Research Journal in Advanced Humanities

RJAH

https://doi.org/10.58256/h7m9v111

Open Access

Check for updates

RESEARCH ARTICLE **Section:** *Literature, Linguistics & Criticism*

Reimagining service learning in the AI Era: Novice teachers' perceptions of life and career skills and community participation

Samia Mokhtar Shahpo[1], Nora A. Almadani[1], Noha Hsan Alfadil[1], Maryam Ahmed Alomair[2], Alaaeldin Ahmed Hamid[2]* & Mahmoud Mohamed Yaseen[2]

[1]College of Sciences and Humanities, Imam Abdulrahman Bin Faisal University, Saudi Arabia

[2]College of Education, King Faisal University, Saudi Arabia

*Correspondence: ahamid@kfu.edu.sa

ABSTRACT

This study explores how novice teachers make sense of life and career skills, community participation, and the role of artificial intelligence within service learning in the AI era. It adopts a mixed-methods sequential explanatory design, drawing on data from 362 novice teachers across Saudi Arabia, Egypt, and Sudan. A structured questionnaire was used to examine three key dimensions: perceptions of life and career skills, perceptions of community participation, and perceptions of artificial intelligence in service learning contexts, followed by semi-structured interviews with a randomly selected group of participants to gain deeper insights. The findings suggest that novice teachers place strong value on life and career skills, especially problem-solving, critical thinking, and communication, which they see as essential for dealing with everyday classroom challenges. However, some areas, such as leadership and time management, appear less consistently developed, reflecting the realities of early career teaching. Community participation is also viewed positively, yet actual engagement remains limited, with teachers pointing to workload, time constraints, and limited institutional support as key barriers. In relation to artificial intelligence, teachers generally express positive attitudes, particularly regarding its role in supporting teaching practices, improving access to resources, and encouraging creativity. However, uncertainty remains about how to meaningfully integrate AI into service learning and community engagement. Overall, the study highlights a transitional stage in teaching, where professional skills, community engagement, and technology are present but not yet fully integrated, pointing to the need for more connected and practice-oriented approaches in teacher development.

KEYWORDS: service learning, artificial intelligence, novice teachers, life and career skills, community participation

Research Journal in Advanced Humanities

Volume 7, Issue 2, 2026

ISSN: 2708-5945 (Print)

ISSN: 2708-5953 (Online)

ARTICLE HISTORY

Submitted: **20 March 2026**

Accepted: 29 **March 2026**

Published: 14 **April 2026**

HOW TO CITE

Shahpo, S. M., Almadani, N. A., Alfadil, N. H., Alomair, M. A., Hamid, A. A., & Yaseen, M. M. (2026). Reimagining service learning in the AI Era: Novice teachers' perceptions of life and career skills and community participation. *Research Journal in Advanced Humanities*, 7(2). https://doi.org/10.58256/h7m9v111

Published in Nairobi, Kenya by Royallite Global, an imprint of Royallite Publishers Limited

1. Introduction

Education systems are undergoing profound transformations that extend beyond curricular reform to a reconfiguration of teachers' professional roles within increasingly complex and technology-mediated environments (Bonales-Daimie et al., 2025). Novice teachers, in particular, are expected to navigate these changes while demonstrating not only subject-matter competence but also a broad repertoire of life and career skills that enable them to adapt, collaborate, and engage meaningfully with their communities (Baier-Mosch et al., 2026).

Life and career skills have gained prominence as essential components of teacher preparation, reflecting the need for flexibility, self-direction, social interaction, productivity, and responsibility in dynamic professional contexts. These skills are closely tied to teachers' ability to function effectively in real-world settings, where teaching extends beyond classroom instruction to include participation in social, cultural, and community-oriented activities (Praraksa & Simpol, 2018; Pratiwi et al., 2019).

Community participation represents a complementary dimension of teachers' professional identity, emphasizing the reciprocal relationship between educational institutions and their surrounding environments. Teachers are no longer confined to instructional roles but are expected to contribute to community development, collaborate with stakeholders, and address local needs through educational initiatives. This expanded role highlights the importance of fostering a sense of social responsibility and active engagement among novice teachers (Gyang & Gusen, 2021; Denby, 2008).

Service learning has emerged as a pedagogical approach capable of integrating academic learning with community engagement, offering opportunities for learners to apply knowledge in authentic contexts while contributing to societal needs. Within teacher education, this approach has been shown to enhance practical understanding, support the transition from theory to practice, and promote a deeper awareness of professional and social responsibilities (Resch & Schrittesser, 2021; Mtawa, 2019). Furthermore, service-learning experiences have been associated with the development of leadership, reflective thinking, and civic-oriented values among participants (Cecilia et al., 2018).

Recent developments in artificial intelligence have introduced new dimensions to educational practice, reshaping how knowledge is accessed, constructed, and applied. AI technologies are increasingly being incorporated into learning environments, offering tools that support inquiry, personalization, and problem-solving. Their integration into service-learning contexts has opened new possibilities for enhancing experiential learning, particularly in project-based settings where learners engage with real-world challenges. Studies have shown that AI-supported service-learning approaches can foster critical thinking, improve learning outcomes, and facilitate innovative solutions to complex problems (Dubay & Richards, 2024; Kimmel, 2024; Sass, 2025). In teacher education, AI-enhanced service-learning modules have demonstrated potential in improving pre-service teachers' practical knowledge and motivation, particularly when linked to authentic community-based experiences (Pu et al., 2021). At the same time, the positioning of artificial intelligence as a public-oriented resource underscores its potential to support collaborative and socially responsive educational practices (Floridi, 2020). These developments suggest that the intersection of AI and service learning may play a significant role in redefining how teachers perceive their professional competencies and social responsibilities.

Despite the growing body of research on service learning and the increasing integration of artificial intelligence in education, limited attention has been given to how novice teachers themselves perceive these evolving dynamics. Existing studies have largely focused on measuring outcomes or evaluating interventions, leaving a gap in understanding how teachers interpret the relationship between AI-supported service learning, life and career skills, and community participation. Addressing this gap requires moving beyond outcome-based evaluations toward an exploration of teachers' perceptions as a lens for understanding how these elements interact in practice. This study aims to explore novice teachers' perceptions of life and career skills and community participation within the context of service learning in the AI era, and to examine how these skills are shaped and influenced by the integration of artificial intelligence tools into educational and community-based practices.

To address this gap and provide a deeper understanding of how novice teachers interpret these emerging educational dynamics, the present study is guided by the following research questions:

1. Q1. What are novice teachers' perceptions of life and career skills and community participation in the context of service learning in the AI era?

2. Q2. How do novice teachers perceive the role of artificial intelligence in shaping service learning practices?
3. Q3. How do novice teachers perceive the relationship between service learning, life and career skills, and community participation in AI-supported contexts?
4. Q4. How do novice teachers explain and interpret their experiences of AI-supported service learning?

2. Literature Review

2.1. Service Learning in Teacher Education: Bridging Professional Skills and Community Participation

Service learning has increasingly been conceptualized as an approach that integrates academic learning with meaningful engagement in community contexts. As highlighted by Cress et al. (2023), it represents more than a pedagogical strategy; it is an experiential framework through which learners construct knowledge by actively participating in socially relevant activities. Similarly, Erickson and Anderson (2023) emphasize that service learning connects disciplinary knowledge with real-life applications, enabling learners to engage with authentic community needs while developing academic understanding.

