The Role of Social Media and Online Communities in Learning and Collaboration in the Age of Digital Transformation

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Abstract: This study explored the utilisation of Web2.0 social networks by Ukrainian students, a pertinent aspect of contemporary pedagogical practice. The objective was to analyse and assess how social networks influence the learning process and student collaboration within the university setting. The study included a survey among 140 students randomly selected from different higher education institutions in Ukraine. The collected data were analysed using statistical analysis methods, which allowed us to formulate a hypothesis about the active use of social media for educational and collaborative purposes by Ukrainian students. The findings of the study suggest that respondents utilize social media for a range of activities and types of communities. These tools, originally introduced to ensure communication with friends and family, are now actively used by students for independent learning and collaboration. The substantial spread of social media in higher education has contributed to the transformation of learning and teaching by enabling participants to actively engage in enriched knowledge sharing and collaborative activities.

Thus, the study emphasises the importance of social media in shaping modern pedagogical practices, contributing to the development of active, interactive and collaborative learning in the university environment. The integration of social media into the education system is a current issue that requires further enhancement, considering the identified challenges. The integration of these networks into educational processes is realised through the creation of an open environment for collective learning between students, which reinforces their importance in informal teaching practices. The study's scientific novelty lies in highlighting the hypothesis that digital transformation transforms social networks from simple communication tools into integral elements of the educational process, where students are actively involved in their own learning and knowledge exchange.

Keywords: transformations in the education system, learning, digital technologies, digital tools.

Introduction

Social media has revolutionised the way people communicate and interact with the world around them. In addition to being used for entertainment and social connections, social media and online communities have also begun to play a significant role in online learning (Weber, Dettmer Schurz & Thelen, 2022). This paper explores the growing influence of social media on hybrid learning in the post-pandemic and war context in Ukraine, looking at both the negative aspects and the benefits they offer.

Social media provides an interactive platform where students can exchange ideas, share resources and collaborate with others who share similar interests (Sofilkanych, 2022). Online groups and communities specialising in specific topics allow students to find mentors, experts and peers to share knowledge and solve problems together (Sherman, Puzman, Puzman, andand solve problems together (Sherman, Puhovskiy, Kambalova & Kdyrova, 2022). The use of social media has many benefits, but also introduces certain negative aspects and potential risks that should be considered for effective management. One of the main negative aspects is the issue of data privacy and security. The use of social media can lead to the mismanagement of personal information, including the possibility of unauthorised parties accessing personal data or using the data without proper authorisation.

In this context, scholars still emphasise the disadvantages of social media and online communities in learning. According to Muftah (2023), social media is often associated with constant distractions, such as notifications, endless news feeds, and off-topic discussions. These distractions can reduce students' concentration and hinder their productivity during online or offline learning. A related point is made by Mkrttchian, Krevskiy, Bershadsky, Glotova, Gamidullaeva & Vasin (2019), who emphasise the reliability of information: According to the authors, social media is also known as a source of unverified

information that is sometimes misleading. Students should use judgement and critical thinking skills to assess the reliability of information shared on social media. To ensure data privacy and security, it is important to follow several strategies. First, you should adjust your privacy settings on social media, limiting access to personal information to trusted individuals or groups. You should be careful about posting personal details such as address, phone number or financial information. In addition, using strong passwords and two-factor authentication to protect accounts are important steps to ensure security. It is also important to develop critical thinking skills among students. This includes the ability to analyse information published on social media, assess its credibility and source. Developing critical thinking skills will help students identify potential threats and risks that may arise when using social media and make informed decisions about their use.

Of course, social media also has advantages. Jie & Sunze (2023) see the main benefit as collaboration and knowledge sharing. Social media provides a platform for students to collaborate, share knowledge and benefit from the experiences of others. This facilitates collaborative learning, broadening perspectives and building professional networks.

Access to a global community is perhaps the greatest benefit according to Martín-Sómer, Casado & Gómez-Pozuelo (2024). Social media allows students to interact with people all over the world, transcending geographical boundaries. They can communicate with experts, teachers and professionals in their field of interest, which expands their learning and communication opportunities.

Furthermore, social media has a significant impact on online learning (Puebla, Fievet, Tsopanidi & Clahsen, 2022). Although they can be a source of distraction and inaccurate information, they also offer huge benefits such as collaboration, knowledge sharing and access to a global community. Students need to be aware of the potential pitfalls and develop time management and critical thinking skills to optimise their learning experience through social media. In short, when used wisely, social media can be a powerful tool for online learning and knowledge enrichment.

In the realm of integrating social media into education, it is crucial to explore theories of social learning and media influence to establish the connections between these platforms and the learning processes.

The Social Learning Theory posits that individuals learn by observing, imitating, and interacting with others (Politi, 2020). Applying this theory to social media means that students can learn by observing imitations of academic ideas and practices that other students or teachers post in open online communities or on their profile pages.

According to media influence theory, which explores the effects of media on human behaviour and perception, social media can shape how information is perceived and understood. This refers to the quality of the information students encounter on social media and their ability to critically evaluate this information.

One example of the application of these theories is how students can use social media to communicate and collaborate on projects. They can observe other students' project work, receive feedback, and even reinforce their own knowledge through interaction in these online environments. This helps to increase academic interaction and develop critical thinking.

