

Strategies, Methods, and Supports for Developing Skills within Learning Communities: A Systematic Review of the Literature

Majid Zamiri ^{1,*}  and Ali Esmaili ² 

¹ NOVA School of Science and Technology, Center of Technology and Systems (UNINOV-CTS) and Associated Lab of Intelligent Systems (LASI), Campus de Caparica, NOVA University Lisbon, 2829-516 Caparica, Portugal

² Mechanical Engineering Department, Faculty of Engineering, Ferdowsi University of Mashhad, Mashhad 9177948974, Iran; aliesmaeil@ferdowsi.um.ac.ir

* Correspondence: m.zamiri@uninova.pt

Abstract: This systematic review underscores the significance of learning communities as fertile grounds for skill development across diverse contexts. Furthermore, it reviews and theoretically evaluates several commonly used strategies, methods, and supports for developing skills within learning communities by synthesizing the existing literature. We followed the procedure outlined by the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) to ensure a transparent, comprehensive, and standardized approach to conducting and reporting our systematic review, thereby enhancing the review's credibility and reproducibility. Through an extensive analysis of the literature, we identified eleven strategies, methods, and supports (application of collaborative projects, mentorship programs, workshops and training sessions, online learning platforms, peer learning and feedback, problem-based learning, cross-collaboration initiatives, leadership development programs, inclusive learning environments, gamification and simulations, and social media and networking) that play pivotal roles in nurturing different types of skills. We describe each identified solution, its advantages and challenges, the types of skills targeted for development, and their overall contribution to skill enhancement. The findings emphasize the importance of fostering collaborative and interactive environments within learning communities to facilitate collective skill development and personal growth. Our systematic review faced some challenges (e.g., heterogeneity of studies and lack of longitudinal data) due to the overwhelming diversity of the literature on skill development across various disciplines and contexts. Overall, by synthesizing existing knowledge and identifying gaps in the literature, this review serves as a foundation for advancing theory, informing practice, and promoting continual improvement in skill development within learning communities.

Keywords: strategies; methods; supports; skill development; learning communities; learners



Citation: Zamiri, Majid, and Ali Esmaili. 2024. Strategies, Methods, and Supports for Developing Skills within Learning Communities: A Systematic Review of the Literature. *Administrative Sciences* 14: 231. <https://doi.org/10.3390/admsci14090231>

Received: 17 July 2024

Revised: 19 September 2024

Accepted: 20 September 2024

Published: 22 September 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

In the ever-evolving landscape of education, the learning community emerges as a vibrant tapestry, woven with threads of collaboration, shared experiences, and the collective pursuit of skill development (Rook et al. 2020). A learning community refers to a group of individuals (e.g., learners) who come together to enhance their understanding, knowledge, and skills in a particular subject or field. The learners typically engage in collaborative learning activities, discussions, and knowledge sharing to support each other's learning and growth. Learning communities can take various forms (e.g., classroom-based learning communities, residential learning communities, online learning communities, professional learning communities, subject-specific learning communities, community of practice, interest-based learning communities, project-based learning communities, cross-institutional learning communities, and innovation or entrepreneurial learning communities), each tailored to specific contexts and objectives (Riel and Polin 2004; Colin Burton 2023).

Learning communities are important for individual learners and the (broader) community. For learners, these communities provide a supportive and collaborative environment that enhances the educational experience. A learning community's shared goals and interests foster deeper engagement with the subject matter, leading to a more profound understanding of concepts. Additionally, the community's sense of belonging and mutual support can positively impact learners' motivation, resilience, and well-being (Weiss et al. 2015). For the (broader) community, learning communities contribute to a more educated and skilled population. As learners within these communities develop their knowledge and skills, they become valuable contributors to the community's growth and development. Learning communities can also catalyze positive social change by nurturing informed and engaged citizens. The importance of learning communities extends beyond individual learning outcomes, making a meaningful impact on both learners and the communities they are a part of (Yuan and Kim 2014; Zamiri and Esmaeili 2024).

Beyond the acquisition and sharing of knowledge, the learning community places a profound emphasis on skill development—a dynamic process that empowers learners to navigate the multifaceted challenges of the modern world (Bunnaen et al. 2022). Skill development in learning communities is crucial for learners for several reasons as it, for example, prepares them for future challenges, enhances their problem-solving skills, increases their adaptability, promotes their effective communication, builds their confidence and self-efficacy, promotes their lifelong learning, enhances their employability and opens up opportunities for career advancement, cultivates their leadership qualities, develops their global competence, and fosters a sense of social responsibility and encourages learners to use their skills for the betterment of the community. In summary, skill development not only prepares learners for the challenges of the future but also contributes to the overall well-being of communities and societies (Bandaranaike 2018; Kirchhoff and Keller 2021).

Participating in learning communities is instrumental in developing a spectrum of skills that extend beyond the confines of traditional academic knowledge. The collaborative nature of these communities cultivates communication and teamwork skills, as learners engage in projects, collaborations, discussions, and shared learning experiences (DuFour and DuFour 2010). Critical thinking and problem-solving skills are honed as learners navigate diverse perspectives and collectively address challenges. Furthermore, exposure to varied viewpoints within learning communities contributes to the development of open-mindedness and adaptability, essential traits in today's rapidly changing world (Zhang and Toker 2011). The supportive network established in these communities fosters self-confidence and resilience, empowering learners to take intellectual risks and explore new ideas. Beyond academic contexts, learners often learn effective time management, organizational relationships, and how to navigate interpersonal dynamics—all valuable skills applicable in professional and personal spheres. In essence, learning communities serve as dynamic environments where learners not only deepen their subject-specific knowledge but also emerge with a well-rounded set of transferable and transversal skills crucial for success in various aspects of life (Virtue et al. 2019).

It should be noted that creating learning communities plays a pivotal role in the process of skill development. By providing a supportive environment, constructive feedback, and real-world application and promoting collaboration, they enhance the learning process, making it more dynamic, efficient, and sustainable. Within these communities, it is crucial to clarify the main features—such as inclusivity, shared goals, and active engagement—that serve as the foundation for effective learning. These features ensure that members are not only focused on individual skill development but also contribute to the collective development of the group, making learning communities powerful tools for personal and professional growth. Thus, for the purpose of skill development in the learning community, this study assumes that the community has already been established and is active and functioning well. To clarify, the following sub-sections explain the importance of creating learning communities and emphasize the key features of these communities for skill development.

1.1. Creating Learning Communities

Creating learning communities refers to the intentional and systematic effort to establish environments where learners come together to learn collaboratively, share knowledge, and support each other in their educational endeavors. The emphasis is on fostering a sense of community and shared purpose and creating a space where learners feel connected, engaged, and supported in their learning journey. This concept often involves a shift from traditional, isolated learning models to more interactive and collaborative approaches (Reynolds 2016; Rook et al. 2020; Zamiri et al. 2022). Creating learning communities can occur in various settings, including classrooms, online platforms, workplaces, or other learning environments, and it often involves strategies such as group activities, peer-to-peer interactions, and shared resources to enhance the overall learning experience. The goal is to create a positive and enriching community that facilitates individual and collective knowledge and skill growth (Chen 2003; McDaniels 2016). The creation of learning communities involves several key elements (Sammon 2007; Felner and Bolton 2007; Ahn 2017). The main elements in the creation and establishment of learning communities include the following:

- Elements 1—Identification of Purpose and Goals: This step should clearly define the purpose and goals of the learning community and identify the specific learning outcomes or shared objectives that members (e.g., learners) aim to achieve through their participation. Identify the knowledge or skills the members aim to acquire and/or develop.
- Elements 2—Selection of Target Audience: This step should determine the target audience for the learning community. This could be students, professionals, enthusiasts, or individuals interested in a specific field or topic.
- Elements 3—Choose a Platform: This step should select a suitable platform for the learning community. This could be an online platform (such as a website, forum, or social media group) or a physical space (e.g., a classroom or workplace) for in-person gatherings. Choosing the platform should be aligned with community goals and audiences.
- Elements 4—Establishment of Community Guidelines: This step should establish clear guidelines for participation, communication, and collaboration and clearly outline expectations for behavior and engagement. This ensures a positive and respectful environment.
- Elements 5—Recruitment of Members: This step should actively recruit members who align with the goals and interests of the learning community and use targeted outreach, social media, and other channels to attract individuals who would benefit from and contribute to the community.
- Elements 6—Facilitation of Communication: This step should set up communication channels that facilitate interaction among community members. This could include discussion forums, group chats, or regular virtual or in-person meetings.
- Elements 7—Provision of Resources: This step should provide relevant learning resources to community members and create a repository of learning materials that members can access. This may include books, articles, videos, or other materials that support their learning journey. This adds value to the community and supports ongoing learning.
- Elements 8—Encouragement of Collaboration: This step should foster a collaborative environment by encouraging members to share their knowledge, experiences, and insights; create opportunities for teamwork and group activities; and assign group projects or activities that promote teamwork.
- Elements 9—Organization of Learning Events: This step should plan and organize learning events within the community. This could include webinars, workshops, guest speaker sessions, or other activities. These events provide opportunities for members to deepen their understanding and interact with experts.

- Elements 10—Promotion of Networking: This step should encourage networking and relationship building among members. This can be facilitated through introductions, mentorship programs, or networking events to build relationships.
- Elements 11—Collection of Feedback: This step should regularly seek and collect feedback from community members to understand their needs and preferences and use this feedback to make improvements and ensure the community evolves based on the members' interests.
- Elements 12—Recognition of Achievements: This step should recognize, acknowledge, and celebrate individual and collective achievements within the community. This could include acknowledging contributions, milestones, or successful collaborative projects. Recognition can motivate members and contribute to a positive community culture.
- Elements 13—Adaptation and Evolution: This step should be open to adapting the community based on the changing needs and interests of members. Learning communities are dynamic, and their success often depends on the ability to evolve.
- Elements 14—Provision of Leadership and Moderation: This step should provide leadership or moderation to guide the community. Leaders or facilitators can help maintain a positive atmosphere, moderate discussions, and ensure the community's objectives are met.
- Elements 15—Promotion of Inclusivity: This step should create an inclusive environment where all members feel welcome and valued and foster a culture that appreciates diverse perspectives and backgrounds.

These elements are summarized in Figure 1.

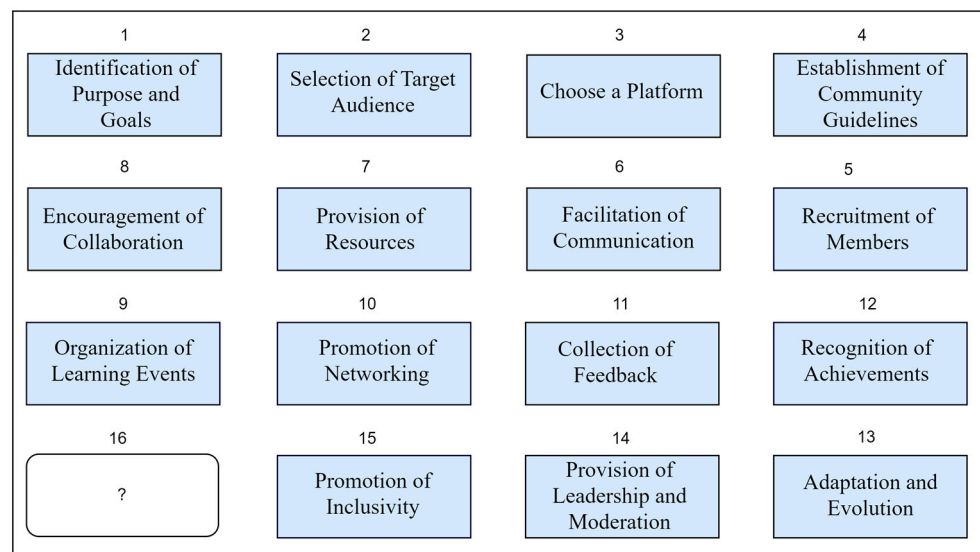


Figure 1. Main elements in the creation and establishment of learning communities.

Given Figure 1, identifying and properly applying relevant elements ensures that learning communities are created to be aligned with the needs of their members, creating an effective and inclusive environment for developing a wide range of skills.

While the main elements in the creation and establishment of learning communities share common principles, there can be variations based on the specific context, goals, and participants involved. To wit, it is important to note that the main elements and their order may vary based on the nature and type of the learning community, whether it is academic or professional, etc. (Rook et al. 2020). Flexibility and responsiveness to the unique needs of the community members are key considerations in the establishment and sustained success of learning communities. Furthermore, the creation of learning communities is not a one-time event but an ongoing process that requires, for example, careful planning,

active facilitation, commitment to the shared objectives of the community, and attention to the evolving needs of its members. By fostering the needed requirements such as a sense of shared purpose, providing resources, and facilitating meaningful interactions, it is possible to establish a vibrant and collaborative learning community (Lajoie et al. 2006; Snyder 2009).