Within teacher education, this integration becomes particularly significant. Resch and Schrittesser (2021) argue that service learning provides a practical pathway for bridging the persistent gap between theoretical preparation and classroom practice. Through direct involvement in community-based activities, novice teachers are exposed to complex educational situations that require adaptive thinking and context-sensitive decision-making, thereby strengthening their professional readiness.

At the level of skill development, service learning contributes to shaping a broad range of competencies. Mtawa (2019) notes that participation in service-learning contexts enhances critical thinking and problem-solving abilities, as learners are required to navigate real-world challenges. In parallel, Cress et al. (2023) point out that such experiences foster collaboration and communication skills, particularly when learners interact with diverse groups and stakeholders in community settings.

The connection between service learning and community participation is also well established. Thelma (2024) describes service learning as a form of civic engagement that promotes active involvement in community life, while Delaine et al. (2024) highlight the importance of partnerships between educational institutions and communities in creating mutually beneficial learning environments. These partnerships enable teachers to move beyond isolated classroom practices and engage with broader social contexts.

A key concept underpinning these interactions is reciprocity. According to Delaine et al. (2024), reciprocity ensures that both learners and community partners contribute to and benefit from the learning process. In this regard, Dumlao (2023) emphasizes the role of collaborative communication in sustaining effective partnerships, where dialogue and mutual understanding become central to the success of service-learning initiatives.

In practice, service learning is not confined to a single model. As discussed by Erickson and Anderson (2023), it can take various forms, including direct service activities, discipline-based projects, problem-oriented initiatives, and community-based research. This diversity reflects the adaptability of service learning and its capacity to respond to different educational and social contexts.

The process of service learning typically unfolds through a sequence of interconnected stages. Cress et al. (2023) underline the importance of reflection as a central component, where learners critically examine their experiences and relate them to theoretical knowledge. This reflective process transforms participation into meaningful learning and supports continuous professional development.

Recent scholarship has extended the scope of service learning to broader societal goals. Rodríguez-Zurita et al. (2025) demonstrate its contribution to sustainable development through community engagement initiatives, while Tripon (2024) highlights its role in promoting social awareness and inclusive participation among students. These perspectives position service learning as a transformative approach that connects education with global and local challenges.

At the institutional level, the sustainability of service-learning practices depends on faculty engagement and support. Berkey et al. (2018) emphasize the need to reconceptualize faculty development to include community engagement practices, whereas O'Meara (2012) points to the role of faculty motivation in sustaining meaningful service-learning initiatives within higher education.

These perspectives suggest that service learning redefines the role of teachers as active contributors to both educational and social processes. By situating learning within real-world contexts and fostering reciprocal

relationships with communities, it provides a strong foundation for understanding how novice teachers perceive professional skills and community participation in contemporary educational settings.

2.2. Life and Career Skills and Community Participation in Contemporary Education

Life and career skills have become a central focus in contemporary education, reflecting a shift from knowledge acquisition toward the development of competencies required for navigating complex professional and social environments. As highlighted by Chaiyama and Kaewpila (2022), these skills encompass a range of abilities including adaptability, self-direction, collaboration, and responsibility, which are essential for effective functioning in rapidly changing contexts. Similarly, Nittayaros et al. (2025) emphasize that assessing such skills requires attention not only to cognitive performance but also to behavioral and social dimensions that shape learners' readiness for real-life challenges.

This perspective positions life and career skills as dynamic constructs that evolve through experience rather than being confined to formal instruction. Abina et al. (2025) argue that the development of sustainable career skills is closely linked to adaptive learning environments, where learners actively engage in self-assessment and continuous improvement. In this regard, experiential and practice-oriented approaches play a critical role in enabling learners to translate abstract knowledge into applicable competencies.

Within teacher education, these skills acquire additional significance. Preparing novice teachers requires equipping them with the capacity to manage classroom complexities, collaborate with diverse stakeholders, and respond to emerging educational demands. As noted by Pascua et al. (2022), career-related competencies are strongly associated with performance in authentic work settings, suggesting that exposure to real-world contexts is essential for meaningful skill development. This aligns with broader educational trends that emphasize the integration of professional skills into teacher preparation programs.

Community participation represents a complementary dimension that reinforces the development of these skills. Lachapelle and Austin (2024) conceptualize community participation as a process through which individuals actively engage in collective decision-making and social action, contributing to improved quality of life and community well-being. In educational contexts, this participation extends beyond involvement to include collaboration, co-creation, and shared responsibility among stakeholders.

The relationship between life and career skills and community participation is increasingly recognized as reciprocal. Engagement in community-based activities provides learners with opportunities to practice communication, teamwork, and problem-solving, while simultaneously enhancing their awareness of social issues. Buddeevong and Mahahing (2025) demonstrate that structured models of community participation can effectively promote both career-related skills and contextual understanding, particularly when learning activities are aligned with local needs.

Moreover, community engagement has been identified as a key driver of innovation and social development. Anthony Jr (2024) highlights its role in fostering collaborative environments where diverse actors contribute to the co-creation of sustainable solutions. In this sense, participation is not merely an outcome of education but a process through which learners develop the competencies required for active citizenship and professional practice.

In school contexts, the role of community extends to partnerships involving parents and local stakeholders. Eden et al. (2024) emphasize that such partnerships strengthen educational outcomes by creating supportive environments that connect learning with social realities. These interactions contribute to shaping learners' values, attitudes, and sense of responsibility, reinforcing the link between individual development and collective well-being.

Taken together, life and career skills and community participation can be understood as interconnected dimensions of contemporary education. While the former focuses on individual competencies, the latter situates these competencies within broader social contexts. Their integration reflects a shift toward educational models that prioritize relevance, engagement, and real-world application, providing a meaningful foundation for examining how novice teachers perceive their professional and social roles in evolving educational environments.

2.3. Artificial Intelligence and the Transformation of Service Learning and Teaching Practices

Artificial intelligence has become a defining force in reshaping educational systems, influencing not only how

knowledge is delivered but also how learning experiences are designed and enacted. As noted by Pedro et al. (2019), AI introduces new possibilities for personalization, data-driven decision-making, and adaptive learning, which collectively redefine traditional educational practices. In higher education contexts, this transformation extends beyond instruction to include research, community service, and institutional engagement, as emphasized by Lawal (2021), who highlights AI's expanding role in supporting integrated academic functions.

Within this evolving landscape, teaching practices are undergoing significant shifts. AI technologies enable educators to move from content delivery toward facilitation, guidance, and the orchestration of complex learning environments. Okunlaya et al. (2022) illustrate how AI-driven systems can support information access, enhance learning analytics, and create more responsive educational ecosystems. These changes require teachers to develop new competencies related to digital literacy, critical evaluation of AI outputs, and ethical engagement with intelligent systems.

The integration of AI into service learning represents a particularly important development. Rather than replacing the core principles of service learning, AI has the potential to enhance its implementation by expanding the scope of community engagement and supporting more sophisticated forms of problem-solving. Dubay and Richards (2024) demonstrate that AI can be effectively incorporated into project-based service-learning contexts, enabling learners to address real-world challenges such as sustainability through data analysis and innovative solution design.

