care, judgment, dexterity

CRAEFT

Policy Recommendations

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Executive summary

This policy brief addresses the critical need to integrate technology into vocational training for traditional crafts, aiming to rejuvenate and sustain these vital cultural practices in the contemporary digital landscape. Traditional crafts are not only a repository of cultural heritage but also a significant source of livelihood for many communities. However, they face challenges such as declining interest among the youth, limited market access, and the risk of losing traditional skills and knowledge.

To address these challenges, the brief proposes the implementation of pilot programs as a strategic approach to introduce and refine the use of technology in traditional crafts. These programs are designed to test the effectiveness of technology integration in enhancing craftsmanship, innovating designs, and expanding market reach while preserving the cultural integrity and authenticity of traditional crafts.

Key recommendations include:

- Developing partnerships among government bodies, educational institutions, technology providers, and craft communities to support pilot programs with expertise, resources, and funding.
- Updating curricula to include digital skills relevant to traditional crafts, ensuring they align with both market needs and cultural preservation goals.
- Providing access to digital tools and infrastructure, alongside training for practitioners and educators in their effective use.
- Establishing a monitoring and evaluation framework to assess the impact of technology integration and refine approaches based on feedback.

The expected outcomes of these initiatives include increased interest in traditional crafts among younger generations, innovation in craft techniques and designs, and improved market access through digital platforms. However, the brief also cautions against potential risks, emphasizing the need for quality assurance and the maintenance of cultural integrity as paramount.

Document history

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Abbreviations

AR	Augmented Reality
CNC	Computer Numerical Control
FabLabs	Fabrication Labs
VR	Virtual Reality
WP	Work Package

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1. Introduction

Globalization and technological advancements are transforming societies at an unprecedented pace, while traditional crafts - a vital component of our cultural heritage and identity – are at risk of being side-lined or forgotten. Traditional crafts are not merely artistic expressions; they embody centuries of knowledge, skills, and cultural narratives transmitted through generations.

This policy brief presents a case for the integration of technology into vocational training programs for traditional crafts. It argues that by using digital tools, online community and marketing platforms, as well as advanced manufacturing technologies, we can address the challenges that traditional crafts and their communities face today. These challenges include the decreasing number of practitioners and the lack of interest among younger generations, as well as limited market access, and the lack of traditional skills and knowledge bases.

We furthermore advocate the relevance of digital tools for education and training which can aid the preservation of traditional crafts. Such tools exhibit the potential to increase the income of craft practitioners through tutoring and, at the same time, reduce the training costs for apprentices who do not have to travel. New technologies furthermore exhibit the potential for practitioner time-saving in the design of products. In addition, they can be of assistance in the crafting process through new manufacturing technologies and reduce the cost of production without impacting the aesthetics of the final products.

Moreover, this brief advocates towards tools and platforms that can be integrated into educational and training curricula for crafts. The use of online knowledge bases is the first step for preserving craft knowledge and enabling the re-enactment of crafting actions. Novel technologies such as augmented or virtual reality can enable remote tutoring, reduce tutoring costs, and lead to energy and material savings.

The brief outlines a series of recommendations that aim for the collaboration between workers in technology and traditional crafts. By initiating pilot programs, we can explore and refine good practices for integrating technology into the processes of traditional crafts. These pilots could serve as a testbed for innovative ideas, allowing the assessment of the impact of technology on craft preservation, innovation, and marketability.

Through a collaborative effort involving government bodies, educational institutions, technology providers, and the crafts communities themselves, this policy brief envisions a future where traditional crafts not only survive but thrive. It champions a future where these crafts continue to enrich our cultural landscapes and contribute to sustainable economic development, all the while remaining adaptable and relevant in a rapidly changing world.

2. Context and Issue

Traditional crafts are endangered due to declining interest, ageing practitioners, and competition with mass-produced goods. The ability to teach a craft is central to its preservation. Perhaps, the biggest threat to craft viability is due to the declining numbers of practitioners and apprentices. Education and training tools are required to support craft education, raise interest, and provide business motivation that necessitates inter-generational and sustainable learning of crafts.

Vocational training plays a crucial role in the preservation and continuation of traditional crafts by imparting essential skills and knowledge to new generations. Therefore our policy recommendations fall into three main axes.

1. Vocational training programs that transmit skills and techniques of traditional crafts from experienced practitioners to novices.
2. The establishment of standardized curricula and certification helps to maintain quality and consistency in craft practices.
3. Training programs on business, marketing, and entrepreneurial skills, enable practitioners to better market their crafts and sustain their livelihoods.