1.2. Main Features of Learning Communities

Learning communities stand out from other types of communities due to their distinct focus on collaborative learning and shared educational goals. Unlike social or interest-based communities, learning communities are specifically designed to enhance learners' knowledge and skills in a particular subject or field. The primary differentiator lies in the intentional structure that promotes active engagement, knowledge sharing, and collective learning experiences (Harvey and Teledahl 2022). Learning communities often have a formal or semi-formal framework with defined learning objectives, facilitators, and organized activities. The emphasis is on academic or skill development rather than solely social interaction. While other communities may foster connections based on shared hobbies or personal interests, learning communities prioritize intellectual growth and often involve the pursuit of academic or professional excellence. The collaborative and purposeful nature of learning communities sets them apart, creating an environment where learners contribute to each other's educational journey in a meaningful and intentional manner (Charalambos et al. 2007; Tang and Lam 2014). The main features of learning communities are explained in the following (Kilpatrick et al. 2003; Clausen et al. 2009; Dingyloudi and Strijbos 2020):

- **Shared Goals and Interests:** Learning communities emerge from a collective pursuit of shared academic, professional, or personal goals. Learners are united by common interests, creating a cohesive foundation for collaborative exploration and knowledge sharing.
- **Collaborative Learning:** Central to learning communities is the emphasis on collaborative learning. Learners actively engage with each other, sharing insights, experiences, and expertise. The community serves as a platform for collective knowledge construction, knowledge sharing, and knowledge development.
- **Diverse Membership:** Learning communities thrive on diversity. Members come from varied backgrounds, disciplines, and levels of expertise. This diversity enriches discussions, offering a mosaic of perspectives and insights.
- **Active Participation:** Active participation is a hallmark of learning communities. Members are encouraged to contribute actively to discussions, projects, and activities. This active involvement fosters a sense of ownership and commitment.
- **Supportive Environment:** Learning communities provide a nurturing and inclusive environment. Learners feel comfortable expressing their ideas, seeking help, and engaging in constructive dialogue. Support mechanisms, such as mentorship, enhance the overall learning experience.
- **Facilitated by Educators or Facilitators:** Educators or facilitators play a pivotal role in guiding the learning process. They provide structure, resources, and mentorship, ensuring that the community's objectives align with educational goals.
- **Integration of Technology:** Technology is seamlessly integrated to facilitate communication and collaboration. Online platforms, forums, and collaborative tools enhance connectivity, making learning accessible beyond physical boundaries.
- **Reflection and Feedback:** Learning communities value reflection as a means of individual and collective growth. Constructive feedback is encouraged, creating a culture of continuous improvement and shared learning.
- **Application to Real-World Contexts:** Learning experiences within communities are designed to apply to real-world contexts. The goal is to bridge the gap between theory and practice, preparing learners for practical challenges in their fields.

- **Flexibility in Learning Formats:** Recognizing diverse learning preferences, learning communities adopt flexible formats. Whether through in-person meetings or virtual discussions, this flexibility accommodates the needs and schedules of members.

These features—collectively or individually—not only hold significant importance in shaping the educational and developmental experiences of learners within these collaborative environments but also contribute to the vibrant and adaptive nature of learning communities.

1.3. Skills, Skill Development, and Types of Skills

Generally, ‘skills’ are defined as a type of ability, proficiency, and knowledge that learners acquire through training, education, or experience, enabling them to perform specific tasks, solve problems, or achieve objectives (Fallows and Steven 2000). Skills are integral to personal and professional development, and learners often acquire and refine them throughout their lives. The specific skills a learner possesses contribute to their overall capabilities and determine their effectiveness in various roles and situations (Prajapati et al. 2017).

Developing skills is essential for a variety of reasons, impacting both personal and professional aspects of a learner’s life. ‘Skill development’ refers to the process of acquiring, enhancing, and honing specific abilities, proficiency, expertise, and knowledge necessary to perform specific tasks or functions effectively. It involves the improvement of different skills such as technical and soft skills, enabling learners to, for example, meet job requirements and contribute meaningfully to personal and professional contexts. Skill development is a continuous process because the demands of the workplace, the evolution of industries, and the complexities of modern life require learners to acquire and adapt new skills throughout their careers (Nazarenko et al. 2024). Furthermore, skill development is a dynamic and multifaceted process that empowers learners to navigate the complexities of their personal and professional lives while adapting to the changing demands of the world around them (Andrews and Russell 2012; Bandaranaike 2018).

The importance of developing different types of skills cannot be overstated, as it forms the cornerstone of personal and professional success. The ‘types of skills’ refer to the various categories or classifications of abilities, knowledge, or proficiencies that learners possess or represent. Skills are diverse and can be grouped into different types. Each type serves different purposes in personal and professional contexts based on the nature of the capability or expertise they represent (Prajapati et al. 2017; Echteit 2024). Understanding these types helps learners, educators, and employers identify and articulate the specific skills relevant to various tasks, roles, or industries. The common types of skills are listed and briefly explained in the following (Akgün Özbek 2015; Taniguchi 2021; Indeed Editorial Team 2023; Elias et al. 2023):

- **Hard Skills:** These are specific, teachable abilities or knowledge sets that are quantifiable and easily measurable. These skills are typically acquired through education, training programs, certifications, or on-the-job experience. Hard skills are often associated with technical expertise and are crucial for performing specific tasks in a job or an industry. The major examples of hard skills/technical skills are programming languages, data analysis and mathematics, engineering and technical design, healthcare and medical skills, and manufacturing and production.
- **Soft Skills:** These refer to a set of interpersonal, social, and communication abilities that are not specific to any job or industry but are crucial for success in the workplace. Unlike hard skills, which are teachable and measurable technical skills, soft skills are more related to personal attributes, attitudes, and how individuals interact with others. Soft skills are often considered essential for effective collaboration, communication, and overall career success. The main examples of soft skills include communication skills, collaboration skills, organizational skills, interpersonal skills, negotiation skills, customer service, teamwork, problem solving, and leadership.

- **Transferable Skills:** Transferable skills, also known as portable skills or adaptive skills, refer to a set of abilities and qualities that are not tied to a specific job, industry, or task. These skills are versatile and can be applied across various roles, professions, and life situations. Transferable skills are often developed through experiences in education, work, and personal life, and they contribute to an individual's overall adaptability and effectiveness in different contexts. Most examples of soft skills (e.g., communication skills, interpersonal skills, negotiation skills, customer service, and teamwork) fall within the category of transferable skills.
- **Job-Specific Skills:** Job-specific skills, also known as technical skills, refer to the specific abilities and knowledge that are directly related to a particular job, industry, or profession. These skills are often acquired through education, training programs, certifications, or on-the-job experience. Job-specific skills are essential for performing tasks and responsibilities associated with a specific role and are crucial for success in that particular job. Unlike transferable skills, which are versatile and can be applied across various settings, job-specific skills are more specialized and tailored to a particular field. Some examples of job-specific skills include healthcare (e.g., patient assessment, administering medication, performing medical procedures, medical coding and billing, and diagnostic imaging), and finance (e.g., financial analysis and modeling, budgeting and forecasting, tax preparation and planning, investment management, and risk management). Some examples of hard skills (e.g., programming languages and data analysis) can also be placed under the group of job-specific skills.
- **Social Skills:** These refer to the ability to interact effectively and harmoniously with others in various social situations. These skills encompass a range of behaviors and communication strategies that contribute to successful interpersonal relationships. Social skills are crucial for navigating social environments, building connections, and fostering positive interactions. The key components of social skills are active listening, empathy, conflict resolution, assertiveness, friendship skills, non-verbal cues, social confidence, and etiquette. Social skills and soft skills share some common examples such as communication skills and teamwork.
- **Life Skills:** These refer to a set of abilities that enable individuals to effectively handle the challenges and demands of everyday life. These skills are essential for personal development, effective communication, problem solving, decision making, and overall well-being. Life skills contribute to an individual's ability to adapt to and navigate the complexities of various life situations. The main examples of life skills include personal skills, resilience, health and wellness, and assertiveness. Life skills and soft skills have a set of shared examples such as communication skills, interpersonal skills, and leadership skills.
- **Academic Skills:** These refer to a set of proficiency and expertise that are essential for success in an educational environment. These skills enable individuals to acquire, process, and apply knowledge effectively. Academic skills are crucial at various levels of education, from elementary school to higher education. Here are some examples of academic skills: reading, writing, comprehension, note taking, research skills, presentation skills, study skills, and test-taking skills. Some academic skills can be categorized as soft skills such as collaboration skills and teamwork skills.
- **Digital Skills:** These refer to proficiency and expertise in using digital devices, applications, and platforms to access, manage, integrate, evaluate, and create information. In the context of the digital age, these skills are essential for individuals to navigate and participate effectively in various aspects of modern life, including education, work, communication, and problem solving. Digital skills encompass a wide range of proficiency and expertise, including basic digital literacy, internet navigation, email communication, digital collaboration and communication, file management, information security, digital content creation, and adaptability to technology.
- **Language Skills:** These refer to an individual's proficiency in communicating effectively using a particular language. Language skills are essential for academic success,

professional advancement, and social interactions. They play a foundational role in literacy and are vital for accessing and contributing to knowledge in various fields. Continuous development and refinement of language skills contribute to effective communication and overall intellectual growth. The main examples of language skills are listening skills, speaking skills, pragmatic competence, vocabulary, grammar, cultural awareness, and fluency. Some examples of language skills (e.g., reading skills and writing skills) fall within the category of academic skills.

- **Leadership Skills:** These refer to a set of expertise that enable individuals to guide, motivate, and influence others toward the achievement of common goals. Effective leadership is crucial in various contexts, including workplaces, organizations, communities, and beyond. Leadership skills are essential for individuals in managerial and supervisory roles, but they are valuable at all levels of an organization. Effective leaders contribute to the success and growth of their teams, fostering an environment where individuals can thrive and achieve their full potential. Leadership skills are also crucial in communities (e.g., learning communities) and social settings where individuals play key roles in guiding collective efforts toward shared objectives. Leadership skills encompass a diverse range of attributes, and individuals with strong leadership skills often exhibit expertise such as decision making, developing vision, strategic thinking, team building, delegation, motivation, empathy, courage, and time management.
- **Motor Skills:** These refer to the proficiency to control and coordinate movements of the body, particularly the muscles and limbs. These skills involve the integration of sensory information with motor responses to perform tasks and actions. Motor skills are generally divided into two categories: (a) gross motor skills which involve larger muscle groups and movements such as walking, running, jumping, and throwing and (b) fine motor skills that involve smaller muscle groups and precise movements such as writing, drawing, buttoning a shirt, and using utensils.

These types of skills are not mutually exclusive, and individuals often possess one or a combination of skills from different categories. Each type of skill serves a specific purpose and plays a unique role in enhancing individual and collective proficiency. A well-rounded skill set that includes a mix of hard skills, soft skills, transferable skills, and others contributes to individual success, adaptability, and positive contributions to society, work, and/or learning (Kapur 2018). The importance of specific skill types varies depending on, for example, the context, industry, and job requirements. Additionally, the significance of different skill types lies in their collective contribution to personal development, professional success, and societal progress (Patacsil and Tablatin 2017).

In the realm of skill development, community learning offers a unique environment where learners engage with real-world challenges, drawing from the collective knowledge and experiences of the community. This contextually rich setting fosters a holistic learning experience, nurturing a broad spectrum of skills (Hodgson et al. 2007). Nevertheless, the existing literature indicates a lack of thorough investigation, identification, and documentation of potential and efficient strategies, methods, and supports applicable to developing skills within learning communities. While some studies present community learning and skill development, they often lack depth in providing a comprehensive list of approaches that can be widely implemented. This gap leaves educators and community leaders with limited resources or models to guide their efforts in fostering skill development. Therefore, there is a pressing need to systematically distill insights from the existing literature (Borges et al. 2023). Hence, this work employs a rigorous systematic literature review methodology to identify, analyze, and synthesize relevant studies. In essence, this work embarks on a journey to unravel the intricacies of skill development within the dynamic realm of community learning. As we explore the various strategies, methods, and supports employed and their implications, we gain a deeper understanding of how community-driven education can catalyze individual empowerment and community progress. From this perspective, this work has three primary goals, namely (a) providing an overview of key aspects of the

creation of learning communities, (b) outlining the fundamental features characterizing learning communities, and (c) presenting an overview of common types of skills which are all presented in this section. The main objective of this work is to provide a comprehensive overview of the current state of knowledge in community learning strategies, methods, and supports for skill development. It should be added that the protocol of this systematic review had not been registered by the time of publication, which means the review process was not pre-documented in a public registry. However, the methodology was rigorously followed to ensure transparency and reliability throughout the review.

The remainder of this study is organized as follows: In Section 2, the research method used for this study is briefly explained. In Section 3, the identified strategies, methods, and supports for developing skills within the learning communities are presented. In Section 4, a discussion is developed about the findings of this survey. The paper ends with some concluding remarks and a brief analysis of possible future work.

2. Research Method

For this study, a systematic literature review was comprehensively and methodically adopted to examine and interpret the findings of existing related research, publications, and scholarly works and to identify the contradictions and gaps in the related literature. To properly guide the study, the following research question is formulated:

- Research Question. What kind of strategies, methods, and supports have the potential to develop collective skills within learning communities?

To answer this research question, the following hypothesis is adopted:

- Hypothesis. Strategies, methods, and supports that emphasize collaborative efforts and practices—whether used individually or in combination—have the potential to influence collective skill development within learning communities by fostering peer-to-peer interaction and creating a supportive environment for continuous growth.

In our study, we followed the procedure described by PRISMA. PRISMA refers to a set of guidelines and a checklist designed to boost the precision and completeness of reporting in systematic reviews and meta-analyses (López-Rodríguez et al. 2022). PRISMA provides a standardized framework for authors to report their review processes, bibliographic data (e.g., the total number of publications, citation counts, and other bibliometric indices), and findings (Page et al. 2021). The PRISMA method enhances the transparency, reproducibility, and quality of the study, while ensuring that the conclusions are articulated with clarity and brevity (Dandil et al. 2020).

2.1. Search Strategy

A fundamental eligibility criterion for the selection of studies in the review was their relevance to the formulated research questions. To search and choose relevant (English-language) studies for the review, the main engineering and computer science databases (i.e., Scopus, Web of Science, IEEE Xplore, Compendex, and INSPEC) and education databases (i.e., Education Source, ERIC, A+ Education, and PsycInfo via OvidSP) were searched.

2.2. Inclusion and Exclusion Criteria

Before commencing the search, we established the criteria for inclusion and exclusion in the study outlined in Table 1. These criteria function as the gateway and filter of the database, guaranteeing that only relevant documents are included in the analysis. Through the establishment of precise and explicit criteria, the inclusion of irrelevant or subpar research is prevented, consequently bolstering the validity and reliability of the findings.

Table 1. Inclusion and exclusion criteria of the bibliometric analysis.

