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# Hands United : A platform to learn and share knowledge

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#### ABSTRACT:

Hands United is an internet-based platform to enable individuals to connect and participate in collaborative learning sessions, both offline and online, by sharing and learning skills. Users are given the feature of registration, creating in-depth profiles, and listing both the skills they possess and learn. The platform features robust search and filtering mechanisms for skill discovery, real-time messaging for seamless communication, notifications to keep users updated, a user feedback and rating system, and a request- based exchange system for secure and efficient interaction. An admin dashboard for user account management and platform activity monitoring is also provided. Developed with React for front-end development, Tailwind CSS for responsive UI, and Supabase for backend services— such as authentication, real- time data base management, and media storage—Hands United is both stable and scalable. By focusing on peer-to-peer learning and eliminating the limitations of traditional education models, the platform enables a people-oriented learning platform where knowledge sharing is efficient and accessible. With this project, the practical use of next- generation web development tools in developing an intuitive, scalable, and socially relevant platform that enables people to learn, grow, and evolve together is showcased.

Keywords- Skill Exchange, Real-time Communication, Notifications, Knowledge Sharing, Scalability, Authentication.

## Introduction

Hands United is an innovative platform that seeks to unite passionate learners and skilled mentors. Believing in the potential of collective wisdom and collaborative learning, Hands United enables people to connect, exchange skills, and grow together in a supportive community. From technical skills to creative skills, the platform provides a wide variety of skills imparted by skilled mentors. The platform provides a customized learning experience, allowing users to choose mentors most appropriate to their personal learning requirements and time table, making education easy and accessible. At its core, Hands United's vision is to create a global world in which knowledge has no boundaries, and everyone can learn, grow, and impart their own special skills. By uniting people across geographical and social boundaries, Hands United creates a global community of lifelong learners and passionate teachers. With its innovative approach to skill sharing and personal growth, the platform seeks to be the go-to platform for collaborative learning, positively impacting the lives of users and empowering them to achieve their learning goals.

In order to fulfill its mission, Hands United is founded upon a robust tech stack that includes React for constructing dynamic and interactive user interfaces, Supabase for backend operations and real-time data management, Tailwind CSS for clean, custom, and responsive designs, and SQL for efficient database management. The tech stack makes the platform fast, scalable, and capable of providing a phenomenal user experience. Hands United combines the cutting-edge technology with a robust community-driven mission for revolutionizing learning and mentoring and making knowledge transfer accessible to all.

### LiteratureSurvey

The Paper "Developing and Implementing a Web- Based Platform for Skills and Knowledge Exchange" presents the development of a webbased platform that is accessible at no cost and aims to support skill and knowledge exchange in the Arab community. Major goals of the platform are overcoming skill acquisition hindrances represented by financial issues and geographical distance, as well as community participation through joint learning. Constructed with the Unified Modeling Language (UML) and Microsoft Visual Studio 2010, the platform seeks to bring the providers and recipients of skills into effective communication and partnership for increased skills development. [1] This research investigates the application of Skype in the Classroom to promote intercultural awareness and build 21st-century skills for Vietnamese university students. During a 10-week Virtual Exchange, students engaged with international peers from different countries, and although critical thinking, communication, and cultural competence were greatly enhanced, collaboration and engaging with local communities required further improvement. The results emphasize that technology has the potential to build significant interactions and rich learning experiences, which prompt students to interact more intensely with the English language and various cultural perspectives. [2]

In the foreword, Robert O'Dowd points to the critical importance of building transferable skills via Virtual Exchange (VE) in foreign language learning, given the growing need for such skills in the international labor market. He stresses an action-oriented strategy for VE, calling for the incorporation of authentic tasks into curricula to enhance students' communication, collaboration, and problem-solving skills. The article also follows the evolution from conventional study abroad experiences to new virtual approaches, expanding access to global competencies for all students, including those with mobility issues. [3]

The chapter discusses European Union (EU) international skilled migration, with emphasis on how legal efforts such as the Treaty of Rome and the Schengen Agreement, meant to encourage mobility, have been unable to match long-term movement levels, which have, relatively speaking, remained low. Cultural resistance, differential national views, language difficulties, and obstacles to the recognition of qualifications remain impediments to skilled workers' mobility between member states, in spite of continuing economic integration. The analysis indicates that, instead of a large rise in cross-border migration, future trends could involve more EU citizens employed domestically by companies based in other EU nations, with current cultural differences likely to continue or even strengthen. [4]