Besides the establishment of programmes that foster the aforementioned skills, research is proposed for overcoming the following limitations that exist in accessing training for said skills.

1. The ability to access vocational training programs remotely in rural or underprivileged areas, as vocational training for traditional crafts might not be accessible to all potential learners due to geographic, economic, or social barriers.
2. Finding a balance between traditional and modern techniques or designs. This challenge regards in particular the engagement of youth, as attracting younger generations to traditional crafts can be difficult, especially in a globalized world where modern industries offer alternative career paths that may seem more lucrative or prestigious.
3. In addition, while technology offers the potential to revitalize traditional crafts, vocational training programs may lack the infrastructure, knowledge, or resources to effectively integrate new technologies. As such the interdisciplinary collaboration of traditional craft masters and technologists is recommended.

3. New Technologies

Technology can play a significant role in addressing several challenges faced by traditional crafts, helping to ensure their sustainability, relevance, and appeal.

Traditional crafts are often labour-intensive and time-consuming, making it difficult to produce large quantities of goods without compromising quality. Automation and digital fabrication technologies, such as 3D printing and CNC machining, can replicate intricate designs more quickly and consistently, increasing production capacity. Digital tools can also streamline the production process, from design to distribution, making it more efficient.

Another recommendation regards keeping traditional crafts relevant and appealing to consumers while preserving their cultural essence and authenticity. Digital design tools such as computer-aided design software can enable practitioners to experiment with new designs, materials, and techniques without the high costs or risks associated with physical prototyping.

The transmission of traditional skills to new generations is becoming increasingly difficult, with fewer opportunities for hands-on learning from experienced practitioners. Online learning platforms and tutorial videos can make vocational training more accessible, especially in remote areas. AR and VR can simulate the hands-on experience of traditional crafting techniques, providing immersive learning environments that are not constrained by geographical boundaries. Moreover, these technologies can provide the ability of remote tutoring thus increasing educator income and enabling the tutoring of remote apprentices.

Some traditional crafting processes can be resource-intensive or use environmentally unsustainable materials. Sustainable technologies can help practitioners source eco-friendly materials and adopt greener production methods. Digital tools can optimize material use, reducing waste in the production process. Furthermore, digital training can assist in the conservation of energy and materials, particularly if combined with VR and haptic technologies that make practice more realistic.

Adapting traditional crafts to align with changing consumer preferences without losing their cultural significance is challenging. Data analytics and consumer trend analysis can help practitioners understand and anticipate market trends, enabling them to innovate their products in ways that resonate with modern consumers while preserving traditional elements.

Practitioners of traditional crafts often face barriers to accessing broader markets, limiting their customer base to local or regional buyers. E-commerce platforms and social media can significantly expand market access for traditional crafts, allowing practitioners to reach a global audience. Digital marketing tools can help practitioners target their marketing efforts more effectively, while online payment and logistics solutions facilitate international sales and shipping.

Maintaining consistent quality and authenticity is vital for traditional crafts, especially as they scale up production or innovate designs. Blockchain technology can provide a transparent way to track the provenance and authenticity of craft items, reassuring consumers about the quality and origin of their purchases.

4. Policy Options and Recommendations

4.1. Short-term and Long-term Strategies

Integrating technology into vocational training for traditional crafts involves a blend of strategic initiatives aimed at immediate improvements and the pursuit of long-term sustainability and growth.

4.1.1. Short-term

Investments in technological infrastructure within vocational training centres and provide subsidies or grants to training centres and practitioners for acquiring digital tools and software.

Our main recommendation focused on the update or development of curricula that include digital skills relevant to traditional crafts, such as digital design, online marketing, and e-commerce. The incorporation of modules in these curricula that educate on the uses of technology is expected to innovate within traditional practices while maintaining cultural integrity. This should be supplemented by organizing professional development programs for trainers that focus on technological tools and pedagogical methods for effective technology integration in craft education.

4.1.2. Long term

Our recommendation is to promote interdisciplinary research combining technology and traditional crafts to explore new materials, techniques, and sustainable practices. Furthermore, the establishment of innovation hubs, FabLabs, or incubators in partnership with vocational training centres is expected to nurture new ideas, prototypes, and products.