Inclusion Criteria	Exclusion Criteria
- Studies published between 2005 and 2024. - Studies published in academic, indexed, and peer-reviewed journals. - Publications that are original journal articles, surveys, book chapters, conference materials, and technical reports. - Studies containing terms related to the topic in the title. - Studies published in the English language.	- Studies that did not meet the inclusion criteria. - Studies that did not address our research question. - Other document types, such as conference abstracts, editorials, position statements, and letters. - Duplicate studies.

2.3. Keyword Selection

In database searching (for the title, abstract, and body text), we used a variety of search terms and keywords (alone and in combination) such as ‘developing skills’, ‘developing students skills’, ‘developing workforce skills’, ‘methods for developing skills’, ‘strategies for skill development’, ‘supports for skill development’, ‘strategies, methods, and supports for developing skills within learning communities’, ‘strategies, methods, and supports for developing skills within the community of practice’, ‘strategies, methods, and supports for developing skills within collaborative learning environments’, ‘strategies, methods, and supports for developing skills in online communities’, ‘strategies, methods, and supports for developing skills in organizations’, ‘strategies, methods, and supports for developing skills in educational settings’, and ‘strategies, methods, and supports for developing skills at the workplace’. As the search terms and keywords show, to carry out a comprehensive search, we also alternatively reviewed the strategies, methods, and supports for developing skills in closely related contexts/environments such as online communities, educational settings, and collaborative learning environments. This is attributed to the limited availability of pertinent literature. That is, so far, very few research works have been conducted to specifically report and document the strategies, methods, and supports for developing skills in learning communities. Thus, in this study, we tried to address and fill this gap by taking small steps.

2.4. Paper Identification and Inclusion

The initial search yielded 143 papers. After reading the titles and keywords and reviewing the abstracts and conclusions for relevance, 94 full papers were selected for full reading. Narrowing the selection, a total number of 51 target papers (cited in Section 3) were eventually picked for in-depth review and included in the final analysis. Figure 2 shows the flowchart corresponding to this review. As depicted in Figure 2, the PRISMA flowchart encompasses three main stages namely, identification, review, and includes.

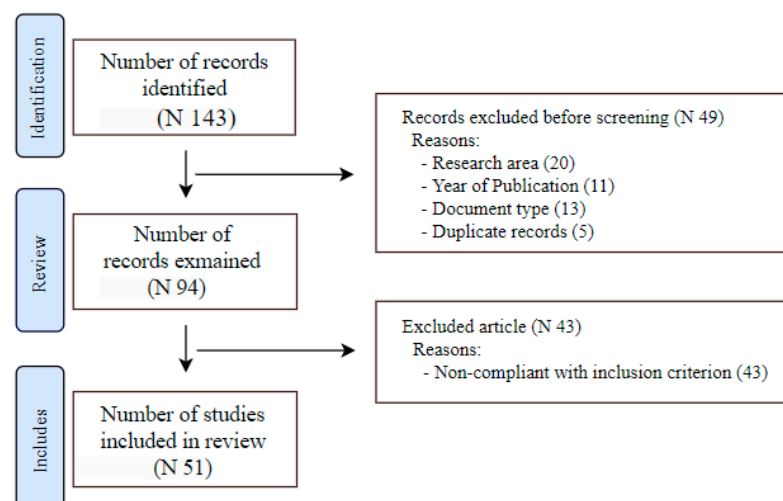
**Figure 2.** PRISMA flowchart of systematic review study identification and inclusion.

Figure 3 demonstrates the distribution of the studies (selected in stage 3 of Figure 1) by year of publication. It shows the studies published in 2005–2024.

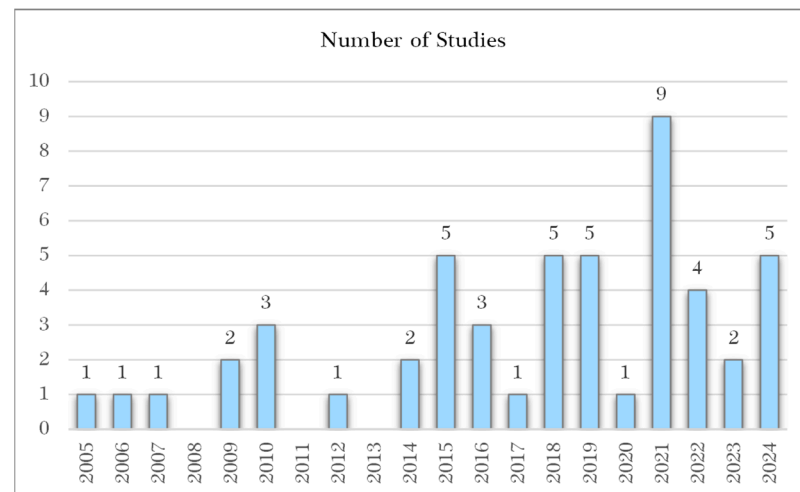


Figure 3. Annual frequency of selected studies.

2.5. Papers Categorization

The included papers in the review were organized and categorized into thematic groups (e.g., base concepts, potential strategies, methods and supports, benefits, and challenges associated with the identified strategies, methods, and supports, types of skills, and potential skills for development). The most important data (e.g., main issues, objectives, findings, open issues, future work, and remarks) were then extracted, tabulated, and documented to be utilized in our study. The included papers were then reviewed and analyzed according to the above-mentioned guiding research questions. Afterward, the potential strategies, methods, and supports for developing skills within community learning were extracted (or interpreted and adjusted in some cases) and are presented in the following section.

3. Identified Strategies, Methods, and Supports for Developing Skills within Learning Communities

The foundation to community learning lies in a deep comprehension that skills are not fixed proficiencies, but rather dynamic and essential foundations that enable learners to navigate the complexities of their lives. Whether a learner acquires vocational skills, masters digital literacy, hones soft skills, or develops other skills, community learning recognizes that developing skills is deeply entwined with the specific needs and aspirations of the community it serves. Within the context of learning communities, developing skills is a pivotal objective, fostering individual empowerment and collective growth. As societies evolve in complexity, the imperative for adaptable and dynamic skill sets becomes increasingly apparent. Developing skills within learning communities involves fostering and employing various strategies, methods, and supports that create a collaborative and enriching environment (Rogerson et al. 2010; Franklin et al. 2011).

In the context of this work, strategies refer to broad and overarching plans or approaches designed to achieve long-term skill development. Thus, the identified solutions are all considered as a type of potential strategy which makes skill development more structured and attainable. Methods refer to specific, systematic procedures or techniques used to achieve skill development. They are often structured and repeatable. Supports are tools, resources, or assistance provided to facilitate or enhance the effectiveness of strategies and methods. They help individuals or communities succeed in implementing methods or executing strategies.

Below, we list and expound upon the identified methods and supports commonly employed for skill development within learning communities. The methods and supports are discerned to facilitate their understanding and application. Although discerning the methods and supports can indeed be difficult due to several factors such as variety of options, context-specific needs, complexity of circumstances, and constant change. We also describe each approach, its benefits and challenges, the types of skills targeted for development, and its overall contribution to skill enhancement:

- Creating Collaborative Projects (method) (Daniels et al. 2010; Dela Harpe and Radloff 2012; Del-Moral and Guzmán-Duque 2014; Rohm et al. 2021):
 - Description: Collaborative projects within learning communities are structured activities that bring learners together to work collectively toward a common goal. Collaborative projects in learning communities create a dynamic environment where learners can contribute their unique skills and learn from one another, fostering a culture of shared knowledge and skill development. These projects are designed to foster skill development by leveraging the diverse strengths and expertise of community members.
 - Main advantages: (a) collaborative projects bring together individuals with diverse backgrounds and expertise, allowing for a broad range of skills to be utilized, (b) participants develop strong teamwork and communication skills as they work together to achieve common goals, (c) participants gain exposure to different disciplines, fostering interdisciplinary understanding and a holistic approach to problem solving, (d) leadership opportunities emerge as individuals take on different roles within the project, contributing to the development of leadership skills, (e) collaborative projects create an environment where individuals can learn from their peers, sharing knowledge and insights, (f) participants have the chance to connect with others in the community, expanding their professional networks and collaboration opportunities, (g) collaborative projects can boost participant engagement by providing hands-on, interactive learning experiences, and (h) working together on projects fosters a sense of community and belonging among participants, enhancing the overall learning experience. As an example, (Daniels et al. 2010) declare that creating groups and collaborative projects can assist students to develop global collaboration skills.
 - Main challenges: (a) differences in communication styles or potential language barriers may impede effective collaboration, (b) conflicts may arise within the community, requiring effective conflict resolution skills to maintain a positive working environment, (c) coordinating schedules and managing different timelines can be challenging, especially in virtual or large communities, (d) there is a risk of some individuals contributing more than others, leading to feelings of inequity within the team, (e) limited resources, such as time or funding, may pose challenges for the successful execution of collaborative projects, (f) variations in skill levels among participants may impact the overall effectiveness of the collaborative effort, and (g) some individuals may resist new approaches or changes in the project, affecting the overall dynamics, and evaluating individual contributions and assessing the success of collaborative projects can be complex. By way of example, the study by Daniels et al. (2010) demonstrates that in collaborative projects, maintaining and fostering shared motivation among student cohorts is a challenging task. By creating collaborative projects, the following skills can be developed: communication skills, teamwork skills, leadership skills, problem-solving skills, creativity and innovation, time management, adaptability, and conflict resolution.
 - Skills for development: By creating collaborative projects the following skills can be developed: communication skills, teamwork skills, leadership skills, problem-solving skills, creativity and innovation, time management, adaptability, and conflict resolution.

- Contribution to skill development: Creating collaborative projects in learning communities fosters skill development by, for example, encouraging teamwork, enhancing communication, and promoting problem-solving proficiency. Participants learn to navigate group dynamics, share knowledge, and apply diverse perspectives, which strengthens both individual and collective skills. This collaborative environment also simulates real-world scenarios, preparing learners for future professional challenges.
- Creating Mentorship Programs (method and support) (Keegan and Costa 2009; Keegan et al. 2009; Klinge 2015; Lee and Pinar 2022; Nguyen et al. 2024):
 - Description: Mentorship programs within learning communities are structured initiatives that pair learners seeking to develop specific skills with experienced mentors who can provide guidance, support, and expertise. Mentorship programs aim to facilitate skill development through one-on-one interactions, sharing of knowledge, and ongoing mentorship. These programs play a crucial role in creating a supportive learning community where learners can thrive, develop their skills, and achieve their professional goals.
 - Main advantages: (a) mentees gain firsthand knowledge and insights from experienced mentors, accelerating their skill development, (b) mentorship offers individualized guidance tailored to the unique needs and goals of each mentee, (c) mentorship provides opportunities for mentees to expand their professional networks through their mentor's connections, (d) interactions with mentors boost mentees' confidence, empowering them to take on new challenges and responsibilities, (e) mentees receive guidance on career paths, professional development, and strategies for success in their chosen field, (f) mentorship contributes to the overall personal and professional development of mentees, going beyond specific skill development, (g) mentors provide motivation and hold mentees accountable for their goals, fostering a commitment to continuous improvement, and (h) mentorship often leads to long-lasting professional relationships, providing ongoing support throughout the mentee's career. For example, in the study of Keegan et al. (2009), educators agreed that mentoring was vital as part of their skill development and that it helped them to start exploring Web 2.0 technologies with both more confidence and motivation.
 - Main challenges: (a) finding the right match between mentors and mentees based on skills, goals, and personality can be challenging, (b) both mentors and mentees may face time constraints, impacting the frequency and depth of their interactions, (c) there could be a disparity in skills between mentors and mentees, leading to challenges in addressing specific skill gaps, (d) differences in communication styles or potential language barriers may impede effective communication between mentors and mentees, (e) mentorship programs may face resource constraints, limiting the extent of support and opportunities provided to mentees, (f) mentees might become overly reliant on their mentors, potentially hindering their ability to develop self-directed learning skills, (g) misaligned expectations between mentors and mentees regarding the scope and goals of the mentorship can lead to dissatisfaction, and (h) the dynamics of mentorship relationships can change over time, and sustaining a positive and effective relationship requires effort. For instance, the study conducted by Keegan et al. (2009) reveals that communication in different languages poses a significant challenge for both mentors and mentees.
 - (a) Skills for development: Creating mentorship programs can lead to the development of various skills, including leadership skills, communication skills, listening skills, coaching and feedback skills, empathy and emotional intelligence, networking and relationship building, self-reflection and self-awareness, critical thinking and problem solving, goal setting and planning, and cultural competence.