At the same time, emerging models such as AI-supported service learning (AISL), discussed by Sass (2025), reflect a growing interest in combining experiential learning with intelligent technologies. These models emphasize the use of AI tools to support inquiry, collaboration, and reflection, thereby enriching the learning process without undermining its experiential nature. Similarly, Alalade (2025) highlights that AI-driven service-learning environments can increase learners' awareness of sustainability issues and promote more active engagement with community-based challenges.

However, the integration of AI into service learning also raises important conceptual and ethical considerations. Paz-Lourido et al. (2024) argue that the increasing reliance on digital technologies necessitates a careful re-examination of the foundational principles of service learning, particularly those related to human interaction, reciprocity, and social responsibility. There is a need to ensure that technological mediation does not weaken the relational and reflective dimensions that define service-learning experiences.

This tension between technological innovation and pedagogical integrity underscores the importance of rethinking how service learning is implemented in AI-rich environments. While AI offers powerful tools for enhancing learning, its effectiveness depends on how it is integrated into pedagogical frameworks that prioritize meaningful engagement and contextual understanding.

Taken together, these developments suggest that artificial intelligence is not merely an external addition to educational practice but a transformative force that reshapes how teaching, learning, and community engagement are conceptualized. In the context of service learning, this transformation opens new possibilities while simultaneously posing challenges that require careful consideration. This makes it essential to explore how novice teachers perceive these changes, particularly in relation to their understanding of professional skills and community participation in AI-supported learning environments.

3. Methodology

3.1. Research Design

This study aims to explore novice teachers' perceptions of life and career skills and community participation within the context of service learning in the AI era, with particular attention to how these perceptions are shaped by the integration of artificial intelligence into educational and community-based practices. To achieve this aim, the study adopts a mixed-methods approach, as it allows for a more comprehensive understanding of the research problem by combining quantitative breadth with qualitative depth. As noted by (Creswell & Creswell, 2017), mixed-methods designs are particularly appropriate when the researcher seeks not only to measure patterns but also to interpret and explain them within their contextual meanings. The quantitative component is based on the descriptive analytical method, which is used to examine patterns in participants' perceptions through a structured questionnaire. This approach is suitable for identifying trends, comparing responses, and providing an overall picture of how novice teachers perceive key constructs related to the study

(Tisdell et al., 2025). The questionnaire is designed around three main dimensions that reflect the core focus of the study:

1. perceptions of life and career skills.
2. perceptions of community participation.
3. perceptions of artificial intelligence in service learning contexts.

The qualitative component complements the quantitative findings by adopting a qualitative approach based on semi-structured interviews. This approach enables the researcher to explore participants' experiences in greater depth and to capture the meanings they assign to AI-supported service-learning practices. As emphasized by Tisdell et al. (2025), qualitative inquiry is particularly useful for understanding how individuals interpret their experiences and construct their perspectives within specific contexts. The integration of both approaches follows a sequential explanatory design, in which quantitative data are collected and analyzed first, followed by qualitative data to explain and elaborate on the initial results. This design enhances the interpretive power of the study by linking statistical patterns with participants' lived experiences, thus providing a more nuanced understanding of the research phenomenon (Creswell & Creswell, 2017).

3.2. Participants

The study included a total of 362 novice teachers from three countries: Saudi Arabia, Egypt, and Sudan. Participants were selected using a snowball sampling technique. Initially, a purposive sample of novice teachers was identified by the researchers based on the study criteria. These participants were then asked to refer other eligible teachers within their professional networks. This process enabled the gradual expansion of the sample and facilitated access to participants across the three countries. Snowball sampling is particularly appropriate when targeting specific populations that are not easily accessible through conventional sampling methods. All participants were novice teachers who had graduated within the last four years, specifically between 2022 and 2025. This ensured that they were still in the early stages of their professional development and able to reflect on contemporary educational practices. All participants were employed in private (non-governmental) schools. This reflects the current employment context in the three countries, where public schools have limited recruitment opportunities for recent graduates due to teacher saturation. As a result, private schools have become the primary entry point for novice teachers into the profession.

For the qualitative phase, a sub-sample of 10 teachers was selected from the main sample using a simple random sampling technique. This approach was adopted to ensure fairness in selection and to provide a representative range of perspectives for the in-depth exploration of participants' experiences. These interviews were intended to complement the quantitative data and offer deeper insights into participants' perceptions. Table 1 presents the demographic characteristics of the study sample.

Table 1. Demographic Characteristics of the Participants (N = 362)

Variable	Category	Frequency	Percentage (%)
Country	Saudi Arabia	128	35.4%
	Egypt	142	39.2%
	Sudan	92	25.4%
Gender	Male	164	45.3%
	Female	198	54.7%
Teaching Experience	Less than 1 year	96	26.5%
	1–2 years	138	38.1%
	3–4 years	128	35.4%
Graduation Year	2022	78	21.5%
	2023	94	26.0%
	2024	102	28.2%
	2025	88	24.3%
School Type	Private Schools	362	100%
Qualitative Sample	Interviewed Teachers	10	—

3.3. Ethical Considerations

The study was conducted in accordance with established ethical standards for research involving human participants. All procedures adhered to the principles of the Declaration of Helsinki, which emphasize respect for participants, informed consent, confidentiality, and the right to withdraw from the study at any stage without any negative consequences. Ethical approval was obtained from the Ethics Committee at King Faisal University (Approval No. KFU-2026-ETHICS4142 - 2026). Prior to data collection, participants were clearly informed about the purpose of the study and the nature of their involvement. Participation was entirely voluntary, and informed consent was obtained from all participants. Confidentiality and anonymity were strictly maintained throughout the study. No identifying information was collected or reported. All data-whether derived from the questionnaire or the qualitative interviews-were used solely for research purposes and handled with strict confidentiality.

3.4. Study Instrument

3.4.1. Quantitative Instrument

The researchers developed a structured questionnaire to explore novice teachers' perceptions in relation to the study variables. The instrument was informed by prior research on service learning, life and career skills, community participation, and the integration of artificial intelligence in education. In particular, the development of the questionnaire drew on frameworks and insights from studies addressing life and career skills (Chaiyama & Kaewpila, 2022; Abina et al., 2025), community participation (Anthony Jr, 2024; Eden et al., 2024), and AI-supported learning and service-learning practices (Dubay & Richards, 2024; Okunlaya et al., 2022; Pu et al., 2021).

The questionnaire was carefully aligned with the research questions and structured around three main dimensions:

1. Perceptions of Life and Career Skills (14 items).
2. Perceptions of Community Participation (13 items).
3. Perceptions of Artificial Intelligence in Service Learning Contexts (15 items).

Each dimension included a set of items that reflect its conceptual meaning in a practical and context-sensitive manner. A five-point Likert scale was used, ranging from (1) strongly disagree to (5) strongly agree, allowing participants to express varying degrees of agreement with each statement.

Validity: To ensure content validity, the questionnaire was reviewed by a group of specialists in education and educational research. Their feedback helped refine the wording of several items and improve clarity, ensuring that the instrument adequately captured the intended constructs.