Thus, understanding theories of social learning and media influence helps to explain how social media can influence learning processes, in particular, by promoting active learning, collaboration and critical thinking among students.

Research Problem

The advancement brought by the integration of information and communication technologies (ICT) across all sectors fosters an environment characterized by ongoing change and innovation. The swift adoption of cutting-edge technologies within universities creates new avenues and resources for knowledge dissemination, effectively transforming cyberspace into an expansive learning environment. This evolution offers students genuine prospects for collaborative learning. Information and communication technologies (ICTs) persist in reshaping how knowledge is imparted in higher education, particularly by combining augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) algorithms. Augmented reality has already found application in education, facilitating the creation of interactive virtual environments that enhance learning opportunities. For instance, students can utilize VR to immerse themselves in studying complex processes or historical events, engaging in virtual testing and experimentation without the constraints of real-world limitations like time and space. This approach significantly enhances comprehension of the subject matter and enriches the learning experience. Artificial intelligence algorithms are similarly employed to personalize learning and cater to individual student needs. For instance, AI systems can analyze student performance, recommend tailored self-study materials, and forecast academic outcomes based on their learning history and academic data. This capability enables curricula to be dynamically adjusted to suit each student's unique requirements, thereby promoting more effective learning outcomes. These ICT innovations not only transform teaching methodologies but also create new avenues for both students and educators, ultimately enhancing the quality of education and fostering digital competence among all participants in the educational process (Dobrovolska et al., 2021). Social networks now play a crucial role in students' daily lives in the digital age, offering open spaces where students actively contribute to their own learning through Web2.0 tools. These tools include services and platforms that empower users to engage, generate, and distribute content over the internet. Examples include Google Docs for collaborative essay writing and social networks for discussing learning materials. Web2.0 tools not only facilitate collaboration and communication but also foster teamwork, mutual assistance, and critical thinking skills among students. They create virtual environments that enhance interactive learning and encourage active student participation, thereby enhancing the quality of education at universities. These tools promote active information sharing and collaboration among users. Popular examples of such tools include social networks like Facebook and Twitter, wikis such as Wikipedia, blogs, video sharing services like YouTube, collaboration platforms such as Google Docs, and various online community and discussion platforms. The environment shaped by these tools underscores the profound impact of social media on students' learning experiences, highlighting its undeniable significance in today's educational landscape. As digital social networks and increasingly powerful computer tools continue to evolve, research into their influence on learning remains more critical than ever.

Research Focus

The focus of this study is to understand how Ukrainian students from different higher education institutions in Ukraine use their technological skills and time using Web2.0 tools.

The research hypothesis is that Ukrainian students actively use social media for learning and collaboration. The importance of this hypothesis lies in understanding how proficiency with technology and usage of Web2.0 tools influence the learning experience of Ukrainian students. This led to the formulation of the following question: Do Ukrainian students utilize social media for their studies?

Research Aim and Research Questions

The aim of this study is to analyse the impact of social media on academic performance and critical thinking among students in Ukrainian higher education institutions. Within the framework of digital

transformation, the research investigates how social media platforms and online communities facilitate knowledge dissemination, skill enhancement, and interaction between students and educators. Additionally, it explores their potential to enhance educational quality and efficiency, fostering inclusive learning environments. The study addresses the following research inquiries:

1. Which social media platforms are commonly utilised by Ukrainian students?

2. What was the utility of these platforms within the university setting and how do they impact student learning?

3. How does the use of social media influence novel educational approaches?

To operationalise these inquiries, correlation analysis will be employed to establish relationships between social media usage and students' academic achievements. This methodology aims to ascertain the extent and manner in which social media utilisation influences knowledge acquisition and educational outcomes among Ukrainian students.

Literature Review

The advent of the Internet has catalyzed a paradigm shift in educational methodologies, with ICT playing a pivotal role globally (Iyamuremye et al., 2022). Web2.0 innovations, including social media platforms, empower students to generate content, exchange ideas, and disseminate knowledge freely. Engagement with social media fosters a collaborative and communicative learning environment, enabling students to engage in discussions and interact with peers (Hinze et al., 2023). Thus, it is plausible to assert that these platforms extend beyond their conventional roles in socialization and entertainment to facilitate learning through peer-to-peer exchange and collaborative efforts. Both Achkan, Vlasenko, Rovenska, Sitak, and Chumak (2022) as well as Afrilyasanti, Basthomi, and Zen (2022) delve into the intricacies of knowledge exchange and collaborative learning in educational settings, albeit from slightly divergent viewpoints. Achkan et al. underscore the collaborative aspect of learning among students who work together towards shared educational objectives. They stress that knowledge isn't merely transmitted but co-constructed and shared among peers, with each participant's contribution shaping the collective understanding. Conversely, Afrilyasanti et al. (2022) concentrate on the role of digital environments, particularly Web2.0 applications, in fostering virtual communities among students. They argue that these technological advancements facilitate synergies between students' interests and intellectual pursuits, effectively leveraging their cultural backgrounds within these virtual communities. While Achkan et al. highlight the interpersonal dynamics and collaborative knowledge construction within learning environments, Afrilyasanti et al. (2022) emphasize the transformative potential of digital technologies in cultivating virtual communities that enrich cultural experiences and intellectual interactions among students. Both perspectives contribute to our comprehension of how collaborative and digital learning environments are influencing educational practices in contemporary settings. Previous research has indicated the increasing popularity and widespread adoption of social media among student demographics. These asynchronous communication tools are increasingly integral in facilitating collaborative learning across diverse temporal and spatial contexts, while also fostering the formation of virtual communities. As noted by Dahal (2022), platforms like Facebook provide a social framework through which students can effectively share resources with their peers. Rashid & Chaturvedi (2019) validate the potential of Facebook and YouTube in global contexts. This study aligns with the research inquiries posed regarding the utilization of social media for student collaboration and knowledge exchange. The findings on Facebook's role in establishing a social foundation for sharing resources support the research goal of investigating how social media enhance educational quality by enriching the learning environment and fostering student collaboration. Modern educational systems are continuously experimenting with new