The proposal for new curricula should be accompanied by integrating principles of sustainability into the, emphasizing the use of eco-friendly materials and technologies, as well as the financial benefits that they provide. The curricula should encourage the development and adoption of green technologies that reduce the environmental impact of traditional crafting processes. To this end, we further recommend the use of digital technologies in the curricula, particularly when training in VR can lead to energy and material savings.

Digital technologies and libraries can be used for the documentation and preservation of traditional crafting techniques and patterns, ensuring their conservation. The development of digital archives accessible to students and researchers can foster the understanding and appreciation of traditional crafts. In this context, the semantic and semiotic analysis and annotation of craft ethnographies are essential to the in-depth analysis of crafts. This analysis enables the re-enactment of crafting processes and, thus besides craft conservation, supports craft preservation through supporting the continuation of practice.

The revision of policies and regulations to support the digital transformation of traditional crafts is recommended, so they are more likely to benefit from innovation and entrepreneurship efforts. Of paramount importance is the implementation of measures to protect the intellectual property rights of traditional practitioners and communities in the digital and physical domains. Specifically, these measures

should aim at the protection of designs and styles that are characteristic of specific communities or individuals.

4.2. Stakeholder Roles

Integration of technology in vocational training for traditional crafts requires the collaboration of multiple stakeholders. Below we map our recommendations to stakeholder groups.

4.2.1. Government Bodies

We believe that the crafts sector would benefit from the implementation of policies that encourage the use of technology in traditional crafts and vocational training. This includes funding programs, tax incentives, and regulations that protect intellectual property rights. The financial support for infrastructure development, research, pilot projects, and scholarships is expected to reduce the limitations to the adoption of pertinent technologies in this sector. Training programs for educators and practitioners in digital literacy and the use of new technologies are a prerequisite for the adoption of technologies in pertinent curricula. This would be supported if the participation in local and international markets for technology-enhanced crafts through trade agreements, e-commerce platforms, and participation in trade fairs is supported.

4.2.2. Educational Institutions

Educational institutions could be encouraged to create new curricula that integrate digital skills and technologies relevant to traditional crafts, ensuring they are aligned with industry needs and cultural preservation goals. This should be accompanied by education and training for students and existing practitioners, including hands-on experience with new technologies and traditional techniques. Naturally, research is required on integrating technology with traditional crafts, and exploring new materials, techniques, and sustainable practices. This could be potentially carried out through innovation hubs or labs dedicated to crafts and technology that collaborate with educational institutions. In this context, it is recommended that educators collaborate with craft communities to understand their needs and challenges, ensuring that their educational programs are relevant and respectful of traditional values.

4.2.3. Technology Providers

As in multiple domains of everyday life, technology can offer affordable digital tools, software, and platforms for educational institutions and practitioners. The academic discount has already implemented by several software vendors and could be provided in exchange for partnership with educational institutions and craft communities to develop technology solutions tailored to the unique needs of traditional crafts. In addition, training and ongoing technical support for users to effectively utilize the technology is recommended. The reason is that, in this way, it is ensured that technology enhances rather than complicates the crafting process. Furthermore, financial benefits could be provided to promote technologies that are sustainable and environmentally friendly, aligning with the ethos of many traditional crafts.

4.2.4. Craft Communities

Collaboration of craft communities with educators, researchers, and technologists is recommended on the topic of sharing traditional knowledge and practices and setting user requirements that ensure that technological integration respects and preserves cultural heritage. It is also relevant to make the selection of where new technologies are appropriate and are welcome in the adaption of traditional crafting processes. In this context, craft communities could put forward the development of new production methods that aim for material and energy savings, as well as the design of new products such as digital games and toys related to crafts which increase the appeal of crafts to younger audiences. Conversely, community-led projects can utilize technology to address the specific challenges of marketing, design innovation, and production efficiency.

4.3. Potential Benefits and Risks

The integration of technology into vocational training for traditional crafts offers potential benefits and, at the same time, poses risks and challenges that need to be managed.

4.3.1. Expected Benefits

Technology can make traditional crafts more appealing to younger generations, who may find the digital aspects of design and production engaging. This can be supported through digital games and physical toys relevant to crafts, as well as through interactive platforms and online learning resources that provide access to training, broadening the appeal of crafting vocations.

Digital tools enable practitioners to experiment with new designs and techniques without the high costs or risks associated with physical prototyping, leading to creative innovation. The integration of computer-aided design technologies with traditional methods can lead to new products that appeal wider range of consumers.