Reliability: The internal consistency of the questionnaire was examined using Cronbach's alpha. The results indicated a high level of reliability across all dimensions:

1. Life and Career Skills: $\alpha = 0.89$
2. Community Participation: $\alpha = 0.87$
3. AI in Service Learning: $\alpha = 0.92$
4. Overall scale: $\alpha = 0.91$

3.4.2. Qualitative Instrument

To complement the quantitative data, semi-structured interviews were conducted with a sub-sample of 10 novice teachers. These participants were selected using a simple random sampling technique from the same group who completed the questionnaire, ensuring consistency between the quantitative and qualitative phases of the study. The interview protocol was developed by the researchers based on the same three dimensions used in the questionnaire, ensuring coherence between the two phases of the study. In designing the interview guide, attention was given to capturing participants' lived experiences and personal interpretations rather than limiting responses to predefined categories. This approach is consistent with qualitative research practices that emphasize meaning-making and contextual understanding (Merriam & Tisdell, 2016).

The interview questions were open-ended and flexible, allowing participants to elaborate on their views. Examples of guiding questions included:

1. How do you perceive the role of life and career skills in your teaching experience?
2. In what ways do you engage with the community as part of your professional role?
3. How do you view the role of artificial intelligence in supporting service learning?
4. Can you describe specific situations where AI influenced your teaching or community engagement?
5. What challenges or opportunities have you experienced when integrating AI into your practice?

Interviews were conducted in a conversational manner to encourage openness and depth. All interviews were recorded with participants' consent and later transcribed for analysis. To ensure the credibility of the qualitative data, transcripts were reviewed carefully, and recurring ideas were identified and organized into themes. This process allowed the researchers to build a deeper understanding of participants' perspectives and to interpret the quantitative findings in a more meaningful and contextualized way.

3.5. Data Collection and Analysis

The quantitative data were collected using a structured questionnaire consisting of 42 items distributed across three main dimensions: life and career skills (14 items), community participation (13 items), and artificial intelligence in service learning contexts (15 items). Responses were measured using a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree.

The questionnaire was administered online using Google Forms. This approach was adopted due to the geographical diversity of the participants across Saudi Arabia, Egypt, and Sudan, allowing for broader reach and easier access. The survey link was shared through professional networks and WhatsApp groups to facilitate participation among novice teachers. Participants were given a period of three weeks to complete the questionnaire. During this time, weekly reminders were sent to encourage participation and reduce non-response. This helped improve the response rate and ensured adequate representation across the target sample. To enhance data quality, responses were reviewed prior to analysis to identify incomplete or inconsistent entries. The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were calculated, including frequencies, percentages, means, and standard deviations.

The analysis focused on identifying overall trends in novice teachers' perceptions across the three dimensions, as well as comparing the relative strength of each dimension. Mean scores were interpreted to determine the level of agreement, providing insight into how participants perceived life and career skills, community participation, and the role of artificial intelligence in service learning contexts.

The qualitative data were collected through semi-structured interviews with 10 novice teachers who were selected randomly from the main sample. These interviews were conducted to gain deeper insights into participants' experiences and to provide a richer understanding of the quantitative findings. The interviews were conducted in a flexible and conversational manner, allowing participants to express their views freely. With participants' consent, all interviews were recorded and later transcribed for analysis. The qualitative data were analyzed using thematic analysis. The researchers began by reading the transcripts multiple times to gain familiarity with the data. Initial codes were then generated to capture key ideas and recurring patterns. These codes were subsequently grouped into broader themes aligned with the three study dimensions. This process allowed the researchers to identify meaningful patterns in participants' responses and to interpret how novice teachers understand and experience AI-supported service learning in relation to their professional skills and community engagement.

4. Results

4.1. Quantitative Results

The quantitative findings are presented to examine novice teachers' perceptions across the three study dimensions: life and career skills, community participation, and artificial intelligence in service learning contexts. The analysis is based on frequencies, percentages, and mean scores for each item, followed by the overall mean for each dimension.

4.1.1. Perceptions of Life and Career Skills

Table 2 presents the distribution of responses related to novice teachers' perceptions of life and career skills,

including frequencies, percentages, and mean scores for each item.

Table 2. Novice Teachers' Perceptions of Life and Career Skills (N = 362)

No.	Item	SD* n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean**
1	Problem-solving skills are essential for effective teaching practice.	10 (2.8%)	28 (7.7%)	52 (14.4%)	140 (38.7%)	132 (36.5%)	4.12
2	Critical thinking plays an important role in handling classroom situations.	12 (3.3%)	25 (6.9%)	60 (16.6%)	150 (41.4%)	115 (31.8%)	4.05
3	Collaboration with colleagues is important for improving teaching performance.	15 (4.1%)	30 (8.3%)	65 (18.0%)	145 (40.1%)	107 (29.6%)	3.98
4	Effective communication enhances the quality of teaching and learning.	14 (3.9%)	32 (8.8%)	70 (19.3%)	140 (38.7%)	106 (29.3%)	3.94
5	Decision-making skills are necessary in educational contexts.	13 (3.6%)	35 (9.7%)	68 (18.8%)	142 (39.2%)	104 (28.7%)	3.91
6	Adaptability is important for dealing with diverse teaching situations.	16 (4.4%)	34 (9.4%)	72 (19.9%)	138 (38.1%)	102 (28.2%)	3.88
7	Continuous professional development is important for teachers.	18 (5.0%)	36 (9.9%)	70 (19.3%)	135 (37.3%)	103 (28.5%)	3.85
8	Effective task management contributes to successful teaching practices.	11 (3.0%)	30 (8.3%)	66 (18.2%)	145 (40.1%)	110 (30.4%)	3.93
9	Time management is essential for organizing teaching responsibilities.	20 (5.5%)	40 (11.0%)	75 (20.7%)	130 (35.9%)	97 (26.8%)	3.79
10	Leadership skills are important in educational activities.	22 (6.1%)	42 (11.6%)	80 (22.1%)	125 (34.5%)	93 (25.7%)	3.76
11	Creativity enhances teaching effectiveness.	14 (3.9%)	30 (8.3%)	68 (18.8%)	142 (39.2%)	108 (29.8%)	3.95
12	The use of technology supports teaching and learning processes.	13 (3.6%)	35 (9.7%)	70 (19.3%)	140 (38.7%)	104 (28.7%)	3.90
13	Reflective thinking improves teaching practices.	15 (4.1%)	33 (9.1%)	72 (19.9%)	138 (38.1%)	104 (28.7%)	3.87
14	Awareness of professional growth contributes to teaching development.	12 (3.3%)	34 (9.4%)	70 (19.3%)	140 (38.7%)	106 (29.3%)	3.92

*SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

**Overall Mean = 3.92

The results indicate a high level of agreement across most items. Responses were largely concentrated in the "agree" and "strongly agree" categories, particularly for problem-solving and critical thinking. In contrast, leadership and time management showed relatively lower levels of agreement.

4.1.2. Perceptions of Community Participation

Table 3 presents participants' perceptions of community participation.