methodologies, driven by the pervasive influence of social media, which actively engage in collective learning environments. Indeed, integrating these platforms into the educational process fosters the accomplishment of virtual communities within social media. This novel approach allows students to actively engage in a more enriching learning environment through sharing and collaborative efforts, thereby fostering a community of practice in an online context. Additionally, these tools present extensive opportunities for innovative pedagogical and organizational strategies that can advance the modernization of teaching methods in higher education (Darwish, Hassanien, Elhoseny, Sangaiah & Muhammad, 2019). The study's findings are particularly valuable as they shed light on how these platforms can be employed for learning, sharing resources, and facilitating interaction between students and educators. This research is essential for comprehending how the integration of social media may enhance the effectiveness of the learning process and elevate overall educational quality.

Today's students, often referred to as "digital natives," increasingly favor digital tools (Alshammari & Aldribi, 2021). This demographic thrives in a networked environment that has transformed the educational landscape, expanding access to knowledge beyond traditional classroom boundaries. Through the integration of social media in university settings, educators are providing students with opportunities for self-directed learning and collaborative engagement. Within this technological framework, the role of educators evolves to supporting students in their learning journeys and guiding them through tasks aligned with their educational objectives.

This era marks a new paradigm in acquiring information and disseminating knowledge, where students play a central role in pedagogical activities that were once predominantly guided by educators. The digital revolution has significantly strengthened the integration of social media in disseminating knowledge beyond physical classrooms. Effectively leveraging these tools "enhances flexibility in learning, promoting the creation and sharing of knowledge through active student participation" (Romele, 2019). In a broader sense, the growing prominence of digital tools in educational environments fosters improved communication, collaboration, creativity, and cohesion within university communities (Politi, 2020). These powerful tools empower students to effectively generate, curate, and distribute content (Morgan-Short, Hamrick, & Ullman, 2022).

Literature analysis indicates that students actively utilize digital tools in their academic pursuits, employing them to access learning materials, explore library catalogs, and engage in discussions on course assignments with peers (Vlasenko, Volkov, Kovalenko, Sitak, Chumak & Kostikov, 2020). They rate these tools as effective for learning and teaching, using them to find resources, prepare and complete assignments, communicate and collaborate, and present and reflect.

Potential limitations of the study include the sample size, which is limited in scope. The importance of the presented research lies in its ability to fill existing gaps, in particular: understanding and optimising the learning process, identifying challenges and opportunities, and developing pedagogical practices through social media.

Therefore, not being aware of these limitations can lead to a misunderstanding of the study results. Therefore, it is important to summarise the results with the possible limitations in mind and take them into account when interpreting the impact of social media in the educational process.

Materials and Methods

In this study, a questionnaire survey served as the main method of data collection. The survey was conducted among a randomly selected sample of 140 students from various higher education institutions in Ukraine. The distribution and collection of questionnaires followed this procedure (see Appendix A): questionnaires were personally distributed to students during classroom sessions. For

this purpose, printed copies of the questionnaires were used, which were distributed to the study participants. Teachers were present to explain the instructions for filling out the questionnaire and answering students' questions; the questionnaires were administered electronically. An electronic version of the questionnaire was developed for those students who were absent from class or did not receive a printed questionnaire for other reasons. This allowed them to fill out the questionnaire online, which was developed using Google Forms (https://www.google.com/intl/uk_ua/forms/about/).

Sample and Participants

The collected data were analysed using rigorous statistical methods to discern patterns, trends, and correlations pertinent to the role of social media and online communities in learning and collaborative processes during the era of digital transformation.

Instruments and Procedures

The questionnaire was administered with the assistance of teachers who facilitated its distribution during their classes, resulting in a complete response rate of 100%, totaling 140 participants. The sample of students was selected randomly, ensuring equal opportunity for all students in the general population to participate without any restrictions based on criteria such as course of study, faculty, or age. This approach enhances the reliability of the study's findings and allows for more precise conclusions regarding the usage of social media among higher education students in Ukraine.

In addition to distributing questionnaires via email, social media, and a university forum, qualitative data were collected through group discussions and semi-structured interviews. These methods provided deeper insights into participants' experiences and perspectives concerning the role of social media and online communities in learning and collaborative activities.