- Contribution to skill development: Creating mentorship programs in learning communities supports skill development by, for example, providing personalized guidance, fostering knowledge transfer, and building confidence. Mentors share their experience and expertise, helping mentees navigate challenges and accelerate their learning. This relationship also cultivates networking opportunities, enhancing both professional and personal growth.
- Providing Workshops and Training Sessions (support) (Naeem 2016; Chappell et al. 2018; Soeker et al. 2018; Jin et al. 2019; Hatice 2023):
 - Description: Workshops and training sessions are structured educational events to enhance knowledge areas or specific skills. These practices play a crucial role in fostering skill development within learning communities. They offer a dynamic and targeted approach to skill development. They create conducive environments for active learning, collaboration, and the practical application of knowledge, contributing significantly to developing learners' skills.
 - Main advantages: (a) workshops and training sessions allow for focused learning on specific skills, providing learners with targeted knowledge and expertise, (b) learners have the opportunity to apply theoretical knowledge in practical scenarios, enhancing their ability to use acquired skills in real-world situations, (c) the interactive nature of workshops promotes engagement, ensuring that learners actively participate in discussions, exercises, and hands-on activities, (d) workshops encourage collaboration and knowledge sharing among learners, fostering a sense of community and collective learning, (e) hands-on activities and practical exercises in workshops facilitate experiential learning, allowing learners to gain skills through direct experience, (f) workshops contribute to building a supportive learning community where learners can network, share insights, and collaborate beyond the session, (g) workshops can incorporate diverse learning formats, catering to different learning styles and preferences, ensuring a well-rounded educational experience, (h) training sessions equip learners with the knowledge and skills necessary to perform their tasks more effectively and efficiently, leading to improved productivity and performance, (i) training sessions foster a culture of continuous learning and innovation within communities, encouraging learners to think creatively, experiment with new ideas, and contribute to organizational growth and innovation, and (j) training sessions help learners stay updated with the latest trends, technologies, and best practices, enabling them to adapt to changing job requirements and environments more easily. For example, based on the findings of (Jin et al. 2019), pharmacy students perceived that the communication training session is useful for improving their communication skills.
 - Main challenges: (a) limited time in workshops and training sessions may restrict the depth of skill development (particularly for complex or multifaceted skills), leading to rushed or incomplete learning experiences, (b) organizing workshops can be resource-intensive, requiring dedicated planning, materials, and sometimes specialized facilities, (c) learners may have varying levels of skill proficiency, making it challenging to address the diverse needs of all attendees adequately, (d) factors such as location, cost, or technology requirements may pose accessibility barriers, limiting the inclusivity of workshops, (e) the impact of a single workshop may be limited, and sustaining skill development often requires ongoing support and reinforcement, (f) assessing the effectiveness of workshops in terms of skill development may be challenging, requiring thoughtful evaluation methods, (g) maintaining consistent learner engagement throughout the workshop can be a challenge, especially in longer sessions, (h) ensuring that learners can effectively transfer the acquired skills from the workshop to real-world settings may require additional support and reinforcement, (i) maintaining learners' interest and engagement throughout

the training session can be challenging, particularly if the content is not tailored to their needs or lacks relevance, (j) providing timely and constructive feedback to learners during training sessions can be challenging, especially in larger communities or when using online platforms, and (k) incorporating technology into training sessions can present challenges, such as technical glitches, accessibility issues, or difficulties in navigating digital platforms. For example, the findings of (Soeker et al. 2018) show that employees in the workshops who remain (in their jobs) for extended periods hinder their ability to improve their vocational skills and gain the necessary experience to work in the open labor market.

- Skills for development: Creating workshops and training sessions can facilitate the development of various skills such as technical skills, communication skills, problem-solving skills, leadership skills, presentation skills, time management, collaboration and teamwork, adaptability, creativity and innovation, and self-reflection and self-improvement.
- Contribution to skill development: Providing workshops and training sessions in learning communities enhances skill development by, for example, offering structured, hands-on learning experiences tailored to specific needs. These sessions allow participants to acquire new skills, refine existing ones, and stay updated with industry trends. Additionally, interactive formats foster engagement and practical application, reinforcing the learning process.
- Providing Educational Technologies Such as Online Learning Platforms (support) (Oduma et al. 2019; Ahmed and Hasegawa 2019; Ashar et al. 2021; Margaryan et al. 2022):
 - Description: Online learning platforms have become integral to skill development within learning communities, offering flexible and accessible avenues for learners to acquire and enhance their skills. Their accessibility, flexibility, and diverse offerings contribute to creating dynamic and inclusive environments where learners can pursue continuous learning and professional development.
 - Main advantages: (a) online learning platforms offer flexibility in terms of when and where learners can access content, making education accessible to a diverse range of learners, (b) online courses that use online learning platforms are often more cost-effective than traditional classroom-based training, reducing barriers to entry for learners, (c) online learning platforms provide a wide range of courses, allowing learners to choose from diverse subjects and skill sets that align with their interests and goals, (d) learners can progress at their own pace, enabling a personalized learning experience that accommodates different learning styles, (e) online learning that uses online learning platforms facilitates collaboration among learners from different geographical locations, fostering a global community of knowledge sharing, (f) many online learning platforms incorporate interactive tools such as forums, quizzes, and collaborative projects, enhancing engagement and practical application of skills, (g) online learning platforms provide continuous learning opportunities for learning communities, allowing learners to stay updated with evolving trends, and (h) successful completion of online courses often results in certifications or badges, providing learners with tangible proof of their skills. For example, the study of (Oduma et al. 2019) shows that through e-learning platforms, students of business education would be able to communicate, collaborate, and cooperate with other learners worldwide and assess worldwide libraries irrespective of their geographical locations and bring to fulfillment the goal of business education.
 - Main challenges: (a) unequal access to digital devices (online learning platforms) and reliable internet may create disparities in the ability to participate in online learning, (b) ensuring the quality and credibility of online courses (that use online learning platforms) can be challenging, with variations in content and instructional design, (c) learners may encounter technical issues in using online learning platforms such as connectivity problems, software glitches, or

device compatibility issues, (d) online learning platforms need robust security measures to protect learner data and privacy, addressing concerns related to cybersecurity, (e) reliance on technology (online learning platform) makes the learning process vulnerable to disruptions, and learners may struggle if they lack technical proficiency, and (f) remote assessments (facilitated by online learning platforms) may be susceptible to academic dishonesty, requiring the implementation of effective monitoring and evaluation mechanisms. For instance, (Margaryan et al. 2022) believe that online platform settings are different from conventional organizational settings in terms of task interdependences, lack of organizational scaffolds for learning, training, and incidental knowledge sharing, as well as the overall shift of responsibility for learning to workers.

- Skills for development: Creating online learning platforms can help to develop diverse skills such as technical skills, communication skills, problem-solving skills, digital literacy, self-management, adaptability, information literacy, collaboration and teamwork, creativity and innovation, and lifelong learning.
- Contribution to skill development: Providing educational technologies like online learning platforms supports skill development by offering flexible, accessible resources that cater to diverse learning styles and paces. These platforms enable learners to engage with interactive content, track their progress, and access a wealth of information anytime, anywhere. In addition, they facilitate collaborative learning and personalized feedback, enhancing the overall learning experience.
- Providing Peer Learning and Feedback (method and support) (Goldsmith et al. 2006; Willey and Gardner 2010; Singh and Abrham 2015; Zhou et al. 2021; Alzaabi et al. 2021; Selvaretnam 2024):
 - Description: Peer learning is a collaborative approach where learners learn from each other's experiences and expertise which helps them to develop their skills. Peer learning involves knowledge sharing among learners within a learning community. Constructive feedback is a vital component of skill development. Learners provide feedback on each other's work, highlighting strengths and suggesting areas for improvement in a positive and supportive manner. Both peer learning and feedback mechanisms play crucial roles in creating a dynamic and effective learning environment within communities. These approaches promote active engagement, collaboration, and continuous improvement, contributing to the overall skill development of learners.
 - Main advantages: (a) peer learning brings together learners with diverse backgrounds and experiences, providing a rich environment for learning from different perspectives, (b) peer learning fosters teamwork and the development of interpersonal skills, essential for success in various professional settings, (c) peers can share their knowledge and expertise, creating a dynamic learning environment where learners learn from each other, (d) peer interaction often leads to increased engagement, as learners actively participate in discussions and activities facilitated by their peers, (e) social learning is enhanced through peer interactions, promoting the acquisition of both cognitive and behavioral skills, (f) learning from peers can enhance the transferability of skills, as learners see how certain skills are applied in different contexts, (g) regular interaction with peers improves communication skills, including the proficiency to articulate thoughts and ideas effectively, (h) feedback from peers offers multiple viewpoints, helping learners identify strengths and areas for improvement in a supportive context, (i) constructive feedback helps learners gain a better understanding of their abilities, behaviors, and performance, fostering self-awareness and self-reflection, (j) positive feedback acknowledges learners' achievements and progress, boosting their confidence and motivation to continue developing their skills, and (k) feedback helps learners evaluate the effectiveness of their

- current strategies and approaches, allowing them to adjust and refine their strategies, methods, and supports for skill development accordingly.
- Main challenges: (a) peers may have different levels of expertise, which can lead to discrepancies in the depth of knowledge shared, (b) in peer-led environments, there is a risk of misinformation if learners lack accurate information or understanding of the subject matter, (c) ensuring equitable participation in peer learning can be challenging, with some learners being more active than others in group discussions, (d) in multicultural learning communities, differences in language and culture may pose challenges to understanding and effective communication among peers, (e) conflicts may arise in peer interactions, requiring effective mechanisms for a resolution to maintain a positive learning environment, (f) there is a need for mechanisms to ensure accountability, as peers may vary in their commitment to the learning community, (g) peers may need training on how to provide constructive feedback effectively, as this skill is crucial for a positive learning experience, and (h) coordinating schedules for collaborative activities and peer feedback sessions can be challenging, especially in diverse learning communities.
 - Skills for development: Providing peer learning and feedback can aid the development of different skills namely, communication skills, problem-solving skills, active listening, collaboration and teamwork, empathy and emotional intelligence, critical thinking, self-reflection, adaptability, resilience, leadership, and mentorship.
 - Contribution to skill development: Providing peer learning and feedback in learning communities supports skill development by, for example, encouraging active collaboration, critical thinking, and diverse perspectives. Participants learn from each other's experiences, gain new insights, and refine their skills through constructive feedback. This reciprocal process also builds communication and teamwork skills, essential for personal and professional growth.
 - Providing Problem-based Learning (method) ([Delaney et al. 2015](#); [Warnock and Mohammadi-Aragh 2015](#); [Thakur et al. 2018](#); [Nurtanto Muhammad and Sofyan 2020](#)):
 - Description: Problem-based learning (PBL) is a learner-centered instructional approach emphasizing active learning through exploring and resolving real-world problems. In PBL, learners are presented with authentic, complex problems requiring critical thinking, problem solving, collaboration, and self-directed learning. Rather than relying on traditional lecture-based instruction, PBL shifts the focus to the process of inquiry and discovery, with students (learners) taking on an active role in their learning. PBL is a pedagogical approach for cultivating a range of skills within learning communities. PBL is often most effective in small to medium-sized communities and groups, where interaction is manageable, and every learner has the opportunity to contribute. In larger communities, breaking into smaller subgroups can help maintain the effectiveness of PBL.
 - Main advantages: (a) PBL promotes active participation and engagement as learners work collaboratively to solve real-world problems. This active involvement enhances motivation and retention of skills; (b) PBL cultivates critical thinking skills as learners analyze, evaluate, and synthesize information to develop solutions for complex problems. This skill is transferable to various contexts; (c) PBL fosters collaboration and teamwork as learners work together to address challenges. Collaborative problem solving enhances interpersonal skills to work in diverse teams; (d) Learners apply theoretical knowledge to practical scenarios, bridging the gap between academic learning and real-world application. This application enhances the transferability of skills; (e) PBL often involves problems that require knowledge from multiple disciplines. This interdisciplinary approach encourages learners to integrate diverse perspectives,

- fostering a holistic understanding; (f) PBL hones problem-solving skills by presenting learners with authentic, complex problems. This skill is valuable across various professional and personal contexts; (g) Presenting findings and solutions to the learning community enhances communication skills. Learners articulate their ideas, listen to others, and engage in constructive dialogue; and (h) PBL encourages self-directed learning. Learners take responsibility for their education, identifying relevant resources, conducting research, and acquiring the knowledge needed for problem solving.
- Main challenges: (a) Effective implementation of PBL requires skilled facilitators who can guide the process. Finding facilitators with expertise in both the subject matter and PBL methodology can be a challenge; (b) PBL can be a time-intensive mechanism. Designing and implementing complex problems, facilitating discussions, and allowing time for collaborative work can extend the duration of the learning process; (c) PBL may require additional resources, including materials for problem scenarios, technology for research, and space for collaborative activities. Limited resources can be a barrier to implementation; (d) The outcomes of PBL can vary. Some learners may excel in problem solving, while others may struggle. Ensuring equitable learning outcomes for all learners can be challenging; (e) Learners who are unfamiliar with PBL may initially resist this approach. Overcoming resistance and effectively communicating the benefits of PBL can be a challenge; (f) Assessing learners' contributions in a group setting can be complex. Designing assessments that capture the depth of learner learning while acknowledging collaborative efforts is a challenge; (g) Balancing the coverage of essential content with the time spent on PBL activities can be challenging. Learners must ensure that key learning objectives are met; and (h) PBL may need adaptation to suit different learning environments and disciplines. Implementing a one-size-fits-all approach may not be effective across diverse contexts.
 - Skills for development: Providing PBL can help the development of several skills, including research skills, critical thinking, problem solving, collaboration, communication, self-directed learning, adaptability, reflection, and decision making.
 - Contribution to skill development: Providing problem-based learning in learning communities enhances skill development by, for example, immersing learners in real-world scenarios that require critical thinking, creativity, and collaboration. This approach encourages active engagement as learners work together to find solutions, which strengthens their problem-solving skills and application of knowledge. Additionally, it fosters independent learning and adaptability, key skills for tackling complex challenges.
 - Creating Cross-Collaboration Initiatives (method) (Slagter van Tryon et al. 2018; Vuojärvi et al. 2019; Sum et al. 2021; Wu et al. 2024):
 - Description: Cross-collaboration initiative methods involve the interaction and partnership between individuals/learners or groups from different backgrounds, disciplines, or expertise areas. In the context of skill development within learning communities, cross-collaboration initiatives aim to leverage diverse perspectives, knowledge, and skills to foster a holistic learning environment. Cross-collaboration initiative methods contribute significantly to skill development within learning communities, preparing learners for the complexities of the modern professional landscape.
 - Main advantages: (a) exposure to diverse viewpoints and expertise enhances problem-solving and critical thinking skills, (b) learners acquire a broad set of skills by working with individuals from different disciplines and backgrounds, (c) engagement with community, industry, or global partners provides practical, real-world experiences, (d) collaboration fosters creativity and

innovation through the synthesis of diverse insights and ideas, (e) establishing connections with professionals and experts beyond the immediate learning community expands networking opportunities, (f) collaboration across borders enhances learners' ability to work in a globalized and interconnected world, and (g) cross-collaboration creates a dynamic learning environment that mirrors the complexities of the real world.