Table 3. Novice Teachers' Perceptions of Community Participation (N = 362)

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean*
1	Participation in community-related activities is an important aspect of teachers' roles.	20 (5.5%)	35 (9.7%)	80 (22.1%)	130 (35.9%)	97 (26.8%)	3.70
2	Collaboration with local community institutions enhances educational practices.	22 (6.1%)	40 (11.0%)	78 (21.5%)	125 (34.5%)	97 (26.8%)	3.62

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean*
3	Engagement in school–community projects supports meaningful learning experiences.	24 (6.6%)	42 (11.6%)	80 (22.1%)	120 (33.1%)	96 (26.5%)	3.58
4	Awareness of local community needs is essential for effective teaching.	15 (4.1%)	30 (8.3%)	70 (19.3%)	140 (38.7%)	107 (29.6%)	3.75
5	Participation in voluntary activities contributes to teachers' roles.	28 (7.7%)	45 (12.4%)	85 (23.5%)	110 (30.4%)	94 (26.0%)	3.49
6	Communication with parents supports student learning.	20 (5.5%)	35 (9.7%)	75 (20.7%)	135 (37.3%)	97 (26.8%)	3.66
7	Supporting community initiatives strengthens schools' roles.	22 (6.1%)	38 (10.5%)	78 (21.5%)	130 (35.9%)	94 (26.0%)	3.60
8	Participation in school social events enhances community engagement.	25 (6.9%)	40 (11.0%)	80 (22.1%)	120 (33.1%)	97 (26.8%)	3.55
9	Encouraging students to participate in community work is important.	18 (5.0%)	32 (8.8%)	72 (19.9%)	138 (38.1%)	102 (28.2%)	3.68
10	Building partnerships with the community improves education.	26 (7.2%)	42 (11.6%)	82 (22.7%)	115 (31.8%)	97 (26.8%)	3.52
11	Responsibility toward community development is essential.	14 (3.9%)	28 (7.7%)	68 (18.8%)	145 (40.1%)	107 (29.6%)	3.80
12	Contributing to solving community problems is part of teaching.	23 (6.4%)	40 (11.0%)	78 (21.5%)	125 (34.5%)	96 (26.5%)	3.57
13	Engagement beyond the classroom supports holistic education.	24 (6.6%)	42 (11.6%)	80 (22.1%)	120 (33.1%)	96 (26.5%)	3.54

*Overall Mean = 3.61

The results reflect moderate levels of community participation. While awareness-related items received higher agreement, items related to actual engagement such as volunteering and partnerships showed lower levels of agreement.

4.1.3. Perceptions of Artificial Intelligence in Service Learning Contexts

Table 4 presents participants' perceptions of AI in service learning contexts.

Table 4. Novice Teachers' Perceptions of AI in Service Learning Contexts (N = 362)

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean*
1	AI helps me improve my teaching effectiveness.	18 (5.0%)	30 (8.3%)	75 (20.7%)	135 (37.3%)	104 (28.7%)	3.85
2	AI enhances student engagement in learning.	20 (5.5%)	32 (8.8%)	78 (21.5%)	132 (36.5%)	100 (27.6%)	3.80
3	AI supports problem-solving in educational contexts.	15 (4.1%)	28 (7.7%)	70 (19.3%)	140 (38.7%)	109 (30.1%)	3.91
4	AI improves lesson planning.	22 (6.1%)	35 (9.7%)	80 (22.1%)	125 (34.5%)	100 (27.6%)	3.76
5	AI can support community-based projects.	24 (6.6%)	36 (9.9%)	82 (22.7%)	122 (33.7%)	98 (27.1%)	3.70
6	AI enhances collaboration among learners.	20 (5.5%)	34 (9.4%)	80 (22.1%)	128 (35.4%)	100 (27.6%)	3.74
7	AI provides innovative solutions for teaching.	16 (4.4%)	30 (8.3%)	75 (20.7%)	138 (38.1%)	103 (28.5%)	3.88

No.	Item	SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)	Mean*
8	AI improves access to educational information.	1 2 (3.3%)	2 5 (6.9%)	6 5 (18.0%)	1 4 5 (40.1%)	1 1 5 (31.8%)	4.02
9	AI supports reflective teaching practices.	1 8 (5.0%)	3 2 (8.8%)	7 8 (21.5%)	1 3 2 (36.5%)	1 0 2 (28.2%)	3.79
10	AI helps reduce workload.	2 2 (6.1%)	3 8 (10.5%)	8 2 (22.7%)	1 2 5 (34.5%)	9 5 (26.2%)	3.72
11	AI enhances creativity in teaching.	1 8 (5.0%)	3 0 (8.3%)	7 6 (21.0%)	1 3 5 (37.3%)	1 0 3 (28.5%)	3.83
12	AI supports decision-making in teaching.	2 0 (5.5%)	3 4 (9.4%)	8 0 (22.1%)	1 3 0 (35.9%)	9 8 (27.1%)	3.77
13	AI can be integrated into service learning activities.	2 4 (6.6%)	3 8 (10.5%)	8 2 (22.7%)	1 2 0 (33.1%)	9 8 (27.1%)	3.69
14	AI raises awareness of community issues.	2 0 (5.5%)	3 6 (9.9%)	8 0 (22.1%)	1 2 8 (35.4%)	9 8 (27.1%)	3.73
15	I face challenges when using AI in teaching.	3 0 (8.3%)	4 2 (11.6%)	9 0 (24.9%)	1 1 0 (30.4%)	9 0 (24.9%)	3.40

*Overall Mean = 3.78

The findings indicate generally positive perceptions of AI. Higher agreement was observed for items related to access to information and problem-solving, while lower agreement levels reflect some challenges associated with its use.

4.2. Qualitative Results

4.2.1. Theme 1: Life and Career Skills

The qualitative findings related to life and career skills provide deeper insight into the patterns observed in the quantitative results, which indicated a high level of agreement across this dimension. The interviews help explain how novice teachers understand and experience these skills in their daily practice.

Participants consistently described life and career skills as central to their teaching experience. Rather than viewing them as abstract competencies, they referred to them as practical tools used in real classroom situations. Problem-solving and critical thinking, in particular, were frequently mentioned as essential for managing unexpected challenges. As one participant explained:

> "Most of the situations I face in class are unexpected, so I find myself constantly trying to solve problems on the spot rather than relying on fixed plans."

Collaboration and communication also emerged as important aspects of teachers' professional lives. Several participants highlighted the role of peer interaction in supporting their development, especially during the early stages of their careers. One teacher noted:

> "Working with other teachers really helps. Sometimes you learn more from a quick discussion with a colleague than from formal training."

At the same time, the interviews revealed some areas where participants felt less confident. Time management was frequently described as a challenge, particularly given the multiple responsibilities associated with teaching. One participant stated:

> "I know time management is important, but honestly, it's still something I struggle with, especially with all the responsibilities at the beginning."

Leadership was also mentioned less frequently and was often associated with more experienced teachers rather than novices. This reflects a perception that leadership develops gradually over time rather than being an immediate expectation.

Overall, the qualitative findings reinforce the quantitative results by showing strong awareness of life and career skills, while also revealing variations in how confidently these skills are applied in practice.

4.2.2. Theme 2: Community Participation

The qualitative findings related to community participation provide further explanation of the quantitative results, which indicated moderate levels of agreement in this dimension. While participants generally acknowledged the importance of community engagement, the interviews revealed a more nuanced picture of how this is understood and practiced.