Data Analysis

Quantitative data from the survey were analysed using SPSS software for frequency counting, which is a standard approach in sociological and psychological research. Qualitative data from previous group discussions and interviews were transcribed and analysed thematically. Past studies involving students and data proved valuable for identifying recurring themes, patterns, and findings.

Permission was granted by the institutional ethics committee to safeguard participant confidentiality, secure informed consent, and uphold ethical standards throughout the research. Potential study limitations encompassed subjective perceptions, sample representativeness, and the generalizability of findings across diverse cultural and educational contexts. Rigorous data collection and analysis methods were employed to mitigate these concerns.

Results

Upon analysing the survey results, it was found that the participants (see Appendix A) consisted of 80 female and 60 male students from diverse higher education institutions across Ukraine. The age range of the respondents was between 17 and 22 years, representing a generation accustomed to using various Internet applications. All participants reported owning smartphones with 4G network capability, enabling them to access the Internet conveniently and consistently.

Participants were queried about their primary use of social media platforms. The responses are detailed in Table 1.

Table 1

Most frequently utilised social media platforms

Social networks	Users	Percentage %
Instagram	140	100
YouTube	120	85.71
Google+	100	71.42
Twitter	92	65.71
LinkedIn	50	35.71
Facebook	40	28.57
WhatsApp	32	22.85

Source: Author's development.

It was observed that all respondents rated Instagram the highest, placing it in the top position with a rating of 100%. Previous studies have consistently identified Instagram as the most favored platform (Li et al., 2022). YouTube follows in second place with 120 users, accounting for 85.71% of the total. Google+ ranks third with 100 users, representing 71.42%. Twitter occupies the fourth position with 92 users, corresponding to 65.71%. LinkedIn ranks lower among participants with 35.71%, followed by Facebook at 28.57%, and WhatsApp at 22.85%.

The table below (Table 2) illustrates the motivation for using social media:

Table 2

Motivation for using social media

Motivation	Users	Percentage %
Stay connected with family and friends	140	100
Make new acquaintances online	99	70.71
Reconnect with acquaintances from the past online	90	64.28
Create a virtual personality	85	60.71
Join online communities	82	58.71
Keep track of what's happening elsewhere	80	57.14
Be present in cyberspace	76	54.28

	73	52.14
Send photos	73	52.14
Send the video	70	50.00
Find an occupation	62	44.28
For acquiring general knowledge	55	39.28

Source: Author's development.

Table (2) indicates that all respondents utilize social media for maintaining connections with family and friends. It's noteworthy that a majority of the survey participants relocated from different cities across the country to pursue their studies at Pavlo Tychyna Uman State Pedagogical University. This aspect has been highlighted in prior research by Durmishi & Durmishi (2022), who suggest that social media and online connections with relatives can alleviate stress and aid students in psychological adjustment. "Making virtual friends" was cited as the second most common reason by 99 respondents, accounting for 70.71%. In third place, "reconnecting with old classmates online" was mentioned by 90 respondents, representing 64.28% of the participants.

Bobur (2023) proposed that the increase in social interaction is likely driven by the desire to establish new connections, exchange opinions, maintain relationships with old friends and colleagues, and share various types of information with a wider audience of followers. "Creating a virtual identity" received 60.71% of the responses, while "participating in discussion forums" was selected by 82 respondents, accounting for 58.71%.

Among the survey participants, 57.14% (80 respondents) indicated their interest in following events in other locations. The second most common motive for using social media was "maintaining a presence in cyberspace," cited by 54.28% (79 participants). Half of the respondents (52.14%) use social media to "share photos," followed closely by "sharing videos" at 50%. These two motivations were frequently mentioned by students, despite some social restrictions.

The least mentioned motivation among participants was "seeking employment," ranking second to last with 44.28%. It is noteworthy that many students express aspirations to pursue further education or secure employment in their field, with some utilizing newspaper advertisements and specialized websites for job hunting. According to the survey, only 39.28% of respondents use these web resources for "general cultural development." This finding underscores the significance of careful analysis, as half of the respondents use social media to follow events elsewhere and actively engage in forums. Overall, this approach supports cultural and informational monitoring, contributing to the enhancement of general cultural awareness (Table 3):

Table 3

Incorporating social media into educational settings

Types of activities	Users	Percentage %
Share documents and lecture notes	132	94.28
Enhance proficiency in a foreign language	125	89.28

Acquire technical skills	119	85
Exchange ideas and foster creativity	115	82.14
Participate in online communities for collaborative learning	112	80
Stay informed about industry advancements	110	78.57
Engage in self-paced learning	109	77.85
Collaborate on group projects	100	71.42
Strengthen English language skills	95	67.85
Enhance overall learning outcomes	90	64.28
Refine English pronunciation	85	60.71
Communicate with mentors	70	50
Collaboratively create and distribute content	63	45

Source: Author's development.

Upon analysing Table (3), it is evident that the integration of social media into educational processes is a reality within Ukrainian higher education institutions, particularly in informal pedagogical interactions across various groups. The primary activity highlighted by respondents was "sharing files and notes," identified as a priority by 94.28% of participants, followed by "enhancing foreign language skills" at 89.28%. This observation is consistent with Garvasiuk & Namestiuk's (2022) research, which indicated that 65% of medical students use social media to improve their proficiency in foreign languages, and 40% utilize it for knowledge acquisition. "Developing technological skills" ranks third at 85%, closely followed by "sharing ideas and fostering creativity" at 82.14%. Additionally, 80% of respondents participate in "joining collaborative learning communities," and use social media for learning English, refining pronunciation, enabling self-directed learning, and addressing challenges associated with language acquisition (Aydinbek, 2022).