- Main challenges: (a) diverse backgrounds may lead to communication challenges, requiring effective communication strategies, (b) coordinating collaboration between different groups may involve logistical complexities, such as time zone differences or organizational protocols, (c) allocating resources for collaborative initiatives, especially in global or industry collaborations, may require careful planning and negotiation, (d) awareness of and sensitivity to cultural differences is crucial to avoid misunderstandings or conflicts in global collaborations, (e) ensuring that individual learners' goals align with collective objectives is essential for a successful cross-collaboration initiative, (f) differences in opinions or working styles may lead to conflicts that require effective resolution strategies, (g) balancing diverse perspectives while maintaining a focus on shared goals can be challenging, and (h) ensuring that all learners contribute equitably to collaborative projects is crucial for a fair and productive learning experience.
- Skills for development: Creating cross-collaboration initiatives can aid the development of different types of skills, for example, communication skills, research skills, co-designing skills, problem solving, teamwork and collaboration, leadership and management, adaptability and flexibility, cultural competence, networking and relationship building, conflict resolution, strategic thinking, innovation, and results orientation.
- Contribution to skill development: Creating cross-collaboration initiatives in learning communities supports skill development by, for example, bringing together diverse expertise and perspectives, fostering innovation and creativity. These initiatives encourage learners to work across disciplines, enhancing their adaptability, communication, and teamwork skills. Moreover, cross-collaboration broadens learners' understanding and equips them to address complex, multifaceted problems more effectively.
- Providing Leadership Development Programs (method and support) (Burke and Collins 2005; Blackwell and Cummins 2007; Solansky 2010; Ogurlu and Emir 2014):
 - Description: Leadership development program methods refer to the strategies, techniques, and approaches utilized within leadership development initiatives and learning communities to cultivate and enhance leadership skills among participants (learners). These methods encompass a wide range of activities, such as workshops, coaching, experiential learning, assessments, and networking opportunities, designed to support learners in developing their leadership skills, fostering personal growth, and achieving their leadership potential.
 - Main advantages: (a) leadership development programs help learners to gain a deeper understanding of their strengths, weaknesses, and leadership style, fostering self-awareness, (b) leadership programs often incorporate team-building activities, improving learners' skill to collaborate and work effectively in a group, (c) programs nurture strategic thinking, enabling learners to analyze situations critically and make informed decisions, (d) learners develop confidence in their leadership skills through experiential learning and skill-building exercises, (e) leadership development often involves networking with professionals, peers, and mentors, expanding learners' professional connections, (f) programs teach adaptability and flexibility, crucial qualities in navigating dynamic and evolving environments, (g) enhanced leadership skills contribute to career advancement by making learners more competitive in the job market, (h) lead-

- ership programs often focus on emotional intelligence, fostering empathy, and improving interpersonal relationships, and (i) exposure to diverse leadership approaches inspires innovative thinking and problem solving among learners.
- Main challenges: (a) implementing comprehensive leadership development programs can be resource-intensive in terms of time, finances, and personnel, (b) learners may resist adopting new leadership approaches or paradigms, hindering the effectiveness of the program, (c) assessing the tangible impact of leadership development programs on learners and the community can be challenging, (d) maintaining the momentum and impact of leadership programs over the long term may be difficult without sustained effort and reinforcement, (e) learners in leadership programs come from diverse backgrounds, and a one-size-fits-all approach may not address individual differences effectively, (f) some programs may focus too much on theoretical concepts, potentially lacking practical application and relevance, (g) not all learners may have equal access to leadership development programs, potentially leading to disparities in skill development, (h) organizational and community cultures that resist change or prioritize traditional leadership styles may impede the success of new leadership development initiatives, (i) some programs may prioritize short-term goals over long-term leadership development, missing opportunities for sustained impact, and (j) learners may find it challenging to integrate the lessons learned in leadership programs into their daily responsibilities.
 - Skills for development: Leadership development programs aim to cultivate well-rounded leaders and learners with diverse skill sets including communication skills, coaching and mentoring, strategic thinking, ethical leadership, problem solving, decision making, conflict resolution, team building and collaboration, adaptability and flexibility, influence and persuasion, and networking and relationship building.
 - Contribution to skill development: Providing leadership development programs in learning communities supports skill development by, for example, cultivating essential leadership qualities such as decision making, communication, and team management. These programs offer learners practical experience in guiding others, fostering their confidence and ability to inspire and influence. Additionally, they prepare learners to take on leadership roles within their communities and beyond, enhancing both personal and collective growth.
 - Creating Inclusive Learning Environments (method) ([Baldiris Navarro et al. 2016](#); [Sushil 2021](#); [Ghosh et al. 2022](#); [Karagianni and Driga 2024](#)):
 - Description: An inclusive learning environment refers to a setting where all learners, regardless of their diverse backgrounds, abilities, or characteristics, feel welcomed, respected, and supported in their learning journey. In the context of skill development within learning communities, inclusivity involves creating a space that accommodates and values the uniqueness of each learner. Creating and sustaining an inclusive learning environment is an ongoing process that requires commitment, awareness, and intentional efforts from educators, learners, and the broader learning community.
 - Main advantages: (a) inclusive learning environments bring together learners with diverse backgrounds, experiences, and perspectives, enriching the learning process, (b) a mix of perspectives fosters creativity and innovation as learners engage with a variety of ideas and approaches, (c) exposure to diverse experiences promotes empathy and understanding among learners, essential for effective collaboration, (d) inclusive environments promote equality by providing an equal platform for all learners, regardless of their background, (e) learning in diverse groups enhances problem-solving skills as learners bring unique insights and solutions to challenges, (f) inclusive environments contribute to the development of cultural competence as learners navigate and

- respect diverse cultural perspectives, (g) interacting with a diverse group fosters the development of strong social skills, crucial for effective communication and collaboration, (h) inclusive learning mirrors real-world scenarios where learners work with diverse teams, preparing learners for future professional environments, (i) learners are more engaged in inclusive environments as they see the relevance of the content to a variety of perspectives, and (j) inclusive learning prepares learners to be global citizens, capable of understanding and appreciating global issues and perspectives.
- Main challenges: (a) diverse viewpoints may lead to conflicts that need to be managed effectively to maintain a positive learning environment, (b) inclusive environments may face challenges in ensuring that all learners participate equally, considering differences in communication styles, (c) instructors and learners may have unconscious biases that can unintentionally affect the learning experience for some individuals, (d) meeting the diverse needs of learners may require additional resources, and resource constraints can limit the effectiveness of inclusivity, (e) some learners or instructors may resist the shift toward more inclusive practices, hindering progress, (f) it may take additional time to address the varied learning needs in an inclusive environment, potentially impacting the pace of instruction, (g) in some cases, certain communities/groups may be underrepresented, limiting the richness of perspectives in the learning environment, (h) instructors need to be culturally sensitive to create an inclusive environment, and a lack of awareness may lead to unintentional exclusion, (i) catering to individual learning differences requires careful planning and implementation, which can be challenging in large and diverse communities/groups, and (j) traditional assessment methods may not effectively capture the diverse range of skills and knowledge that learners in an inclusive environment possess.
 - Skills for development: Creating inclusive learning environments not only promotes diversity, equity, and inclusion but also cultivates a range of valuable skills such as communication skills, leadership skills, collaboration and teamwork, critical thinking, conflict resolution, cultural competence, empathy and understanding, self-reflection and self-awareness, adaptability and flexibility, resilience, and creativity and innovation.
 - Contribution to skill development: Creating inclusive learning environments contributes to skill development by, for example, ensuring that all learners, regardless of background or ability, have equal access to resources and opportunities. This fosters a sense of belonging and encourages diverse perspectives, enhancing collaborative learning and critical thinking. Inclusivity also empowers learners to engage more fully, leading to a richer, more comprehensive skill set for everyone in the community.
 - Providing Gamification and Simulations (method and support) ([Pereira et al. 2018](#); [Roberts and Cooper 2019](#); [Mårell-Olsson 2021](#); [Pafadnam et al. 2022](#); [Hussein et al. 2023](#); [Juera 2024](#)):
 - Description: Gamification refers to integrating game elements and principles into non-game contexts, such as educational settings, to enhance engagement, motivation, and learning outcomes. In skill development within learning communities, gamification involves applying game mechanics, such as points, badges, leaderboards, and challenges, to make the learning experience more interactive and enjoyable. Simulations involve creating a mimicry of real-world scenarios or processes to provide learners with hands-on, experiential learning opportunities. In the context of skill development within learning communities, simulations offer a safe and controlled environment for learners to practice and refine their skills. Incorporating gamification and simulations into skill development initiatives within learning communities can contribute to

a dynamic and effective learning environment, promoting active participation and skill mastery.

- Main advantages: (a) gamification makes learning more engaging and enjoyable by incorporating elements such as challenges, rewards, and progress tracking, which encourages active participation and sustained interest in skill development activities, (b) gamification breaks down skill development into manageable tasks and provides opportunities for repeated practice and mastery through levels, badges, or points systems, allowing learners to gradually improve and refine their skills over time, (c) gamification fosters collaboration and healthy competition among learners, teams, or communities by incorporating social features such as leaderboards, challenges, and collaborative quests, encouraging peer learning, knowledge sharing, and skill development through friendly competition, (d) simulations provide a bridge between theoretical knowledge and real-world application, allowing learners to practice skills in authentic scenarios, (e) simulations offer a risk-free environment for learners to experiment and make mistakes without real-world consequences, (f) simulations facilitate experiential learning, allowing learners to actively participate and gain practical skills through hands-on experiences, (g) both gamification and simulations provide instant feedback, enabling learners to learn from their actions promptly, (h) gamification and simulations make the learning process more engaging, encouraging active participation and sustained interest, and (i) gamification and simulations can be adapted to different skill levels, making them suitable for learners with varying degrees of proficiency.
- Main challenges: (a) there is a risk that gamification elements might be perceived as mere distractions rather than meaningful contributors to the learning process, (b) designing simulations that balance complexity and user-friendliness, ensuring they are challenging but not overwhelming, can be complex, (c) access to the necessary technological resources for simulations may vary among learners, leading to potential disparities in opportunities, (d) integrating gamified elements and simulations seamlessly with the existing learning resources can be a challenge, requiring careful alignment, (e) implementing gamification and simulations often requires technology infrastructure, and ensuring access for all learners can be challenging, (f) developing high-quality simulations and gamified content may involve significant costs in terms of resources, time, and technology, (g) providing meaningful and constructive feedback within the gamified and simulated environments requires careful attention to detail, (h) ensuring that gamified and simulated content is inclusive and accessible to learners with diverse skills and backgrounds is a persistent challenge, and (i) regular maintenance and updates are necessary to keep gamified and simulated content relevant and aligned with evolving learning objectives.
- Skills for development: Gamification and simulations can help the development of various skills, including problem-solving skills, communication skills, decision-making skills, leadership and management skills, critical thinking, collaboration and teamwork, adaptability and flexibility, technical proficiency, emotional intelligence, risk management, time management, and creativity and innovation.
- Contribution to skill development: Providing gamification and simulations supports skill development by, for example, engaging learners in interactive, scenario-based learning that enhances problem-solving and decision-making skills. These methods and supports make learning more enjoyable and immersive, motivating learners to apply knowledge in practical, simulated environments. Additionally, gamification and simulations offer immediate feedback and opportunities for reflection, which reinforce learning and skill mastery.

- Providing Social Media and Networking Platforms (method and support) (Dabbagh et al. 2015; Ren and Chadee 2016; Di Gangi et al. 2017; Charlton-Czaplicki and Margaryan 2021; Ashar et al. 2021):
 - Description: Social media and networking platforms have become integral tools for facilitating skill development within learning communities. Social media platforms such as Facebook, Twitter, LinkedIn, Instagram, and TikTok provide spaces for learners to connect, share information, and engage in conversations with others who share similar interests or professional goals. Networking involves building and keeping relationships with other professionals, experts, mentors, and peers to share ideas, resources, and opportunities. Networking events, conferences, workshops, and webinars enable learners to expand their professional networks, gain insights from others' experiences, and access new learning opportunities.
 - Main advantages: (a) social media platforms facilitate collaborative learning, enabling learners to engage in discussions, share insights, and collectively enhance their skills, (b) learners can stay updated on trends, best practices, and emerging technologies through social media platforms, aligning their skill development with current (academic and industry) needs, (c) social media platforms allow for the easy sharing of learning resources, including articles, tutorials, and tools, providing a vast pool of knowledge for skill development, (d) social media platforms support diverse content formats, such as videos and webinars, making learning more engaging and catering to different learning preferences, (e) networking exposes learners to diverse perspectives, ideas, and experiences, enriching their understanding and fostering creativity in skill development, (f) social networking platforms provide opportunities for learners to connect with professionals, mentors, and peers, creating valuable networks for career growth and skill advancement, (g) through networking platforms, learners can access learning materials and engage with the community at their own pace and convenience, promoting flexibility in skill development, and (h) engaging in online discussions and forums provided by networking platforms helps learners develop effective communication skills, a valuable asset in professional settings.
 - Main challenges: (a) learners may face distractions on social media platforms, affecting their focus on skill development tasks, (b) ensuring the accuracy and reliability of information shared on social media requires careful curation and validation, (c) access to social media platforms may not be universal, potentially excluding individuals who do not have reliable internet access, (d) excessive use of social media can lead to time management issues, with learners spending more time on platforms than on skill development activities, (e) the abundance of information on social media can lead to information overload, making it challenging for learners to filter relevant content, (f) learners may be exposed to cybersecurity risks, such as phishing scams or data breaches when engaging on social media, (g) balancing the benefits of networking with privacy concerns can be challenging, particularly in professional or educational settings, (h) building and maintaining professional networks requires time and effort, which can be challenging for learners with busy schedules or multiple commitments, (i) building genuine relationships and meaningful connections with others in a professional context can be challenging, especially in highly competitive or crowded industries, and (j) fear of rejection, criticism, or judgement may deter learners from reaching out to others for networking opportunities or initiating conversations with new contacts.
 - Skills for development: Providing social media and networking opportunities can support the development of multiple skills, including communication skills, networking skills, research skills, critical thinking, digital literacy, personal

branding, adaptability, cultural competence, conflict resolution, leadership and influence, and time management.