Participants often spoke about community participation as a valuable aspect of the teaching role, particularly in terms of supporting students' social development and strengthening the connection between schools and their surrounding communities. One participant noted:

> "Teachers are not only responsible for what happens inside the classroom. There is always a connection with the community, whether through students or parents."

Despite this recognition, many participants described their actual involvement in community-related activities as limited. Time constraints, workload, and institutional structures were frequently mentioned as factors that restrict engagement. As one teacher explained:

> "We understand the importance of community work, but in reality, there isn't always enough time or support to be actively involved."

Communication with parents emerged as one of the more common forms of community interaction. Participants indicated that this type of engagement is often expected and more easily integrated into their roles. However, broader forms of participation-such as volunteering, partnerships, or involvement in community initiatives-were less frequently practiced.

Another participant reflected this gap by stating:

> "Most of our interaction with the community is through parents. Beyond that, opportunities are not always clear or available."

In addition, some teachers pointed to the need for institutional support and clearer structures to facilitate community engagement. Without such support, participation tends to remain at a basic or informal level rather than developing into sustained partnerships.

Overall, the qualitative findings suggest that while novice teachers hold positive perceptions of community participation, their actual engagement remains constrained. This helps explain the moderate levels observed in the quantitative results and highlights a gap between perceived importance and practical involvement.

4.2.3. Theme 3: Artificial Intelligence in Service Learning Contexts

The qualitative findings related to artificial intelligence in service learning contexts provide further explanation of the quantitative results, which indicated generally positive perceptions with some variation across items. The interviews offer a clearer understanding of how novice teachers interpret the role of AI in their teaching and community-related practices.

Participants generally viewed artificial intelligence as a supportive tool that enhances various aspects of teaching. Many referred to its role in facilitating access to information, improving lesson preparation, and providing new ways to engage students. As one participant explained:

> "AI makes it easier to find resources and ideas. It saves time and helps me think of different ways to present the lesson."

AI was also associated with flexibility and innovation. Some participants highlighted its ability to support creative teaching approaches and adapt materials to students' needs. One teacher noted:

> "Using AI tools gives me more options. I can adjust materials quickly depending on the level of the students."

At the same time, the interviews revealed a degree of uncertainty regarding the integration of AI into service learning contexts. While participants recognized its value in classroom teaching, they were less confident about its role in community-based activities. As one participant stated:

> "I can see how AI helps in teaching, but I'm not always sure how to connect it to real community work."

Concerns were also raised about the need for training and guidance. Several participants indicated that their use of AI depends largely on individual efforts rather than structured institutional support. One teacher explained:

> "We use AI tools, but mostly on our own. There is not much guidance on how to use them in a meaningful way."

Another recurring point was that, although AI supports individual teaching tasks, its contribution to community engagement and service learning remains unclear for many novice teachers.

The qualitative findings suggest that teachers hold positive but still developing perceptions of AI. While its benefits in classroom contexts are widely recognized, its application in service learning and community engagement requires further clarity, support, and practical frameworks. These insights help explain the quantitative results, particularly the presence of moderate agreement and neutral responses in this dimension.

5. Discussion and Integration of Quantitative and Qualitative Findings

Across the three dimensions, the findings show a clear pattern: teachers demonstrate strong awareness of professional skills, more cautious engagement with community participation, and an evolving understanding of artificial intelligence. This pattern reflects the shifting nature of teaching in contemporary educational contexts, particularly in relation to service learning and digital transformation.

The quantitative results indicated a high level of agreement regarding life and career skills, and the qualitative findings help explain this clearly. Teachers do not simply value these skills in theory; they actively rely on them in their daily practice. Skills such as problem-solving, critical thinking, and communication were described as essential for navigating classroom realities.

This alignment between perception and practice supports earlier work emphasizing the central role of life and career skills in modern education, particularly in preparing teachers for complex and dynamic environments (Chaiyama & Kaewpila, 2022; Abina et al., 2025). At the same time, the qualitative data revealed that not all skills are equally developed. Areas such as leadership and time management appeared less stable, especially among novice teachers.

This uneven development is consistent with research suggesting that professional skills evolve gradually through experience rather than being fully formed at the beginning of a teaching career (Pascua et al., 2022). In this sense, the findings highlight both confidence and vulnerability: teachers recognize the importance of these skills, but their ability to apply them varies depending on context and experience.

A different pattern emerges when looking at community participation. The quantitative results showed moderate levels of agreement, and the qualitative findings explain why. Teachers generally expressed positive attitudes toward community engagement, but their actual involvement remained limited.

This gap between awareness and practice appears to be shaped by practical constraints, including workload, time limitations, and a lack of structured opportunities for engagement. Teachers often described

community participation as important, yet difficult to sustain within their current working conditions.

This finding aligns with previous research highlighting that community engagement in education often depends on institutional support and clearly defined structures (Eden et al., 2024; Gyang & Gusen, 2021). Without such support, participation tends to remain at a surface level rather than developing into meaningful partnerships.

At the same time, the results reflect the broader understanding of community participation as a collaborative process that connects schools with social development efforts (Anthony Jr, 2024). However, for novice teachers, this connection appears to be more conceptual than practical at this stage of their careers.

The integration of findings related to artificial intelligence reveals a more complex and evolving picture. The quantitative results showed generally positive perceptions, but also included a noticeable proportion of neutral responses. The qualitative findings help explain this variation.

Teachers clearly recognize the benefits of AI in supporting teaching tasks, particularly in terms of access to information, lesson preparation, and creativity. These findings are consistent with studies highlighting the role of AI in enhancing teaching and learning processes (Dubay & Richards, 2024; Okunlaya et al., 2022).

However, when it comes to service learning and community engagement, the picture becomes less clear. Many teachers expressed uncertainty about how AI can be meaningfully integrated into community-based activities. This suggests that while AI is becoming part of classroom practice, its connection to service learning is still emerging.

This aligns with recent discussions emphasizing the need to rethink service learning in the context of digital transformation and AI (Paz-Lourido et al., 2024; Sass, 2025). It also reflects broader concerns about the gap between technological potential and practical implementation in educational settings (Pedro et al., 2019).

In addition, participants highlighted the need for training and institutional guidance, indicating that current use of AI is often based on individual initiative rather than structured integration. This supports findings by Pu et al. (2021), which emphasize the importance of guided experiences in developing meaningful engagement with AI in educational contexts.

Taken together, the findings suggest that novice teachers are navigating a complex professional landscape. They show strong awareness of essential skills, recognize the importance of community engagement, and are open to the use of artificial intelligence. However, their practices are shaped by constraints, uncertainties, and evolving expectations.

The integration of results highlights three key insights:

1. Professional skills are well understood but unevenly applied.
2. Community participation is valued but limited in practice.
3. Artificial intelligence is embraced in teaching but not yet fully integrated into service learning.

These patterns reflect the transitional nature of teaching in the AI era, where traditional roles are being reshaped and new expectations are emerging (Bonales-Daimie et al., 2025).