However, social media tools are less utilised for "communicating with mentors" in this paper, with students preferring other methods such as formal consultations on a scheduled basis. The detection of

table data suggests a reluctance among participants to generate their own content, possibly due to perceived difficulties, lack of interest, or insufficient support from educators and institutional frameworks.

However, the incorporation of ICT in universities highlights the essential role of students within the educational system, empowering them as central actors in their own learning and engaging them in various teaching formats.

Discussion

The study findings suggest that students utilize social media and online communities predominantly for educational rather than recreational purposes. This finding aligns with earlier research conducted by Damayanto and Bangkara, Abidin, Heryani & Maruf (2022).

Additionally, it's noteworthy that institutional tools provided to students often do not fully meet their needs, as highlighted by Bashori, van Hout, Strik & Cucchiarini (2022). They point out that students frequently resort to informal study groups and utilize RMS applications for collaboration. This shift towards using such applications stems from a mismatch between students' expectations and the functionalities of available tools. Consequently, communication and information sharing enable users to collaboratively create content (Alrikabi, Jasim, Majeed, Abass & ALRubee, 2022).

Here, we join Alenezi (2023) in an instrumental genesis using an artefact (technical object) that structures, organises, and enables new resources to perform a task by opening up the field of possible actions available to the subject. The presented results also confirm the findings of a study by Gonçalves, Tavares, Guerra, Oliveira, Silva & Soares (2022) on the use and preference of WhatsApp. The researchers preferred WhatsApp, demonstrating that all their students use this application and find it more convenient. For Rosa, Villanueva, Miguel & Quinto (2022), the appeal of this application lies in its capability for users to send not just messages, but also videos, voice messages, and images to their friends, and even make phone calls. Moreover, the app offers the advantage of creating groups, enabling multiple users to communicate within a single conversation. Furthermore, Vandebroeck (2022) notes other useful features of the app, such as formatting messages with bold, italic and strikethrough text, editing photos directly in the app (e.g. drawing on them), connecting to a Windows or Mac computer quoting previous messages before replying, addressing a user in a chat using the "@" symbol ("@" symbol), the ability to add participants to a group with a simple link, and watching YouTube videos directly in the application without having to switch to another window or application. It is also worth noting that mobile phones are the tool of choice for students, even if they are not very convenient for reading texts and watching videos.

In the context of contemporary pedagogical practices and the utilization of social media for educational purposes, the findings of this study hold significance for both theoretical frameworks and practical applications in teaching. These findings validate the theoretical perspective of Proskura & Lytvynova (2020) on instrumental genesis, demonstrating that students actively employ social networks for educational tasks, thereby contributing to the organization, structuring, and access to new learning resources. This underscores the pivotal role of technological tools in fostering collaboration and knowledge exchange among students across various higher education institutions.

The study revealed that WhatsApp is widely favored among students as a convenient tool for communication and collaboration, consistent with findings from Pourdavood & Song (2021). Beyond basic messaging capabilities, WhatsApp supports video, voice, and image messaging, and features group creation functionalities that facilitate seamless collaboration.

Students also highlighted WhatsApp's advantages over other social media platforms in terms of functionality (Sergeev, Kulikova, Danilchuk & Borisova, 2021). In addition to messaging, the app offers tools for photo editing, message quoting, and the ability to view videos directly within chat threads.

The findings have implications for enhancing practices in higher education, particularly in the realm of information and communication technology policy. Improving accessibility and enhancing tools for student collaboration can enhance educational quality and efficacy. Social networks and online communities play a pivotal role in learning and collaboration during the digital transformation era, enriching the educational process and fostering a knowledge-sharing environment (Vlasenko, Chumak, Achkan, Lovianova & Kondratyeva, 2020).

Social networks and online communities are integral to modern learning processes and collaboration in several significant ways. Firstly, they facilitate the exchange of knowledge and expertise among students and educators, enabling discussions on academic topics, problem-solving, and co-creation of new knowledge. Secondly, these platforms provide swift access to pertinent information, such as educational materials, news updates, video tutorials, and webinars, which are crucial for student learning. Moreover, they promote the formation of knowledge communities and support collaborative learning initiatives. By rallying students around common objectives and projects, these platforms encourage active participation and engagement in learning activities. Finally, the utilization of social media promotes inclusivity by making learning accessible to students with diverse needs and learning preferences.

Therefore, incorporating social media and online communities into educational practices improves educational standards, enhances accessibility and engagement in learning, and promotes the formation of a dynamic and collaborative knowledge community.

Consequently, this study contributes fresh insights into the role of social media in education and encourages further research in this field to advance educational methods and technologies.

Conclusions and Implications

The study's findings reveal that young individuals, including students, are actively using social media and online communities for educational purposes. However, several identified challenges—psychosocial, spatio-temporal, technical, and pedagogical—highlight the ongoing need for refinement in this evolving process. The study focused on evaluating the integration of these tools within hybrid learning frameworks.