The study examines the influence of international exchange programs on the development of soft skills among undergraduate students, with specific emphasis on students from Bangladesh. It emphasizes that the programs significantly enhance qualities like communication, team work, and flexibility. It also emphasizes that most of the students have to individually bear the expenses of taking part. The results highlight the need for greater funding opportunities in order to guarantee that disadvantaged students are in a position to access these important global experiences, which are instrumental for success in the global employment market. [5]

The paper emphasizes the importance of knowledge exchange and effective communication among organizations, which hinges on these qualities for successful leadership to manage differences between stakeholders. It also lists the four critical factors for knowledge exchange as vision and mission, expectations, clarity, and change, and posits that knowledge of these elements is essential for effective interactions. The author supports an integrative approach to communication that promotes organizational effectiveness, innovation, and profitability through effective information exchange. [6]

The article documents InterCult, an online exchange course to build intercultural competence among German, French, and Brazilian students. Students engaged in structured online exchanges, and the research examined how cultural difference was identified and nurtured in higher education. Technological limitations and varying degrees of cooperation among students were some of the difficulties. Notwithstanding these difficulties, the research showed shifts in attitude among the students towards cultural diversity, and the advantages of virtual exchanges in getting students ready for increasingly multicultural workplaces. The research underscores the importance of having such programs as part of learning institutions. [7]

In her article, Bonnie Urciuoli discusses how contemporary workplace discourses construct people as "bundles of skills," closely associating personal identity with market-oriented competencies like communication, teamwork, and leadership. She is critical of the commodification of such skills, noting how they are treated as universal, quantifiable assets that employees must internalize in order to survive under neoliberal capitalism. Urciuoli argues that this dynamic forces individuals to make their sense of self fit into corporate idealizations, often erasing the difference between personal agency and external control. By emphasizing the need for self-management and continuous performance, workplaces create a space in which workers are forced to become market values, reducing individuality to a set of marketable qualities and reinforcing broader systems of capitalist discipline and conformity. [8]

The article examines the effect of real exchange rate (RER) fluctuations on skill upgrading and export business of Chilean manufacturing establishments. The article concludes that real depreciations raise the probability of firms' entry into export markets and raise the export volumes of firms already involved in exporting. The rise raises the share of skilled labor in the labor costs of exporters. The article thus concludes that real depreciations can lead to rising income inequality. The article argues that in developing countries in the process of trade liberalization, such processes highlight the need for policy intervention to contain possible adverse effects on income distribution and to induce more equitable economic growth. [9]

This paper, "A Skill Sharing Platform for Team Collaboration and Knowledge Exchange" by Victor Obionwu, Andreas Nürnberger, and Gunter Saake, explores the integration of blogs into collaborative computer science- based tasks as a means to enhance student learning through reflection and knowledge sharing. The study implemented a blogging tool within SQLValidator, a web-based educational platform, and collected qualitative and quantitative feedback from students who used the tool. Their

findings revealed that students found the platform easy to use, effective for clarifying doubts, and useful for fostering a sense of community. Over 80% showed interest in team collaboration through the blog, and more than 75% found it beneficial for expressing ideas. The evaluation utilized the DeLone and McLean IS Success Model to measure its effectiveness. [10]

This paper explains informal intergenerational learning via participatory democracy processes in Maribor, Slovenia, with a focus on selforganized citizen assemblies. It explains how citizens of various generations collaborate on issues that affect communities, fostering understanding, social justice, and intergenerational solidarity. The study reveals that this collaboration yields individual development, which allows individuals to learn new skills, new frames of thinking, and greater agency. Further, the process strengthens community cohesion, bridges the gap between generations, and maintains shared values amid social transformation. Through collaboration, the actors build trust, empathy, and shared commitment to democratic engagement, demonstrating how grassroots processes can build more inclusive and resilient communities across generations.[11]