- Contribution to skill development: Providing social media and networking platforms supports skill development by, for example, facilitating connections and knowledge sharing among learners and broadening their professional and learning networks. These platforms enable real-time collaboration, access to diverse resources, and peer feedback, enhancing both learning and personal growth. Also, they offer opportunities for learners to showcase their skills and gain insights from academia and/or industry experts and peers.

Given the identified strategies, methods, and supports it can be stated that while strategies, methods, and supports for skill development offer numerous advantages, acknowledging and addressing the associated challenges is crucial for successful implementation although some of these strategies, methods, and supports share common benefits and challenges. A thoughtful, adaptive approach that considers the unique characteristics of the learning community can maximize the benefits and mitigate potential drawbacks. In other words, these strategies, methods, and supports, when thoughtfully selected and implemented, contribute to the holistic development of skills within learning communities. The effectiveness of these solutions may vary based on the specific goals, contexts, and diverse needs of the community members. The literature shows that effective skill development requires a strategic integration of diverse strategies, methods, and supports that align with the goals and needs of the learning community and its members (Nag and Das 2015; Prabuddha and Subrata 2019).

4. Discussion

In the realm of education and collaboration, learning communities play a pivotal role in fostering skill development. Learning communities go beyond the mere transmission of knowledge; they embrace a holistic approach to skill development. They are not confined to the four walls of a classroom but spill into the everyday lives of learners. Skill development within learning communities is a nuanced and multifaceted process, requiring careful consideration of various strategies, methods, and supports. As learning communities evolve, the strategies, methods, and supports employed for skill development should be dynamic, innovative, and reflective of the ever-changing landscape of education and professional development (Charalambos et al. 2007).

Various strategies, methods, and supports contribute significantly to skill development across diverse contexts, offering unique avenues for learners to acquire and enhance their skills (Nag and Das 2015). The eleven identified strategies, methods, and supports for skill development within learning communities each contribute exclusively to enhancing learning outcomes, as supported by the existing literature. In particular, collaborative projects are widely recognized for fostering teamwork, communication, and problem-solving skills as learners collaborate to achieve common goals, learn to navigate group dynamics, and leverage collective strengths. For instance, the study by (Del-Moral and Guzmán-Duque 2014) shows that the project of hosting video gamers on Facebook and the construction of a virtual city can favor collaboration between gamers along with the exchange of strategies, equally contributing to learning transfer and skill development. Mentorship programs provide personalized guidance and feedback from experienced mentors, facilitating skill development through tailored support, role modeling, and knowledge sharing. As an example, the study of (Keegan et al. 2009) reports that the mentoring approach can train vocational teachers and develop their 21st century skills. Workshops and training sessions offer targeted instruction and practice opportunities in specific skill areas, empowering learners to acquire and develop new skills applicable to their professional or personal development as well as aligning with the literature that highlights their role in upskilling and professional development. For example, the study of (Naeem 2016) shows that providing regular faculty development workshops can improve participants' knowledge, skills, and teaching performance. Online learning platforms, social media, and networking extend

learning beyond the classroom and provide accessible and flexible learning opportunities, allowing learners to engage in self-directed study, access educational resources, and participate in interactive activities to develop skills at their own pace and convenience. For example, the conducted study by (Ahmed and Hasegawa 2019) shows that virtual learning applications can cultivate students' skills in designing and producing online virtual laboratories. Peer learning and feedback mechanisms promote collaborative learning environments where learners share ideas, provide constructive criticism, and support each other's growth, fostering communication, critical thinking, and reflective practices. For example, the study of (Selvaretnam 2024) found that working with peers enabled the students to generate feedback, clear doubts, learn to solve problems, and develop group working skills. Problem-based learning approaches immerse learners in authentic, real-world challenges, encouraging them to apply knowledge, think critically, and devise innovative solutions, thereby enhancing problem-solving and decision-making skills. For example, (Delaney et al. 2015) show that transitioning from traditional to problem-based learning in management education can enhance and leverage practitioners' competencies and skill sets. Cross-collaboration initiatives encourage interdisciplinary approaches and bring together diverse stakeholders to address complex issues, fostering collaboration, creativity, and adaptability as learners navigate interdisciplinary perspectives and work toward shared objectives. For example, the study carried out by (Vuojärvi et al. 2019) shows that cross-boundary collaboration and problem solving in blended and online courses can enhance students' 21st century skills. Leadership development programs cultivate leadership skills through targeted training, coaching, and experiential learning opportunities, preparing learners to lead effectively and inspire others toward common goals. For example, the results of the study of (Burke and Collins 2005) confirm that leadership development programs support the transfer of leadership skills.

Inclusive learning environments create supportive, welcoming spaces where diversity is embraced, fostering empathy, cultural competence, and collaboration among learners from different backgrounds. Additionally, inclusive learning environments ensure that diverse perspectives are integrated into the learning process, promoting equity and access to opportunities. For instance, the work of (Sushil 2021) proves that the creation of effective and inclusive learning environments support teachers' core skills. Gamification and simulations leverage game-like elements and immersive experiences to engage learners, promote active participation, and provide opportunities for experiential learning and skill practice in safe, controlled environments. As proof, the study performed by (Pereira et al. 2018) shows that gamification can be used as a tool to increase employee skills through interactive work instruction training. Social media and networking platforms facilitate connections, knowledge sharing, and professional development opportunities, enabling learners to expand their networks, access valuable resources, and engage in collaborative learning and knowledge exchange. For example, the study of (Dabbagh et al. 2015) shows that using social media can develop personal learning environments and self-regulated learning skills. Overall, by harnessing the strengths of these diverse strategies, methods, and supports, learners can embark on a comprehensive journey of skill development, embracing varied approaches to cultivate a versatile skill set tailored to their goals and aspirations. Collectively, these strategies, methods, and supports align with the broader literature that advocates for a holistic, multifaceted approach to skill development, addressing cognitive, interpersonal, and technical competencies within learning communities. The existing literature broadly supports the efficacy of these strategies, methods, and supports, with each offering unique contributions to skill development. The literature also highlights the importance of a balanced, integrated approach that leverages the strengths of multiple methods to address the diverse needs of learners in various contexts (Nag and Das 2015; Prabuddha and Subrata 2019).

The literature shows that various potential and promising strategies, methods, and supports have been employed for skill development, each with its unique advantages and challenges. A comprehensive skill development approach within learning communities

involves a judicious blend of these strategies, methods, and supports, recognizing their strengths and addressing inherent challenges. While each strategy, method, and support has its distinct advantages and challenges, a holistic strategy that combines various approaches can cater to the diverse needs and preferences of learners. That is, the managerial team of learning communities must critically assess the evolving needs of the community and learners; align strategies, methods, and supports with overarching goals; and employ a dynamic approach to maximize the impact of skill development initiatives. Thus, the success of skill development strategies, methods, and supports lies in their alignment with the goals of the learning community and its members, adaptability to changing needs, and a continuous commitment to improvement (Andrews and Russell 2012).

Although the potential of learning communities is immense, it is not without challenges. Resource constraints, inclusivity hurdles, and the need for adaptability are realities that community learning initiatives face. However, these challenges are not roadblocks but rather opportunities for creative solutions, innovative partnerships, and a reimagining of traditional educational norms. The critical analysis of the identified strategies, methods, and supports shows that each strategy, method, and support contributes uniquely to the development of some skills, but none is without challenges. For example, interactive workshops provide immediacy but require substantial resources. Online platforms offer flexibility but risk excluding those with limited digital access. Collaborative projects enhance practical skills but necessitate intricate coordination. Mentorship programs offer personalized guidance but may lack scalability. Problem-based learning fosters critical thinking but demands careful design and facilitation. From workshops and mentorship programs to collaborative projects and online learning platforms, the strategies, methods, and supports employed are as diverse as the skills they aim to cultivate. Therefore, ongoing review, evaluation, and adaptation of such strategies, methods, and supports are critical to addressing the evolving challenges and opportunities of skill development within the learning landscape (Bandaranaike 2018; Kirchhoff and Keller 2021).

Determining the effectiveness of identified strategies, methods, and supports for skill development in learning communities requires a robust and systematic evaluation process. This begins with defining clear, measurable learning objectives that align with the desired outcomes of the skill development programs. Pre- and post-training assessments are crucial for quantifying the improvement in skills. These assessments can take the form of tests, practical exercises, or performance-based evaluations, providing tangible data on skill development. Additionally, surveys and feedback forms filled out by learners can offer insights into their perceptions of the training's relevance and applicability. Observations and direct assessments by instructors or peers can further validate the practical application of new skills (Alzaabi et al. 2021).

A comprehensive evaluation also involves qualitative measures, such as interviews and focus groups, to gain deeper insights into the learners' learning experiences and the contextual factors that affect skill development. Longitudinal studies can track the sustainability of the skills over time, indicating whether the identified strategies, methods, and supports lead to lasting improvements. Comparing the results across different cohorts or learning communities can help identify the most effective strategies, methods, and supports. Furthermore, incorporating feedback loops, where instructors and learners regularly review and discuss the training outcomes, can highlight strengths and areas for improvement. Continuous improvement cycles, guided by evaluation data, ensure that the skill development strategies, methods, and supports remain relevant and effective, adapting to the evolving needs of the learning community. This multifaceted approach not only measures the immediate impact of training but also its long-term efficacy and adaptability (Alzaabi et al. 2021; Prabuddha and Subrata 2019).

Determining the effectiveness of identified strategies, methods, and supports for skill development in learning communities should be a collaborative effort involving multiple stakeholders. Participants themselves are crucial, as their feedback and performance data provide direct insights into the effectiveness of the strategies, methods, and supports. In-

structors and trainers, with their firsthand experience of teaching and observing progress, can offer valuable perspectives on the practical application and impact of these strategies, methods, and supports. Educational researchers can contribute by designing and analyzing evaluation studies, ensuring the rigor and validity of the findings (Karagianni and Driga 2024). Additionally, administrators and policymakers play a key role by supporting the implementation of effective strategies, methods, and supports and facilitating the necessary resources for comprehensive evaluations. Engaging external experts and industry professionals can also provide an objective assessment and ensure that the skills being developed align with current professional standards and needs. By involving a diverse group of stakeholders, the evaluation process becomes more comprehensive, ensuring that the strategies, methods, and supports are effectively fostering skill development within the learning community (Karagianni and Driga 2024).

It should be added that as we stand at the precipice of an ever-evolving future, the role of community learning in skill development is becoming increasingly pivotal. The skills acquired through community learning are not just tools for personal advancement; they are catalysts for community resilience, societal progress, and the shaping of a collective future. Furthermore, the landscape of education and skill development within learning communities is evolving rapidly, driven by technological advancements, societal changes, and a deeper understanding of effective pedagogical approaches. The integration of technology, emphasis on lifelong learning, commitment to inclusivity, and a focus on interdisciplinary and soft skills are key trends shaping the educational landscape. As learning communities adapt to these trends, they will play a crucial role in preparing learners for the challenges and opportunities of the future (Bandaranaike 2018; Kirchhoff and Keller 2021).

4.1. Review Limitations

Our systematic review of the literature on strategies, methods, and supports for developing skills within learning communities faced the following limitations:

- Some of the reviewed studies lack rigorous empirical evidence, making it challenging to assess the true effectiveness of certain strategies, methods, or supports.
- The included studies present diverse strategies, methodologies, supports, contexts, and outcomes, making it difficult to synthesize findings cohesively.
- Some of the studies do not provide long-term data, limiting the ability to assess the sustained impact of the identified strategies, methods, and supports on skill development.

4.2. Future Work

The future work could include several avenues for further exploration and research, for example:

- **Exploration and Integration of Emerging Technologies:** Investigate new and innovative technologies for skill development within learning communities (e.g., virtual reality, artificial intelligence, or augmented reality into learning environments) that can be incorporated with the potential strategies, methods, and supports. Examine the role of technology integration and digital literacy in skill development within learning communities, exploring how digital tools and platforms can enhance learning outcomes and promote 21st century skills.
- **Comparative Studies:** Conduct comparative studies to evaluate the effectiveness of different strategies, methods, and supports for skill development within learning communities, considering factors such as learner engagement, knowledge retention, and skill transferability.
- **Longitudinal Studies:** Undertake longitudinal studies to assess the long-term impact of skill development strategies, methods, and supports on learners' academic performance, career outcomes, and personal development.

- **Cross-Cultural Studies:** Conduct cross-cultural studies to examine how the identified strategies, methods, and supports for skill development in learning communities are perceived and utilized in different cultural contexts, considering cultural norms, values, and educational practices.
- **Meta-Analyses and Syntheses:** Conduct meta-analyses to evaluate, compare, synthesize, combine, and summarize the findings of this work with similar studies, addressing, overarching trends, patterns, and gaps in the literature on skill development within learning communities.
- **Implementation Studies:** Explore the challenges and facilitators of implementing different skill development strategies, methods, and supports within diverse learning communities, including factors such as resource availability, institutional support, and teacher training.
- **Innovative Pedagogical Approaches:** Investigate the integration of interdisciplinary and experiential learning approaches into skill development strategies, methods, and supports within learning communities, fostering creativity, critical thinking, and problem-solving skills.
- **Teacher Professional Development:** Develop and evaluate professional development programs for learners to enhance their capacity to implement effective skill development strategies, methods, and supports within learning communities, emphasizing pedagogical strategies, assessment techniques, and classroom management practices.
- **Policy Implications:** Explore the policy implications of promoting skill development within learning communities, considering issues such as curriculum design, assessment practices, funding allocation, and equity and inclusion initiatives.