One of the most consistent findings relates to life and career skills. Both the quantitative and qualitative results point to a high level of awareness, particularly in areas such as problem-solving, critical thinking, and communication. These are not seen as abstract competencies, but as essential tools that teachers rely on in everyday classroom situations. This supports earlier research emphasizing that such skills are central to effective teaching in contemporary educational settings (Chaiyama & Kaewpila, 2022; Abina et al., 2025).

At the same time, the findings suggest that awareness does not always translate into equal levels of mastery. Skills such as leadership and time management appear to be less stable, especially for teachers at the beginning of their careers. This is not surprising. Early career teachers are still learning how to balance multiple responsibilities, and many of these skills tend to develop gradually through experience rather than formal preparation alone (Pascua et al., 2022). In this sense, the results highlight an important distinction between knowing what matters and being able to consistently apply it.

A different dynamic appears in relation to community participation. Teachers generally recognize its importance, but their actual engagement remains limited. The results suggest that this is less about lack of willingness and more about the conditions in which teachers work. Heavy workloads, limited time, and the

absence of structured opportunities all seem to restrict meaningful participation. This reflects what has been reported in previous studies, where community engagement often depends on institutional support and clearly defined partnerships (Eden et al., 2024; Gyang & Gusen, 2021).

What stands out here is the gap between intention and practice. Teachers value community participation, but they do not always find realistic ways to integrate it into their daily work. This suggests that service learning, in its current form, may not be fully embedded in school practices, particularly for novice teachers who are still adjusting to their roles.

The findings related to artificial intelligence add another layer to this picture. Teachers generally view AI in a positive way, especially in terms of supporting teaching tasks such as lesson preparation, accessing resources, and enhancing creativity. These perceptions are in line with existing research that highlights the potential of AI to improve teaching and learning processes (Dubay & Richards, 2024; Okunlaya et al., 2022). However, the role of AI becomes less clear when connected to service learning and community engagement. Many participants expressed uncertainty about how AI can be used beyond the classroom. This reflects a broader issue in the literature, where the integration of AI into educational practice is advancing faster than its integration into community-oriented learning (Paz-Lourido et al., 2024; Sass, 2025).

In addition, the findings point to a lack of structured guidance. Teachers often rely on personal initiative when using AI, rather than institutional frameworks or training. This reinforces the idea that meaningful integration of AI requires more than access to tools; it requires intentional design and support (Pu et al., 2021; Pedro et al., 2019).

Taken together, the findings suggest that novice teachers are working within a space of transition. They are aware of what is expected from them-professionally, socially, and technologically-but they are still figuring out how to bring these elements together in practice. This reflects the broader transformation of the teaching profession in the age of artificial intelligence, where new roles and expectations are emerging (Bonales-Daimie et al., 2025).

What this study adds is a more grounded understanding of this transition. It shows that the challenge is not only about adopting new tools or approaches, but about connecting different dimensions of teaching-skills, community engagement, and technology-in a way that is realistic and sustainable. Without this connection, each element tends to develop in isolation.

In practical terms, this points to the need for more integrated approaches in teacher preparation and professional development. Programs that combine service learning with structured use of AI, while also supporting the development of life and career skills, may help bridge the gaps identified in this study.

6. Conclusion

This study set out to understand how novice teachers perceive life and career skills, community participation, and the role of artificial intelligence within service learning contexts. Taken together, the findings suggest that these elements are all clearly recognized by teachers, yet they are not fully integrated in practice. Novice teachers show strong awareness of the importance of life and career skills and regularly draw on them in their day-to-day teaching, especially when responding to classroom challenges that require flexibility and quick decision-making. However, some skills-particularly leadership and time management-remain less stable, reflecting the realities of early career development and the demands placed on beginning teachers. In a similar way, community participation is widely valued, but actual engagement tends to be limited. This appears to be less about motivation and more about context, as teachers often face heavy workloads, time constraints, and a lack of structured opportunities to connect meaningfully with the community. The role of artificial intelligence adds further complexity. While teachers generally view AI as a useful and supportive tool-especially for lesson planning, accessing resources, and enhancing creativity-its connection to service learning and community engagement remains unclear for many. As a result, AI is often used in isolated ways rather than as part of a coherent educational approach. Overall, the study points to a transitional moment in teaching, where key dimensions-professional skills, community engagement, and technology—are present but developing along separate paths. The main contribution of this study lies in highlighting the need to move beyond treating these areas independently and toward more integrated, practice-oriented approaches that help teachers connect what they know with what they are able to do in real educational settings.

7. Limitations of the Study

While this study provides useful insights, several limitations should be taken into account. The sample was drawn from novice teachers working in private schools across three countries, which offers a degree of diversity but may limit the generalizability of the findings to other contexts, particularly public education systems or different cultural settings. In addition, the study relied on self-reported data collected through a questionnaire and interviews. Although this approach was appropriate for exploring perceptions, it does not necessarily capture actual practices, and responses may have been influenced by personal interpretations or a tendency to present experiences in a favorable way. The qualitative component, while valuable in adding depth, was based on a relatively small number of participants, which means that some perspectives may not have been fully represented. Furthermore, the study captures teachers' views at a single point in time, despite the fact that both professional development and the use of artificial intelligence in education are continuously evolving. Future research could build on these findings by including larger and more varied samples, incorporating observational data, and adopting longitudinal approaches to better understand how teachers' perceptions and practices develop over time.

Acknowledgments
This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia (Proposal Number: KFU261888).