The results indicate a growing prevalence of incorporating social media into educational settings in the digital age. This shift in knowledge acquisition promotes an inclusive environment conducive to collaborative learning among students, emphasizing the importance of social media in informal educational practices. Additionally, the findings underscore social media's role in facilitating peer-to-peer learning.

In conclusion, the digital revolution has expanded social media's role beyond communication to encompass active engagement in learning activities, where students take a proactive role in their educational journeys.

However, it is important to acknowledge several methodological limitations that could impact the reliability of the study's conclusions. One limitation concerns the sample, which comprised students from various higher education institutions in Ukraine. This may limit the applicability of the findings to

broader contexts, as cultural, social, and educational differences among countries can influence how social media is perceived and utilized in educational settings.

A second limitation relates to the methodology of data collection. By relying on survey questionnaires, there is a potential risk of introducing bias in the results due to participant response tendencies or limitations in capturing detailed insights into motivations and practices related to social media usage.

The third limitation is associated with the dynamic nature of the phenomenon under investigation. The integration of social media into educational processes is a relatively recent and rapidly evolving trend. Therefore, the study's findings may offer a snapshot in time and may not fully capture current trends or innovations in this area.

Despite these constraints, the study underscores the growing importance of social media in contemporary education, where students actively participate in learning through collaborative practices and knowledge sharing. This highlights the need for further research aimed at understanding and optimizing the role of social media in educational strategies and collaborative initiatives during the ongoing digital transformation.

Suggestions for Future Research

Social media and online communities have become integral to learning and collaboration in today's era of digital transformation, enriching educational processes and fostering knowledge communities. These platforms facilitate the sharing of ideas and resources between students and educators, offer convenient access to information, and promote collaborative learning. By enhancing inclusivity and fostering new modes of collaboration, social media makes learning more dynamic and responsive to contemporary educational needs.

Future research could explore several promising avenues. Firstly, investigating effective strategies for integrating social media into educational practices could enhance learning quality and student engagement. Secondly, examining the impact of social media on academic achievement would provide insights into how active social media use influences student performance. Thirdly, studying how educators utilize social media to support teaching and develop educational content could offer valuable insights into effective teaching methodologies.

Further research could also explore the impact of hybrid learning on student engagement, examining how the integration of social media in hybrid learning environments affects student motivation and collaboration. Areas of interest include student interactions within virtual communities, the efficacy of using social media for knowledge sharing, and its overall impact on academic performance and student satisfaction.

These research directions aim to advance our understanding of social media's role in education and contribute to refining educational practices and technologies to meet current educational demands effectively.

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References

Achkan, V. V., Vlasenko, K. V., Lovianova, I. V., Rovenska, O. H., Sitak, I. V., Chumak, O. O., & Semerikov, S. O. (2022). Web-based support of a higher school teacher. In S. Semerikov, V. Osadchyi, & O. Kuzminska (Eds.), *Proceedings of the 1st Symposium on Advances in Educational Technology - Volume 2: AET* (pp. 245-252). SciTePress. https://doi.org/10.5220/0010930500003364

Afrilyasanti, R., Basthomi, Y., & Zen, E. L. (2022). Tuning up a CMLL toolbox: analyzing Web-based applications for critical media literacy learning. *Interactive Technology and Smart Education*, *19*(4), 544–567. https://doi.org/10.1108/itse-07-2022-0088

Alenezi, M. (2023). Digital learning and digital institution in higher education. *Education Sciences*, *13*(1), 88. https://doi.org/10.3390/educsci13010088

Alrikabi, H. T. S., Jasim, N. A., Majeed, B. H., Abass, A. Z., & ALRubee, I. R. N. (2022). Smart learning based on Moodle E-learning platform and digital skills for University students. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, *10*(01), 109-120. https://doi.org/10.3991/ijes.v10i01.28995

Alshammari, A., & Aldribi, A. (2021). Apply machine learning techniques to detect malicious network traffic in cloud computing. *Journal of Big Data*, *8*(1), 1-24. https://doi.org/10.1186/s40537-021-00475-1

Aydinbek, C. (2022). Contributions of cognitive theory to the problem of automatisation of grammatical structures in foreign language teaching. *Educational Research and Reviews*, *17*(4), 131-137. https://doi.org/10.5897/ERR2022.4230

Bashori, M., van Hout, R., Strik, H., & Cucchiarini, C. (2022). Web-based language learning and speaking anxiety. *Computer Assisted Language Learning*, *35*(5-6), 1058-1089. https://doi.org/10.1080/09588221.2020.1770293

Beibei, S. (2023). Psychological impact of languages on the human mind: Research on the contribution of psycholinguistics approach to teaching and learning English. *Journal of Psycholinguistic Research*, *52*(6), 2027–2045. https://doi.org/10.1007/s10936-023-09977-w

Bobur, T. (2023). Activation of students' cognitive activity in foreign language classes. *American Journal of Language, Literacy and Learning in STEM Education (2993-2769)*, *1*(5), 126-131. https://grnjournal.us/index.php/STEM/article/view/442.