E-commerce and digital marketing have the potential to provide access to global markets for traditional crafts, previously accessible only to local or regional customers. Although some such platforms already exist, the ways that products are presented are not comprehensive. Thus, we recommend the encouragement of realistic 3D graphics in the presentation of products as well as the use of AR and haptics to be able to preview the appearance of products and their hand feel.

Technology facilitates niche marketing, allowing practitioners to reach specific segments of consumers interested in authentic and culturally rich products. In this context, the association of products with their “stories” (or contextualisation narratives) is essential for increasing the value of products for these audiences.

Automation and digital fabrication tools can increase production efficiency, making it easier to scale operations and meet larger orders without compromising quality. Digital management tools can streamline various aspects of the business, from inventory management to customer relations, improving overall operational efficiency.

4.3.2. Potential Risks and Challenges

A risk of increased production efficiency and automation is that it might lead to a compromise in the handmade quality and uniqueness of traditional crafts. Quality control mechanisms need to be in place to ensure that the integration of technology doesn't dilute the craftsmanship that gives traditional products their value. The challenge lies in innovating and adapting traditional crafts without losing their cultural significance and authenticity. There's a delicate balance between modernization and preservation, requiring careful consideration of how technologies are applied to ensure they enhance rather than erode traditional practices. We recommend that technology is used to save time, material, and energy while being seamlessly integrated in the craft process. For example, today potters use electrical wheels for clay throwing and class makers electrical furnaces without affecting product quality. In conclusion, over-reliance on technology might lead to a loss of traditional skills and techniques that are passed down through hands-on, personal instruction. It is, thus, important to maintain a balance where technology supports rather than replaces traditional methods, ensuring that the essence of the craft is preserved.

As traditional crafts gain global visibility, there's a risk of market saturation or the emergence of counterfeit products that mimic traditional designs without adhering to authentic practices. Protecting intellectual property and authenticating products through certifications or making and origin is deemed necessary to maintain the value and integrity of traditional crafts.

Last but not least, technological advancements might not be equally accessible to all practitioners, especially those in remote or underprivileged areas, but they create unique and/or high-quality handmade products. Policies and programs are recommended to ensure equitable access to technology, training, and markets to prevent a digital divide within the craft sector.

5. Implementation Strategies

The use of pilot programs is an approach to gradually integrate technology into vocational training for traditional crafts. Pilot programs allow stakeholders to test, refine, and demonstrate the effectiveness of technology integration in a controlled, manageable environment before scaling up.

Projects that integrate technology in selected traditional crafts to test, refine, and demonstrate the approach are recommended through partnerships between vocational training centres, technological companies, and cultural institutions to support technology integration, including sponsorships, mentorships, and collaborative projects.

A training program tailored to the specific needs of the pilot, focusing on both the technological aspects and the enhancement of traditional skills. This would include capacity-building sessions for educators and craft communities to support the program beyond the end of its pilot phase.

The experimentation within the framework of pilots should be encouraged, as participants are very likely to come up with new ideas on the ways that technology can be used or new products, due to their individual and diverse backgrounds.

A robust monitoring and evaluation framework is recommended to assess the impact of pilots. Qualitative and quantitative data on skill improvement, production efficiency, market reach, and participant satisfaction and their analysis are recommended to identify the most efficient approaches. Moreover, the results of such an analysis should be used to refine the pilot approach before scaling up the program to include more participants, different crafts, and additional technologies.

6. Conclusion

In conclusion, the integration of technology into vocational training for traditional crafts presents a promising pathway to revitalizing these age-old practices, making them more relevant, sustainable, and appealing. Pilot programs exhibit the potential to test and refine approaches to technology integration, ensuring that they enhance rather than undermine the value and integrity of traditional crafts. These pilot programs, supported by a collaborative framework involving government bodies, educational institutions, technology providers, and craft communities, are crucial for identifying best practices and overcoming potential challenges.

The expected benefits of this integration include increased interest among new generations in traditional crafts, innovation in techniques and designs that respect cultural heritage, and expanded market opportunities through digital platforms. At the same time, it is essential to proceed with caution specifically when the preservation of quality and cultural integrity of traditional crafts is at stake. In other words, pilot approaches should include the goal of ensuring that technological advancements serve as a complement to, rather than a replacement for, the rich heritage embedded in these practices.

This policy brief advocates for a balanced approach that leverages technology to enhance traditional crafts while maintaining their cultural essence. By starting with pilot programs, we can scale up to efficient practices, ensuring the preservation of traditional crafts, their cultural diversity, and sustainability.