) introduces training programs modules involving all stakeholders within the framework, encouraging collaboration in sharing knowledge, skills, resources and experiences among all stakeholders.

The ICT Training Program for Society 5.0 (ICTTPS5) provides training on ICT skills necessary for transitioning into Society 5.0. It ensures significant improvements in community engagement through advanced technologies such as cloud services, artificial intelligence (AI), the Internet of Things (IoT), and big data. Finally, the HEI's Vision and Mission guides the overall direction of community development initiatives, ensuring alignment between institutional goals and societal needs to prevent disintegration of efforts.

These interconnected entities highlight collaboration among HEI and Community to achieve sustainable development goals while leveraging technology to prepare HEIs for Society 5.0.

Conclusion

DNA Community 5.0 framework is a comprehensive guide for HEIs to implement community development programs effectively while embracing Society 5.0 principles. By fostering collaboration among academic units, research offices, communities, and organizations, it ensures that projects are aligned with institutional goals and societal needs while leveraging advanced technologies for impactful outcomes.

Observation plays a significant role in analyzing and evaluating the results and discussions to ensure a high-quality output. It is an integral part of most methods used in this research, including expert interviews, focus group discussions, and the collection of most significant stories of change. These methods greatly contributed to the development of a community development program framework for HEIs aligned with Society 5.0.

As Ferreira and Serpa (2018) emphasized, achieving quality of life and sustainability requires introducing the new concept of Society 5.0 as a guide for social development. This concept has the potential to create a profound impact on societies at all levels. Higher Education Institutions (HEIs), with their advanced understanding and abundant resources, are well-positioned to address societal challenges. By leveraging HEIs through academic programs, these institutions can implement community engagement initiatives at the highest level, fostering meaningful and sustainable solutions.

Future research may focus on developing a more detailed operational framework for implementing Society 5.0–driven community development programs of HEIs that are specifically tailored not just for rural community but also for Indigenous Peoples, including clearer guidelines on stakeholder engagement, technology integration, and cultural preservation. Further studies are also recommended to implement and test these proposed

frameworks across different higher education institutions and in specific community case studies, to evaluate their scalability, contextual adaptability, and long-term impact on both communities and partner HEIs.

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