Dahal, N. (2022). Understanding and uses of collaborative tools for online courses in higher education. *Advances in Mobile Learning Educational Research*, *2*(2), 435-442. https://doi.org/10.25082/AMLER.2022.02.012

Damayanto, A., Bangkara, B. A., Abidin, A. Z., Heryani, A., & Maruf, I. R. (2022). Management Challenges for Academic Improvement in Higher Education in The Digital Era. *Nazhruna: Jurnal Pendidikan Islam*, *5*(2), 572-592. https://doi.org/10.31538/nzh.v5i2.2131

Darwish, A., Hassanien, A. E., Elhoseny, M., Sangaiah, A. K., & Muhammad, K. (2017). The impact of the hybrid platform of internet of things and cloud computing on healthcare systems: opportunities,

challenges, and open problems. *Journal of Ambient Intelligence and Humanized Computing*, *10*(10), 4151–4166. https://doi.org/10.1007/s12652-017-0659-1

Dobrovolska, N., Moroz, L., Shpak, M., Tsekhmister, Y., & Vovchenko, O. (2021). Motivational mechanisms of emotional intelligence development in practicing psychologists. *AD ALTA: Journal of Interdisciplinary Research, Social Sciences, 11*(2)(21), 54-59. Retrieved from https://lib.iitta.gov.ua/732654/

Durmishi, L., & Durmishi, A. (2022). A philosophical assessment of social networks impact on adolescents' development in conditions of unlimited access to information. *Futurity Philosophy*, *1*(2), 27–41. https://doi.org/10.57125/FP.2022.06.30.03

Garvasiuk, O. V., & Namestiuk, S. V. (2022). Peculiarities of teaching pathomorphology and sectional course to foreign students in terms of distance learning. *Clinical and experimental pathology*, *21*(4). https://doi.org/10.24061/1727-4338.xxi.4.82.2022.13

Gonçalves, A., Tavares, C., Guerra, J., Oliveira, L., Silva, M. M. D., & Soares, R. (2022). The future of language education in an increasingly digital world: Embracing change. In *XVII CercleS International Conference 2022* (pp. 20-27). Instituto Superior de Administração e Contabilidade do Porto. Retrieved from https://recipp.ipp.pt/handle/10400.22/20753

Hinze, A., Vanderschantz, N., Timpany, C., Cunningham, S. J., Saravani, S.-J., & Wilkinson, C. (2022). A Study of Mobile App Use for Teaching and Research in Higher Education. *Technology, Knowledge and Learning*, *28*(3), 1271-1299. https://doi.org/10.1007/s10758-022-09599-6

Iyamuremye, A., Mukiza, J., Nsabayezu, E., Ukobizaba, F., & Ndihokubwayo, K. (2022). Web-based discussions in teaching and learning: Secondary school teachers' and students' perceptions and potential to enhance students' performance in organic chemistry. *Education and Information Technologies*, *27*(2), 2695-2715. https://doi.org/10.1007/s10639-021-10725-7

Jie, Z., & Sunze, Y. (2022). A mobile pedagogical framework for enhancing online teaching and learning in higher education. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2022.2039945

Li, Q., Peng, H., Li, J., Xia, C., Yang, R., Sun, L., Yu, P. S., & He, L. (2022). A Survey on Text Classification: From Traditional to Deep Learning. *ACM Transactions on Intelligent Systems and Technology*, *13*(2), 1–41. https://doi.org/10.1145/3495162

Martín-Sómer, M., Casado, C., & Gómez-Pozuelo, G. (2024). Utilising interactive applications as educational tools in higher education: Perspectives from teachers and students, and an analysis of academic outcomes. *Education for Chemical Engineers*, *46*, 1-9. https://doi.org/10.1016/j.ece.2023.10.001

Mkrttchian, V., Krevskiy, I., Bershadsky, A., Glotova, T., Gamidullaeva, L., & Vasin, S. (2019). Web-Based Learning and Development of University's Electronic Informational Educational Environment. *International Journal of Web-Based Learning and Teaching Technologies*, *14*(1), 32–53. https://doi.org/10.4018/ijwltt.2019010103

Morgan-Short, K., Hamrick, P., & Ullman, M. T. (2022). Declarative and procedural memory as predictors of second language development. In S. Li, P. Hiver, & M. Papi (Eds.), *The Routledge Handbook of Second Language Acquisition and Individual Differences* (pp. 67-81). Routledge. https://georgetown.app.box.com/s/dg9n8c23ggkfkj84copfgfeqj5jf4bwh

Muftah, M. (2023). The effects of web-based language learning on university students' translation proficiency. *Journal of Applied Research in Higher Education*, *15*(5), 1420-1439. https://doi.org/10.1108/JARHE-05-2022-0173

Politi, V. (2020). Taxonomies, Networks, and Lexicons: A Study of Kuhn's Post-'Linguistic Turn' Philosophy. *International Studies in the Philosophy of Science*, *33*(2), 87–103. https://doi.org/10.1080/02698595.2020.1865784

Pourdavood, R. G., & Song, X. (2021). Engaging pre-service and in-service teachers in online mathematics teaching and learning: Challenges and opportunities. *International Journal of Learning, Teaching and Educational Research*, *20*(11), 96-114. https://www.ijlter.myres.net/index.php/ijlter/article/view/722.