By addressing these future directions, researchers can contribute to advancing our understanding of effective strategies, methods, and supports for skill development within learning communities and inform evidence-based practices to support learners' growth and success.

In sum, the findings of the reviewed paper show that skill development within learning communities is achievable if potential and effective strategies, methods, and supports are identified and applied. Furthermore, our theoretical evaluation shows that the effectiveness of the identified strategies, methods, and supports can be achieved by thoroughly examining the evidence and considering both the benefits and challenges associated with them.

5. Conclusions

In the ever-evolving landscape of education, the role of learning communities in skill development stands as a cornerstone for shaping futures. As we navigate the complexities of the 21st century, the conclusion is clear: strategies, methods, and supports for developing skills within learning communities are integral to preparing learners for a dynamic and uncertain future.

In the tapestry of educational research, a systematic literature review stands as a powerful lens. Thus, the authors conducted a systematic literature review to illuminate the varied strategies, methods, and supports employed for skill development within learning communities. As we traverse the pages of scholarly endeavors, the richness and diversity of these strategies, methods, and supports become evident, each contributing a distinct hue to the canvas of educational progress.

This systematic exploration has not merely been an exercise in academic inquiry; rather, it unveils practical insights that resonate with the real-world dynamics of learning communities. The synthesis of existing knowledge not only acknowledges the existing landscape but also lays the groundwork for future trajectories in education.

The literature shows that one of the prominent themes that emerged is the dynamic interplay among traditional and contemporary strategies, methods, and supports. While time-tested approaches retain their significance, the infusion of modern strategies, methods, and supports has ushered in a new era. For example, the application of online learn-

ing platforms and social media platforms has become integral, not just as means but as transformative agents in the learning process.

Furthermore, in the reviewed studies, the significance of soft skills has been underscored repeatedly. As we propel into an era where automation and artificial intelligence shape industries, the cultivation of uniquely human attributes gains paramount importance. Collaboration and teamwork, leadership, critical thinking, problem solving, and adaptability emerge not just as skills but as the very fabric of success in the complex landscape of the future.

The studies also emphasize that inclusivity and diversity resonate profoundly. The eleven strategies, methods, and supports identified (application of collaborative projects, mentorship programs, workshops and training sessions, online learning platforms, peer learning and feedback, problem-based learning, cross-collaboration initiatives, leadership development programs, inclusive learning environments, gamification and simulations, and social media and networking platforms) not only facilitate skill development but also contribute to dismantling barriers, ensuring that learning opportunities are equitable and accessible to all. In doing so, learning communities evolve into spaces where the richness of diverse perspectives converges for collective growth.

As we draw the curtain on this systematic journey, the conclusion is not a termination but a commencement. The insights gathered beckon educators, researchers, and policymakers to continue the dialogue, refine methodologies, and venture into uncharted territories of pedagogical innovation. In the ever-evolving saga of education, this systematic literature review serves as a compass, guiding us toward an era where skill development is not just an outcome but a continuous, adaptive process within the vibrant tapestry of learning communities.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: The authors are grateful to the anonymous referees for their valuable suggestions.

Conflicts of Interest: The authors declare no conflicts of interest.

References

- Ahmed, Mohamed Elsayed, and Shinobu Hasegawa. 2019. The Effects of a New Virtual Learning Platform on Improving Student Skills in Designing and Producing Online Virtual Laboratories. *Knowledge Management & E-Learning An International Journal* 11: 364–77.
- Ahn, Joonkil. 2017. Taking a Step to Identify How to Create Professional Learning Communities—Report of a Case Study of a Korean Public High School on How to Create and Sustain a School-based Teacher Professional Learning Community. *International Education Studies* 10: 82–92. [\[CrossRef\]](#)
- Akgün Özbek, Ela. 2015. A Classification of Student Skills and Competencies in Open and Distance Learning. *International Journal on New Trends in Education and Their Implications* 6: 174–85.
- Alzaabi, Shaikha, Mohammed Nasaif, Amar Hassan Khamis, Farah Otaki, Nabil Zary, and Sharon Mascarenhas. 2021. Medical Students' Perception and Perceived Value of Peer Learning in Undergraduate Clinical Skill Development and Assessment: Mixed Methods Study. *JMIR Medical Education* 7: e25875. [\[CrossRef\]](#) [\[PubMed\]](#)
- Andrews, Georgina, and Marilyn Russell. 2012. Employability Skills Development: Strategy, Evaluation and Impact. *Higher Education, Skills and Work-Based Learning* 2: 33–44. [\[CrossRef\]](#)
- Ashar, Muhammad, Waras Kamdi, and Dediek Tri Kurniawan. 2021. Professional Skills Development through the Network Learning Community Using an Online Learning Platform. *International Journal of Interactive Mobile Technologies* 15: 202–10. [\[CrossRef\]](#)
- Baldiris Navarro, Silvia, Panagiotis Zervas, Ramon Fabregat Gesa, and Demetrios G. Sampson. 2016. Developing Teachers' Competences for Designing Inclusive Learning Experiences. *Educational Technology & Society* 19: 17–27.
- Bandaranaike, Suniti. 2018. From Research Skill Development to Work Skill Development. *Journal of University Teaching & Learning Practice* 15: 108–26.
- Blackwell, Cindy, and Richard Cummins. 2007. Assessing Perceived Student Leadership Skill Development in an Academic Leadership Development Program. *Journal of Leadership Education* 6: 39–58. [\[CrossRef\]](#)

- Borges, Ana Margarida, Fernando Pereira, Inês Barbedo, João P. Almeida, Paula Cabo, Pedro Rodrigues, Vera Ferro-Lebres, Cláudia S. Costa, Josiana Vaz, and Juliana Almeida-de-Souza. 2023. Skill development in health sciences: Active methodologies in higher education. In *ICOPEV: 5th International Conference on Production Economics and Project Evaluation: Conference Proceedings Book*. Castelo Branco: Instituto Politécnico de Castelo Branco.
- Bunnaen, Wutthisak, Parichart Prasertsang, and Wittaya Worapun. 2022. Professional Learning Community in the Improvement of Student Learning Achievement in a Demonstration School. *Journal of Educational Issues* 8: 907–15. [CrossRef]
- Burke, Veronica, and David Collins. 2005. Optimising the Effects of Leadership Development Programmes: A Framework for Analysing the Learning and Transfer of Leadership Skills. *Management Decision* 43: 975–87. [CrossRef]
- Chappell, Kathy B., Lawrence Sherman, and Scott D Barnett. 2018. An Interactive Faculty Development Workshop Designed to Improve Knowledge, Skills (Competence), Attitudes, and Practice in Interprofessional Continuing Education. *Medical Teacher* 40: 896–903. [CrossRef] [PubMed]
- Charalambos, Vrasidas, Zembylas Michalinos, and Richard Chamberlain. 2007. The Design of Online Learning Communities: Critical Issues. *Educational Media International* 41: 135–43. [CrossRef]
- Charlton-Czaplicki, Timothy, and Anoush Margaryan. 2021. Exploring the Role of Social Media Support Communities in Online Freelancers' Learning and Skill Development. Paper presented at the Work21 Conference, Online, August 18–19.
- Chen, Teresa. 2003. Recommendations for Creating and Maintaining Effective Networked Learning Communities: A Review of the Literature. *International Journal of Instructional Media* 30: 35–44.
- Clausen, Kurt W., Anna-Marie Aquino, and Ron Wideman. 2009. Bridging the Real and Ideal: A Comparison Between Learning Community Characteristics and a School-Based Case Study. *Teaching and Teacher Education* 25: 444–52. [CrossRef]
- Colin Burton. 2023. What Are Learning Communities? (Examples, Types & Best Practices). Available online: <https://www.thinkific.com/blog/what-is-a-learning-community/> (accessed on 5 January 2024).
- Dabbagh, Nada, Anastasia Kitsantas, Maha Al-Freih, and Helen Fake. 2015. Using Social Media to Develop Personal Learning Environments and Self-Regulated Learning Skills: A Case Study. *International Journal of Social Media and Interactive Learning Environments* 3: 163–83. [CrossRef]
- Dandil, Yasemin, Katherine Smith, Emma Kinnaird, Cindy Toloza, and Kate Tchanturia. 2020. Cognitive Remediation Interventions in Autism Spectrum Condition: A Systematic Review. *Front Psychiatry* 11: 722. [CrossRef]
- Daniels, Mats, Åsa Cajander, Arnold Pears, and Tony Clear. 2010. Engineering Education Research in Practice: Evolving Use of Open Ended Group Projects as A Pedagogical Strategy for Developing Skills in Global Collaboration. *International Journal of Engineering Education* 26: 795–806.
- Delaney, Yvonne, Bob Pattinson, John McCarthy, and Sarah Beecham. 2015. Transitioning from Traditional to Problem-Based Learning in Management Education: The Case of a Frontline Manager Skills Development Programme. *Innovations in Education and Teaching International* 54: 214–22. [CrossRef]
- Del-Moral, María-Esther, and Alba-Patricia Guzmán-Duque. 2014. CityVille: Collaborative Game Play, Communication and Skill Development in Social Networks. *Journal of New Approaches in Educational Research* 3: 11–19. [CrossRef]
- Di Gangi, Paul M., Samuel H. Goh, and Carmen C. Lewis. 2017. Using Social Media to Support Presentation Skill Development in Traditional Classroom Environments. *Journal of Organizational and End User Computing (JOEUC)* 29: 1–40. [CrossRef]
- Dingyloudi, Filitsa, and Jan-Willem Strijbos. 2020. Community Representations in Learning Communities. *Scandinavian Journal of Educational Research* 64: 1052–70. [CrossRef]
- DuFour, Richard, and Rebecca DuFour. 2010. The Role of Professional Learning Communities in Advancing 21st Century Skills. In *21st Century Skills: Rethinking How Students Learn*, 1st ed. Edited by James Bellanca and Ron Brandt. Bloomington: Solution Tree Press, vol. 5, pp. 52–77.
- Echtelt, Rick van. 2024. What Are Skills? Explanations & Examples. Available online: <https://www.ag5.com/what-are-skills/> (accessed on 5 January 2024).
- Elias, Peter, Andy Dickerson, and Neil Bachelor. 2023. A Skills Classification for the UK. Available online: https://assets.publishing.service.gov.uk/media/652fdb9d92895c0010dcb9a5/A_skills_classification_for_the_UK.pdf (accessed on 5 January 2024).
- Fallows, Stephen, and Christine Steven. 2000. The skills agenda. In *Integrating Key Skills in Higher Education*, 1st ed. London: Routledge, pp. 2–11.
- Felner, Robert D., and Natalie Bolton. 2007. Creating Small Learning Communities: Lessons from the Project on High-Performing Learning Communities About “What Works” in Creating Productive, Developmentally Enhancing, Learning Contexts. *Educational Psychologist* 42: 209–21. [CrossRef]
- Franklin, Alex, Julie Newton, Jennie Middleton, and Terry Marsden. 2011. Reconnecting Skills for Sustainable Communities with Everyday Life. *Environment and Planning A* 43: 347–62. [CrossRef]
- Ghosh, Nitu, Bharti Ayer, and Ruchika Sharmac. 2022. Technology Integrated Inclusive Learning Spaces for Industry 4.0 Adaptive Learners- LUR Model for Sustainable Competency Development. *ECS Transactions* 107: 13823–32. [CrossRef]
- Goldsmith, Mary, Lyn Stewart, and Lorraine Ferguson. 2006. Peer Learning Partnership: An Innovative Strategy to Enhance Skill Acquisition in Nursing Students. *Nurse Education Today* 26: 123–30. [CrossRef]
- Harpe, Barbara dela, and Alex Radloff. 2012. Lessons Learned from Three Projects to Design Learning Environments That Support ‘Generic’ Skill Development. *Journal of Learning Design* 1: 21–34.