This paper describes a randomized clinical trial protocol to compare two training methods—virtual didactic environments and simulation-based training—to enhance pediatric specialists' skills in the exchange transfusion procedure. Since the procedure is rare and complicated, conventional training is restricted. The study intends to compare the effectiveness of these novel methods among pediatric residents to enhance technical proficiency, decision-making, and confidence. Through the implementation and strict evaluation of these methods, the study intends to determine the best teaching methods. Ultimately, the objective is to enhance clinical training, ensure patient safety, and enhance health outcomes in the care of critically ill pediatric patients. [12]

The research examines new methods for developing global competences and intercultural sensitivity among future teachers at Matej Bel University through Virtual Exchange Programs (VEPs) and Blended Intensive Programs (BIPs). The article focuses on the importance of adapting teacher education to the needs of globalization through active learning techniques that evoke critical thinking, creativity, and collaboration. The study results show that participation in the programs has a positive influence on teaching practice and fosters social responsibility among students of education. Through these kinds of activities, future teachers become more skilled in working in multicultural, interdependent environments, ultimately becoming such teachers who are able to master the complex challenges of our globalized world. [13]

The work analyzes dynamic skill acquisition in multi-agent systems by employing the MAGIQUE framework and detailing how agents, from their atomic basis, learn and acquire skills over time to adapt to shifting tasks and roles. Skills are defined as rigorous sets of capabilities that not only assist modularity and reusability of agent design but also enhance agent-agent interaction and learning. Dynamic acquisition allows the agents to alter tasks and roles with ease, and the entire system becomes efficient and adaptive. MAGIQUE also allows hierarchical agent structuring, which maximizes communication and delegation of skills, which in tandem makes multi-agent environments flexible, cooperative, and scalable throughout the duration of its operation life cycle. [14]

The article unveils the Virtual Intercultural Communication (VIC) program, a cooperation initiative between Florida Universitaria (Spain) and Jade UAS (Germany), with the objective of improving students' English language skills and intercultural communication skills through virtual exchange. Organized in three editions between 2021 and 2023, the program involved students from diverse cultures in the co-construction of themes concerning stereotypes, negotiation, and oral presentations. The experience encouraged intercultural sensitivity, language improvement, and the development of cooperation skills. Extremely positive feedback was obtained from the students, with increased motivation and willingness to participate again in the program. The outcomes offer virtual exchanges as an effective, accessible alternative to traditional physical mobility programs, with excellent educational and personal development benefits for students. [15]

## METHODOLOGY

## Architecture:



Fig-1: System Architecture of Hands United

Hands United's architecture prioritizes simplicity and scalability, utilizing contemporary web development solutions. On the client end, users interact with a responsive web application that utilizes React to manage dynamic user interfaces and Tailwind CSS to handle rapid and customizable styling. The frontend sends data to the backend, where it is served by Supabase — a backend-as-a- service solution. Supabase manages critical features like user authentication, database queries, and file storage, efficiently controlling data exchange and user sessions. The admin also communicates with the backend to carry out activities like user moderation and analytics fetching. This design provides a clean separation of concerns, improved security, and seamless user experience across various roles on the platform.

#### **User Flow Diagram:**



#### Fig-2: User Flow Diagram of Hands United

The Hands United user flow diagram defines the end-to-end interaction process for general users and administrators alike, giving a clear view of how different roles function within the platform. A user will most likely start out as a visitor, visiting the landing page of the platform. The page serves as the first point of contact, providing information regarding the mission and features of the platform, inviting exploration. They can view the features on offer and learn about the mechanism of skill-sharing prior to registration. If they would like to contribute actively, they then advance to the login or registration procedure and become a registered user.

Once they are authenticated, the registered user gains access to a number of personalized features. One of the most important aspects is profile management, where users can create and edit their professional and personal information, establish their skills, and identify the skills they want to learn. Such information serves as the foundation of meaningful connections within the platform. They can then carry out skill search, which allows them to view or filter out other users based on certain skills they are either offering or in search of. Once a good match is identified, the users can establish a skill swap—a reciprocal process in which each member shares and learns from the other. For ease of collaboration and coordination, the site features a messaging component, enabling real-time exchanges and discussions for learning objectives, schedules, and expectations. This provides an active and dynamic knowledge-sharing community.