Proskura, S. L., & Lytvynova, S. H. (2019). The approaches to Web-based education of computer science bachelors in higher education institutions. In A. E. Kiv & M. P. Shyshkina (Eds.), *Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019* (Vol. 2643, pp. 609-625). CEUR Workshop Proceedings. http://ceur-ws.org/Vol-2643/paper36.pdf

Puebla, C., Fievet, T., Tsopanidi, M., & Clahsen, H. (2022). Mobile-assisted language learning in older adults: Opportunities and challenges. *ReCALL*, *34*(2), 169-184. https://doi.org/10.1017/S0958344021000276

Rashid, A., & Chaturvedi, A. (2019). Cloud computing characteristics and services: a brief review. *International Journal of Computer Sciences and Engineering*, *7*(2), 421-426. https://doi.org/10.26438/ijcse/v7i2.421426

Romele, A. (2019). *Digital hermeneutics: philosophical investigations in new media and technologies*. Routledge. https://doi.org/10.4324/9780429331893

Rosa, A. P. M. D., Villanueva, L. M. M., Miguel, J. M. R. S., & Quinto, J. E. B. (2022). Web-based Database Courses E-Learning Application. *arXiv preprint arXiv:2212.00104*. https://doi.org/10.48550/arXiv.2212.00104

Sergeev, A., Kulikova, N., Danilchuk, E., & Borisova, N. (2021). Online Educational Platform as a Web Content Management System in the Organisation of Student-Teacher Interaction. In *Proceedings of the Computational Methods in Systems and Software (*pp. 846-856). Cham: Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-030-90321-3_70

Sherman, M., Puhovskiy, E., Kambalova, Y., & Kdyrova, I. (2022). The future of distance education in war or the education of the future (the Ukrainian case study). *Future Education*, *2*(3), 13-22. https://doi.org/10.57125/FED/2022.10.11.30

Shytyk, L., & Akimova, A. (2020). Ways of transferring the internal speech of characters: A psycholinguistic projection. *Psycholinguistics*, *27*(2), 361-384. https://doi.org/10.31470/2309-1797-2020-27-2-361-384

Sofilkanych, M. (2022). The formation of a new information culture of the future: the socio-philosophical content. Future Philosophy, 1(1), 56-67. https://doi.org/10.57125/FP.2022.03.30.05

Vandebroeck, D. (2022). 'Thinking through' technique or thinking 'through' technique? Expanding the toolkit of cultural sociology. *Poetics*, *91*, 101670. https://doi.org/10.1016/j.poetic.2022.101670

Vlasenko, K. V., Volkov, S. V., Kovalenko, D. A., Sitak, I. V., Chumak, O. O., & Kostikov, A. A. (2019). Web-based online course training higher school mathematics teachers. In A. E. Kiv & M. P. Shyshkina (Eds.), *Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019* (Vol. 2643, pp. 648–661). CEUR Workshop Proceedings. Retrieved from http://ceur-ws.org/Vol-2643/paper38.pdf

Vlasenko, K., Chumak, O., Achkan, V., Lovianova, I., & Kondratyeva, O. (2020). Personal e-Learning Environment of a Mathematics Teacher. *Universal Journal of Educational Research*, *8*(8), 3527–3535. https://doi.org/10.13189/ujer.2020.080828

Weber, F., Dettmer, N., Schurz, K., & Thelen, T. (2022, June). Building an educational social media application for higher education. In *International Conference on Human-Computer Interaction (*pp. 210-220). Cham: Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-031-05064-0_16

Appendix A

A questionnaire for students on the role of social media and online communities in learning and collaboration in the digital transformation era:

1. Which social media do you use most often? (Select all that apply to your activities)
   - Facebook
   - Instagram
   - Twitter
   - TikTok
   - Snapchat
   - LinkedIn
   - YouTube
   - WhatsApp
   - Telegram
   - Reddit
   - Other (please specify)

2. How often do you use these social networks?
   - Daily
   - Several times a week
   - Once a week
   - Rarely

3. What goals do you usually achieve when using social media? (Select all that apply to your actions)
   - Keeping in touch with friends and family
   - Meet new people
   - Get the latest news
   - Entertainment and recreation
   - Finding a job or career opportunities
   - Educational objectives (training, teaching materials)
   - Other (please specify)

4. How do you assess the impact of social media on your learning and academic achievements?

5. Does social media influence the way you communicate with your classmates and teachers?

6. Is there anything else you would like to add or emphasise about the use of social media among students?

7. What role do social media and online communities play in your studies and daily life? (Select all that apply)
   - Keeping in touch with family and friends
   - Finding new virtual friends
   - Looking for old friends on the Internet
   - Creating a virtual personality
   - I join online communities
   - I follow what is happening elsewhere
   - Constantly present in cyberspace
   - Sharing photos
   - Share the video
   - Looking for a job
   - I gain general knowledge

8. How often do you use social media or online communities for these purposes?
   - Daily
   - Several times a week
   - Rarely

9. What advantages do you see in using social networks and online communities in the learning process and in cooperation with other students?

10. What are the disadvantages or limitations of using social media and online communities in your learning or collaboration?

11. Do you think that your use of social media and online communities affects your academic performance? How?

12. Is there anything you would like to add or emphasise about the role of social media and online communities in your learning and collaboration?