- Harvey, Frida, and Anna Teledahl. 2022. Characteristics of Professional Learning Communities in Mathematics: A Systematic Review. *Mathematics Teacher Education and Development* 24: 72–95.
- Hatice, Kara Erol. 2023. Time for Universities to Think Outside the Box: University Students' Experiences of Social Skills Development Workshops. *Active Learning in Higher Education*, 1–18. [CrossRef]
- Hodgson, Ann, Sheila Edward, and Maggie Gregson. 2007. Riding the Waves of Policy? The Case of Basic Skills in Adult and Community Learning in England. *Journal of Vocational Education & Training* 59: 213–29.
- Hussein, Elham, Ashraf Kan'an, Abeer Rasheed, Yousef Alrashed, Malek Jdaitawi, Ahmed Abas, Sherin Mabrouk, and Mona Abdelmoneim. 2023. Exploring the impact of gamification on skill development in special education: A systematic review. *Contemporary Educational Technology* 15: 1–9. [CrossRef]
- Indeed Editorial Team. 2023. What Are Skills? (with Tips on How to Improve Them). Available online: <https://www.indeed.com/career-advice/career-development/what-are-skills> (accessed on 5 January 2024).
- Jin, Hye Kyung, So Hyun Park, Ji Eun Kang, Kyung Suk Choi, Hong Ah. Kim, Min Seon Jeon, and Sandy Jeong Rhie. 2019. The influence of a patient counseling training session on pharmacy students' self-perceived communication skills, confidence levels, and attitudes about communication skills training. *BMC Medical Education* 19: 1–9. [CrossRef] [PubMed]
- Juera, Louie C. 2024. Digitalizing skills development using simulation-based mobile (SiM) learning application. *Journal of Computers in Education* 11: 29–50. [CrossRef]
- Kapur, Radhika. 2018. Classification of Various Skills. Available online: https://www.researchgate.net/publication/323725787_Classification_of_Various_Skills#fullTextFileContent (accessed on 5 January 2024).
- Karagianni, Eleni, and Anna Maria Driga. 2024. Inclusive Learning and Development Practices for Children with Autism Spectrum Disorders and the Ict's Role. *Global Journal of Engineering and Technology Advances* 18: 55–67. [CrossRef]
- Keegan, Helen, Anne Fox, Crisitina Costa, Laurence Dr Borgmann, Torhild Slatto, Judita Kasperuniene, Thomas Berger, and Marcus Fessler. 2009. Mentoring for 21st Century Skills It's all about the Learning. Available online: https://www.researchgate.net/publication/41105480_Mentoring_for_21st_Century_Skills_It%E2%80%99s_all_about_the_Learning (accessed on 5 January 2024).
- Keegan, Helen, and Crisitina Costa. 2009. Online Learning Communities and Social Software: A Mentoring Approach to 21st Century Skills. Paper presented of the 1st International Conference on Education and New Learning Technologies, Barcelona, Spain, July 6–8.
- Kilpatrick, Sue, Margaret Barrett, and Tammy Jones. 2003. Defining Learning Communities. Paper presented of the Joint New Zealand Association for Research in Education (NZARE) & Australian Association for Research in Education (AARE) International Conference, Auckland, New Zealand, November 29–December 3.
- Kirchhoff, Esther, and Roger Keller. 2021. Age-Specific Life Skills Education in School: A Systematic Review. *Frontiers in Education* 6: 660878. [CrossRef]
- Klinge, Carolyn M. 2015. A Conceptual Framework for Mentoring in a Learning Organization. *Adult Learning* 24: 160–66. [CrossRef]
- Lajoie, Susanne P., Benilde Garcia, Gloria Berdugo, Luis Márquez, Susana Espíndola, and Carlos Nakamura. 2006. The Creation of Virtual and Face-to-Face Learning Communities: An International Collaboration Experience. *Journal of Educational Computing Research* 35: 163–80. [CrossRef]
- Lee, Kwan Meng, and Yaprak Pinar. 2022. Mentoring and Digital Learning to Enhance the Impact of Social Sciences. *Italian Journal of Sociology of Education* 14: 103–30.
- López-Rodríguez, Campos Elías, Jorge Alexander Mora Forero, and Ana León-Gómez. 2022. Strategic Development Associated with Branding in the Tourism Sector: Bibliometric Analysis and Systematic Review of the Literature between the Years 2000 to 2022. *Sustainability* 14: 9869. [CrossRef]
- Margaryan, Anoush, Timothy Charlton-Czaplicki, and Ujwal Gadiraju. 2022. Workplace Learning in Crowdwork Questionnaire (WLCQ): Measuring Self-Regulated Learning and Skill Development in Online Platform Work. *International Journal of Training and Development* 26: 495–515. [CrossRef]
- Mårell-Olsson, Eva. 2021. Using Gamification as an Online Teaching Strategy to Develop Students' 21st Century Skills. *IxD&A: Interaction Design and Architecture(s)* 47: 69–93.
- McDaniels, Melissa. 2016. Creating Dynamic Learning Communities in Synchronous Online Courses: One Approach from the Center for the Integration of Research, Teaching and Learning (CIRTL). *Online Learning* 20: 110–29. [CrossRef]
- Naeem, Naghma. 2016. Which Knowledge and Skills Do Participants Retain after Attending Medical Education Training Workshops? *Creative Education* 7: 870–77. [CrossRef]
- Nag, Debanjan, and Niladri Das. 2015. Development of Various Training Methods for Enhancing the Effectiveness and Skill Development Among Micro-Entrepreneurs in India. *Journal of Entrepreneurship Education* 18: 1–18.
- Nazarenko, Artem A., Majid Zamiri, Joao Sarraipa, Paulo Figueiras, Ricardo Jardim-Goncalves, and Néjib Moalla. 2024. Integration of AI Use Cases in Training to Support Industry 4.0. *Journal of Advances in Information Technology* 15: 397–406. [CrossRef]
- Nguyen, Loan, Sarath Tomy, and Eric Pardede. 2024. Enhancing Collaborative Learning and E-Mentoring in a Smart Education System in Higher Education. *Computers* 13: 28. [CrossRef]
- Nurtanto Muhammad, Moh Fawaid, and Herminarto Sofyan. 2020. Problem based learning (PBL) in Industry 4.0: Improving learning quality through character-based literacy learning and life career skill (LL-LCS). *Journal of Physics: Conference Series* 1573: 012006. [CrossRef]

- Oduma, Chriatian A., Onyema Lizzy Nkem, and Akiti Ndidi. 2019. E-Learning Platforms in Business Education for Skill Acquisition. *Nigerian Journal of Business Education (NIGJBED)* 6: 104–12.
- Ogurlu, Üzeyir, and Serap Emir. 2014. Effects of a Leadership Development Program on Gifted and Non-Gifted Students' Leadership Skills. *Eurasian Journal of Educational Research* 55: 223–42. [\[CrossRef\]](#)
- Pafadnam, Yacouba, Patrice Ngangue, Nestor Bationo, Arzouma Hermann Pilabré, Abibata Barro, Talato Tassembedo, Sulpice Adognibo, Tewendé Abel Kinda, Doulaye Traoré, and Dieudonné Soubeiga. 2022. Effects of the Simulation Pedagogy Utilization in Undergraduate Nursing and Midwifery Students' Skill Development, in Low- And Middle-Income Countries: A Systematic Review. *Journal of Nursing Education and Practice* 12: 7–15. [\[CrossRef\]](#)
- Page, Matthew J., Joanne E. McKenzie, Patrick M. Bossuyt, Isabelle Boutron, Tammy C. Hoffmann, Cynthia D. Mulrow, Larissa Shamseer, Jennifer M. Tetzlaff, Elie A. Akl, Sue E. Brennan, and et al. 2021. The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *Systematic Reviews* 10: 89. [\[CrossRef\]](#)
- Patacsil, Frederick F., and Christine Lourrine S. Tablatin. 2017. Exploring the Importance of Soft and Hard Skills as Perceived by It Internship Students and Industry: A Gap Analysis. *Journal of Technology and Science Education* 7: 347–68. [\[CrossRef\]](#)
- Pereira, Marcelo, Marcelo Oliveira, Andréia Vieira, Rui M. Lima, and Luciano Paes. 2018. The Gamification as a Tool to Increase Employee Skills Through Interactives Work Instructions Training. *Procedia Computer Science* 138: 630–37. [\[CrossRef\]](#)
- Prabuddha, Ray, and Mandal Subrata. 2019. Assessment of Efficacies of Different Skill Development Training Methods Organized by Rathindra KVK, Visva-Bharati. *International Journal of Social Sciences* 8: 45–50.
- Prajapati, Ravindra, Bosky Sharma, and Dharmendra Sharma. 2017. Significance of Life Skills Education. *Contemporary Issues in Education Research* 10: 1–6. [\[CrossRef\]](#)
- Ren, Shuang, and Doren Chadee. 2016. Influence of Work Pressure on Proactive Skill Development in China: The Role of Career Networking Behavior and Guanxi HRM. *Journal of Vocational Behavior* 98: 152–62. [\[CrossRef\]](#)
- Reynolds, Krista. 2016. Creating Effective Professional Learning Communities (PLCs). *BU Journal of Graduate Studies in Education* 8: 9–12.
- Riel, Margaret, and Linda Polin. 2004. Learning Communities: Common Ground and Critical Differences in Designing Technical Support. In *Designing for Virtual Communities in the Service of Learning*. Edited by Sasha Barab, Rob Kling and James H. Gray. Cambridge: Cambridge University Press, pp. 16–53.
- Roberts, Fiona, and Kay Cooper. 2019. Effectiveness of High Fidelity Simulation Versus Low Fidelity Simulation on Practical/Clinical Skill Development in Pre-Registration Physiotherapy Students: A Systematic Review. *The JBI Database of Systematic Reviews and Implementation Reports* 17: 1229–55. [\[CrossRef\]](#)
- Rogerson, Robert, Sue Sadler, Cecilia Wong, and Anne Green. 2010. Planning Sustainable Communities—Skills and Learning to Envision Future Communities: An Introduction. *Town Planning Review* 81: 505–21. [\[CrossRef\]](#)
- Rohm, Andrew J., Matt Stefl, and Noriko Ward. 2021. Future Proof and Real-World Ready: The Role of Live Project-Based Learning in Students' Skill Development. *Journal of Marketing Education* 43: 204–15. [\[CrossRef\]](#)
- Rook, Michael Montalto, Saliha Özkan-Bekiroglu, Phil Tietjen, Koun Choi, and Scott P. McDonald. 2020. Forming and Sustaining a Learning Community and Developing Implicit Collective Goals in an Open Future Learning Space. *Journal of Learning Spaces* 9: 19–30.
- Sammon, Grace. 2007. *Creating and Sustaining Small Learning Communities: Strategies and Tools for Transforming High Schools*. Warren County: Corwin, pp. 10–76.
- Selvaretnam, Geethanjali. 2024. Facilitating Feedback Generation and Group Skill Development Through Assessment Design. *Journal of Work-Applied Management, ahead-of-print*. [\[CrossRef\]](#)
- Singh, Amarpreet, and Teketel Abrham. 2015. Effect of Peer-learning Method on the Development of Students' Skill Performance. *International Journal of Physical Education, Sports and Health* 2: 284–87.
- Slagter van Tryon, Patricia J., Jason McDonald, and Atsusi Hirumi. 2018. Preparing the Next Generation of Instructional Designers: A Cross-Institution Faculty Collaboration. *Journal of Computing in Higher Education* 30: 125–53. [\[CrossRef\]](#)
- Snyder, Martha Marti. 2009. Instructional-Design Theory to Guide the Creation of Online Learning Communities for Adults. *TechTrends* 53: 48–56.
- Soeker, Mohammed Shaheed, Jo Celene De Jongh, Amy Diedericks, Kelly Matthys, and Nicole Swart Petra van der Pol. 2018. The Experiences and Perceptions of Persons with Disabilities Regarding Work Skills Development in Sheltered and Protective Workshops. *Work* 59: 303–14. [\[CrossRef\]](#)
- Solansky, Stephanie T. 2010. The Evaluation of Two Key Leadership Development Program Components: Leadership Skills Assessment and Leadership Mentoring. *The Leadership Quarterly* 21: 675–81. [\[CrossRef\]](#)
- Sum, Kiu, Labros Dimitropoulos, and Grete Kurik. 2021. Enhancing Student Learning and Teaching Experience Through a Cross-Level Collaboration: A Reflection. *Student Engagement in Higher Education Journal* 3: 4–9.
- Sushil, Kumar. 2021. Creating Effective and Inclusive Learning Environments. *Asian Journal of Research in Social Sciences and Humanities* 11: 227–32.
- Tang, Eunice, and Cherlotte Lam. 2014. Building an Effective Online Learning Community (OLC) in Blog-based Teaching Portfolios. *The Internet and Higher Education* 20: 79–85. [\[CrossRef\]](#)
- Taniguchi, Tadanari. 2021. Classification of Educational Skills for University Students in Computer Programming Classes. *International Journal of Information and Education Technology* 11: 313–18. [\[CrossRef\]](#)

- Thakur, Preeti, Sunil Dutt, and Abhishek Chauhan. 2018. Problem Based Learning Strategy for Development of Skills--A Review. *Journal of Educational Technology* 15: 53–62.
- Virtue, Emily E., Gayle Maddox, and Pfaff Ken. 2019. The Lasting Effects of Learning Communities. *Learning Communities: Research & Practice* 7: 1–15.
- Vuojärvi, Hanna, Miikka Eriksson, and Henriikka Vartiainen. 2019. Cross-Boundary Collaboration and Problem-Solving to Promote 21st Century Skills—Students' Experiences. *International Journal of Learning, Teaching and Educational Research* 18: 30–60. [\[CrossRef\]](#)
- Warnock, James N., and M. Jean Mohammadi-Aragh. 2015. Case study: Use of Problem-Based Learning to Develop Students' Technical and Professional Skills. *European Journal of Engineering Education* 41: 142–53. [\[CrossRef\]](#)
- Weiss, Michael J., Mary G. Visser, and Evan Weissman. 2015. The Impact of Learning Communities for Students in Developmental Education: A Synthesis of Findings From Randomized Trials at Six Community Colleges. *Educational Evaluation and Policy Analysis* 37: 520–41. [\[CrossRef\]](#)
- Willey, Keith, and Anne Gardner. 2010. Collaborative Peer Learning to Change Learning Culture and Develop the Skills for Lifelong Professional Practice. Paper presented at the 21st Annual Conference for the Australasian Association for Engineering Education, Sydney, Australia, December 5–8.
- Wu, Yiyan, Agata Gapinska-Serwin, Wade Knaap, Ronald Soong, and Vivienne Luk. 2024. The Application of Cross-course Collaboration between Forensic Chemistry and Forensic Identification. *Journal of Chemical Education* 101: 753–65. [\[CrossRef\]](#)
- Yuan, Jiangmei, and C. Kim. 2014. Guidelines for Facilitating the Development of Learning Communities in Online Courses. *Journal of Computer Assisted Learning* 30: 220–32. [\[CrossRef\]](#)
- Zamiri, Majid, and Ali Esmaeili. 2024. Methods and Technologies for Supporting Knowledge Sharing within Learning Communities: A Systematic Literature Review. *Administrative Sciences* 14: 17. [\[CrossRef\]](#)
- Zamiri, Majid, Luis M. Camarinha-Matos, and João Sarraipa. 2022. Meta-Governance Framework to Guide the Establishment of Mass Collaborative Learning Communities. *Computers* 11: 12. [\[CrossRef\]](#)
- Zhang, Ke, and Sacip Toker. 2011. Stimulating Critical Thinking in a Virtual Learning Community with Instructor Moderations and Peer Reviews. *Knowledge Management & E-Learning: An International Journal* 3: 534–47.
- Zhou, Yulan, Wei De Shao, and Lijuan Wang. 2021. Effects of Feedback on Students' Motor Skill Learning in Physical Education: A Systematic Review. *International Journal of Environmental Research and Public Health* 18: 6281. [\[CrossRef\]](#)

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.