Meanwhile, the admin workflow is structured to maintain order and enhance the user experience across the platform. Admins have a separate admin panel that acts as a control hub for platform functionality.

They use it to manage users by keeping track of accounts, resolving complaints, and moderating inappropriate conduct. Admins also moderate content to ensure that the platform conforms to community rules. Lastly, they create and study reports and intelligence, which are used to monitor usage patterns, determine trending skills, and drive data-informed decisions to refine the platform consistently.

## **IMPLEMENTATION**

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	Sign in	
	Don't have an account? Sign up	

## Fig-4.1: Sign in Page

This page allows users to securely log in to the platform using their registered credentials. Technologies Used: React (form handling), Tailwind (responsive layout & styling)

- Form input components are styled using Tailwind utility classes. ٠
- The React state manages form fields and validations.
- Navigation after login is handled via component logic.
- ٠ The user interface includes clear links to account creation and password recovery.

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#### Fig-4.2: User Dashboard

After authentication, users are redirected to a personalized dashboard showing their profile details such as name,

- skills. Technologies Used: React components, Tailwind CSS, JavaScript logic
  - Dynamic rendering of user data fetched and displayed using React state/props.
- Tailwind ensures the layout is responsive across screen sizes.

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This page supports features like editing the profile, adding skills, and viewing stats. •

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location, profession, and

#### Fig-4.3: Skills Page and Explore other Users

This page allows users to browse through the list of available users/teachers and the skills they offer. **Technologies Used:** React (card generation), Tailwind (grid layout), filtering logic

- Each teacher is represented via a card component dynamically rendered through .map().
- Search functionality is implemented using JavaScript to filter data.
- Tailwind classes are used to create a clean, grid-based UI that adapts across devices.



#### Fig-4.4: Messaging Interface

This is the real-time communication section that allows users to connect with others via chat. **Technologies Used:** React components for chat UI, conditional rendering, Tailwind

- A two-column layout shows the list of chats on the left and messages on the right.
- Messages are styled based on the sender using conditional class names.
- Image and text message rendering is supported.
- The chat UI follows a lightweight, Messenger-style structure.

## **RESULTS AND DISCUSSIONS**

The deployment of the Hands United platform shown to be highly effective in promoting role-based access and functionality for three main categories of users: Admin,Teacher, and Student. Every role was aligned with a specific set of features to guarantee task-focused workflows and a safe interaction environment. For instance, performance and feedback management is possible by students and teachers, while admins are equipped with all-around tools to moderate content and users.The development process heavily prioritized user experience (UX). The platform's UI, constructed with React and styled through Tailwind CSS, was easy to use and respond to devices. Users easily moved around the platform, requiring very little onboarding. Real- time features, including messaging, attendance recording, and performance reporting, operated smoothly—showcasing successful integration between frontend elements and Supabase backend services.Supabase use enabled efficient real-time data synchronization, secure authentication of users, and scalable database operations. Furthermore, the scalability of the backend to handle large amounts of data proved readiness for real-world application, with possibilities for future scalability.The deployment of the system in practice confirmed structural stability and operation under real conditions. Overall, the system effectively accomplished its mission of providing skill transfer and collaborative learning within an electronic environment, underscoring the usability value of MERN- stack technology in school-based web software applications.

## CONCLUSION

The Hands United initiative showcases the effective use of cutting-edge web technologies, leveraging a React, Supabase, and Tailwind CSS stack to develop a scalable, user-focused platform for skill swapping and collaborative learning. Built with the ability to support multiple user roles—learners, mentors, and admins—the platform features key functionality such as profile management, skill posting, real-time messaging, and user feedback systems. With peer-to-peer learning at its core, the platform promotes a dynamic, accessible learning space that diverges from conventional models of education. The project, although yet to be deployed publicly, highlights a complete structure ready for production and features a solid backend fueled by Supabase for authentication and real-time database management. Future development with new features such as mobile optimization, sophisticated notice systems, and further user administration tools will facilitate greater capabilities within the plat form, user engagement, and its application. Hands United is a forceful demonstration of the potential through current web tools to create an applied, efficient, and socially influential platform allowing knowledge sharing and self-improvement.

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