References

1. Abina, A., Kovačič, D., Prucnal, M., Kiratzouli, V., & Zidanšek, A. (2025). Building sustainable career skills in youth through adaptive learning and competency self-assessment tools. *Sustainability, 17*(2), 412. https://doi.org/10.3390/su17020412
2. Alalade, O. E. (2025). Learners' awareness and engagement with sustainability education through AI-driven service-learning: Implications for educational practice. *International Journal of Environmental Sciences, 11*(17s). https://doi.org/10.64252/nxc8w731
3. Anthony Jr, B. (2024). The role of community engagement in urban innovation towards the co-creation of smart sustainable cities. *Journal of the Knowledge Economy, 15*(1), 1592–1624. https://doi.org/10.1007/s13132-023-01176-1
4. Baier-Mosch, F., Schulze-Vorberg, L., & Schneider, J. (2026). The relationship between teachers' age, gender, and their will and skill to teach artificial intelligence. *Technology, Knowledge and Learning*, 1–22. creation of smart sustainable cities. *Journal of the Knowledge Economy, 15*(1), 1592–1624. https://doi.org/10.1007/s10758-025-09943-6
5. Berkey, B., Rountree, E. E., Green, P. M., & Meixner, C. (Eds.). (2018). *Reconceptualizing faculty development in service-learning/community engagement: Exploring intersections, frameworks, and models of practice*. New York: Routledge. https://doi.org/10.4324/9781003446699
6. Bonales-Daimie, G., Martínez-Estrella, E., & Sierra-Sánchez, J. (2025). Evolution of the teaching profile and the emergence of new professional roles in the age of artificial intelligence (AI): A perspective from teachers, students, and professionals. *Pixel-Bit, Revista de Medios y Educación*, 73(73). https://doi.org/10.12795/pixelbit.109085
7. Buddeevong, C., & Mahahing, S. (2025). Model development of community participation to promote life and modern agriculture career skills in schools. *Journal of Vocational Education Innovation, 1*(1), 38–47. https://so19.tci-thaijo.org/index.php/JVEI/article/view/2305/1459
8. Cecilia, M. A., Shek, D., Li, P., & Shek, V. (2018). Promotion of service leadership: An evaluation of a service-learning subject in Hong Kong. *Journal of Service-Learning in Higher Education, 8*.
9. Chaiyama, N., & Kaewpila, N. (2022). The development of life and career skills in 21st century test for undergraduate students. *European Journal of Educational Research, 11*(1), 51–68. https://doi.org/10.12973/eu-jer.11.1.51
10. Cress, C. M., Collier, P. J., & Reitenauer, V. L. (2023). *Learning through serving: A student guidebook for service-learning and civic engagement across academic disciplines and cultural communities*. Taylor & Francis.
11. Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.
12. Delaine, D. A., Redick, S., Radhakrishnan, D., Shermadou, A., Smith, M. M., Kandakatla, R., ... & DeBoer, J. (2024). A systematic literature review of reciprocity in engineering service-learning/community engagement. *Journal of Engineering Education, 113*(4), 838–871. https://doi-org.library.iau.edu.sa/10.1002/jee.20561
13. Denby, R. A. (2008). *The impact of service learning on civic responsibility* (master's thesis). The University of Western Ontario. https://hdl.handle.net/20.500.14721/19591
14. Dubay, C. M., & Richards, M. B. (2024). Leveraging artificial intelligence in project-based service learning to advance sustainable development: A pedagogical approach for marketing education. *Marketing Education Review, 34*(4), 307–323. https://doi.org/10.1080/10528008.2024.2411975
15. Dumlao, R. (2023). *A guide to collaborative communication for service-learning and community engagement partners*. Taylor & Francis.
16. Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Parent and community involvement in education: Strengthening partnerships for social improvement. *International Journal of Applied Research in Social Sciences, 6*(3), 372–382. https://doi.org/10.51594/ijarss.v6i3.894
17. Erickson, J., & Anderson, J. B. (Eds.). (1997). *Learning with the community: Concepts and models for service-learning in teacher education*. New York: Routledge. https://doi.org/10.4324/9781003445715
18. Floridi, L. (2020). Artificial intelligence as a public service: Learning from Amsterdam and Helsinki. *Philosophy & Technology, 33*(4), 541–546. https://doi.org/10.1007/s13347-020-00434-3
19. Gyang, T. S., & Gusen, J. M. (2021). Community participation in the development of secondary schools in Plateau State, Nigeria. *International Journal of Secondary Education, 9*(3), 86–92. https://doi.org/10.11648/j.ijsedu.20210903.12

20. Kimmel, S. (2024). AI-facilitated critical thinking in an undergraduate project-based service-learning course. *Journal of Behavioral and Applied Management, 24*(2), 123–130. https://doi.org/10.21818/001c.122149
21. Lachapelle, P. R., & Austin, E. K. (2024). Community participation. In *Encyclopedia of quality of life and well-being research* (pp. 1182–1187). Springer International Publishing.
22. Lawal, O. S. (2021). Artificial intelligence in higher education: A critical examination of its impact on teaching/learning, research, and community service. In *Role of AI in enhancing teaching/learning, research and community service in higher education*.
23. Mtawa, N. N. (2019). *Human development and community engagement through service-learning: The capability approach and public good in education*. Springer
24. Nittayaros, P., Ketchatturat, J., & Makmee, P. (2025). Life and career skills assessment for high school students. *International Journal of Evaluation and Research in Education*, 14(5), 3428. https://doi.org/10.11591/ijere.v14i5.33010
25. O'Meara, K. (2012). Research on faculty motivations for service learning and community engagement. In *Research on service learning* (pp. 215–243). Routledge.
26. Okunlaya, R. O., Syed Abdullah, N., & Alias, R. A. (2022). Artificial intelligence (AI) library services: Innovative conceptual framework for the digital transformation of university education. *Library Hi Tech, 40*(6), 1869–1892. https://doi.org/10.1108/LHT-07-2021-0242
27. Pascua, D. S., Corpuz, J. T., & Sadang, W. C. (2022). Career skills and on-the-job training performance of business administration students at a state university in Isabela, Philippines. *International Journal of Humanities and Education Development, 4*(3), 222–228. https://doi.org/10.22161/jhed.4.3.26
28. Paz-Lourido, B., Hervás-Torres, M., & Chaves, Á. R. (2024). Service-learning in higher education in the age of digital transformation and artificial intelligence: Time to safeguard and put into practice the principles of service-learning. In *Innovation and technologies for the digital transformation of education: European and Latin American perspectives* (pp. 111–119). Springer Nature Singapore. https://doi.org/10.1007/978-981-97-2468-0_11
29. Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development*. https://unesdoc.unesco.org/ark:/48223/pf0000366994
30. Praraksa, P., & Simpol, W. (2018). Life and career skills of primary school students: A tentative model and an online scale. *New Trends and Issues Proceedings on Humanities and Social Sciences, 5*(1), 17–23. https://doi.org/10.18844/prosoc.v5i1.3377
31. Pratiwi, D. P., Risnani, L. Y., & Nofiana, M. (2019). Profile of life and career skills of senior high school students in Banyumas Regency in the context of 21st-century skills. *Bioedukasi (Jurnal Pendidikan Biologi), 10*(2), 112–132. https://doi.org/10.24127/bioedukasi.v10i2.2460
32. Pu, S., Ahmad, N. A., Md Khambari, M. N., Yap, N. K., & Ahrari, S. (2021). Improvement of pre-service teachers' practical knowledge and motivation about artificial intelligence through a service-learning-based module in Guizhou, China: A quasi-experimental study. *Asian Journal of University Education, 17*(3), 203–219. https://doi.org/10.24191/ajue.v17i3.14499
33. Resch, K., & Schrittesser, I. (2021). Using the service-learning approach to bridge the gap between theory and practice in teacher education. *International Journal of Inclusive Education*, 27(10), 1118-1132. https://doi.org/10.1080/13603116.2021.1882053
34. Rodríguez-Zurita, D., Jaya-Montalvo, M., Moreira-Arboleda, J., Raya-Diez, E., & Carrión-Mero, P. (2025). Sustainable development through service learning and community engagement in higher education: A systematic literature review. *International Journal of Sustainability in Higher Education, 26*(1), 158–201. https://doi.org/10.1108/IJSHE-10-2023-0461
35. Sass, M. (2025). AI service-learning (AISL) in higher education. *The Applied Business & Management Review, 1*(1). https://abmr-journal.org/index.php/intl/article/view/6
36. Thelma, C. C. (2024). Service learning and civic engagement: Exploring the linkages. *International Journal of Research Publication and Reviews, 5*(4) 7056-7064.
37. Tisdell, E. J., Merriam, S. B., & Stuckey-Peyrot, H. L. (2025). Qualitative research: A guide to design and implementation. John Wiley & Sons.
38. Tripon, C. (2024). Bridging horizons: Exploring STEM students' perspectives on service-learning and storytelling activities for community engagement and gender equality. *Trends in Higher Education, 3*(2), 324–341. https://doi.org/10.3390/higheredu3020020