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Artificial Intelligence and the Transformation of Collaborative Study Culture: Evidence from Graduate-Level Students in Pakistan

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Abstract
This paper explores the effects of Artificial Intelligence (AI) technologies on the culture of collaborative study among graduate students in Pakistan. Although AI-based tools like ChatGPT, Grammarly, and QuillBot have become part of academic activities, the effects they have on peer-to-peer learning and engage with others have not been studied extensively. The study based on a qualitative research design, including semi-structured interviewing of 120 graduate students in the COMSATS University Islamabad, International Islamic University Islamabad, National University of Modern Languages, and Quaid-i-Azam University guided by the social constructivist theory of Vygotsky (1978) and using the semi-structured interviews based on the thematic analysis model by Braun and Clarke (2006). Its results showed a twofold effect of AI integration. On the upslope side, AI led to improved academic achievement, language mastery, self-confidence, effectiveness, and communication, especially among non-native English speakers. On the downsides, AI undermined originality, critical thinking, dependence on machine-generated summaries, and in-depth collaborative effort. These findings underscore the self-contradictory nature of AI as a facilitator of personal learning and a destroyer of the traditional study group. The research concludes by stating that AI cannot be deemed as a positive or negative phenomenon and rather the dual phenomenon that needs to be integrated in a balanced manner. Teachers and scholars are encouraged to work on plans that can exploit the advantages of AI and maintain the collaborative practices as a way of making sure that technology and peer communication co-exist to enhance graduate education. Placing the research in the Pakistani context, the study can offer localized knowledge to the research on artificial intelligence as it encourages focusing on culturally-sensitive ways of integrating AI into higher education.

Background of the Study
The implementation of Artificial Intelligence (AI) in the sphere of higher education has turned into one of the most radical changes of the last decade. Graduate learners are increasingly beginning to rely on AI-driven tools like ChatGPT, Grammarly, QuillBot, and ELSA Speak to support writing, learning language, and solving academic problems. These applications offer real-time feedback and content creation as well as tailored learning journeys, which radically transform the conventional learning processes. Although these innovations are making the process more efficient

and more accessible, they also undermine the traditional principles of collaborative learning, which has traditionally been a key pillar of graduate education in Pakistan and other places (Zawacki-Richter et al., 2019).

The culture of the combined study, which implies interaction between peers, collective problem solving, and collective knowledge development, has been identified as a critical element of graduate education. Not only it promotes academic performance but it also builds all-important soft skills, including teamwork, communication, and interpersonal competence (Dillenbourg, 1999; Johnson & Johnson, 2009). International Islamic University Islamabad (COMSATS University Islamabad, Quaid-i-Azam University, and National University of Modern Languages) are Pakistani universities in which collaborative study groups have historically been a central element of the intellectual community of practice and of academic engagement.

However, with the emergence of AI tools, a new dynamic has been observed in this environment. Students can now avoid group discussions and use machine generated explanations, summaries and corrections. This personalized and technocratic approach to study practice is a cause of apprehension about the degradation of collegial cultures. Although AI solutions are time-saving and offer an opportunity to receive one-on-one assistance, they can also lead to the loss of the possibility to have a critical dialogue, a common problem-solving experience, and the emergence of superior insights (Holmes et al., 2021).

This change is especially important in socio-cultural aspects like in Pakistan, where team work in studies has been part of the academic culture. Social constructivist theory according to Vygotsky (1978) emphasizes the significance of social interaction in cognitive development and learning is best realized when students are able to engage in a dialogue and co-construct knowledge. The growing use of AI in game form may thus compromise these pillars, causing diminished originality, poor critical thinking, and poor peer interaction.

Although the research on AI in the educational field has expanded worldwide, the majority of the current literature has addressed the advantages of the research on the individual learning process, adaptive assessment, and automated feedback (Keuning et al., 2018). The social and cultural implications of AI integration including the effects of AI on collaborative learning practices have received less attention. This negligence is problematic in the sense that the relational features of education: teamwork, communication and joint meaning-making are key to holistic academic development.

Research gap in South Asian context, and that is in Pakistan, is even greater. Although researchers have explored the adoption of AI and student attitudes towards technological-based learning, limited research has critically examined the impact of AI on the team study-based habits and peer-to-peer interactions. The results of global literature cannot be directly transferred to Western and South Asian university due to the cultural and institutional distinctions without the contextual study. That is why the impact of AI on the collaborative study culture in Pakistan is a timely and a necessary issue to study.

The current study thus finds itself at the overlap of the new technological innovation and the traditional socio-cultural setting. It aims to point out the enablers and the disruptive aspects of AI integration by exploring the impact of AI tools on collaborative study behaviors of graduate students in Pakistan. The results will be a part of a more complex vision of the role of AI in higher education, and the results will inform the perspectives on how the technological development can be implemented in the presence of the collaborative traditions to improve the quality of learning

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on the graduate level.

Problem Statement

In Pakistan, graduate students are gradually resorting to AI technologies in working on academic assignments, which makes them less involved in the practice of combined studies. This movement casts doubts on the undermining of the spirit of shared learning, communication with peers, and the acquisition of the necessary interpersonal skills. Although the current research literature on AI in the educational field is increasing, there are few studies that have analyzed the impact of AI as a specific factor on the collaborative study culture in South Asia. The research fills this gap by focusing on two effects of AI tools on collaborative study practices among graduate-level students in Pakistan.

Research Questions

1. What are the beneficial effects of AI tools on the collaborative study atmosphere of graduate students in Pakistan?
2. How negatively do AI tools affect graduate-level students in Pakistan in terms of their study culture as a team?

Literature Review

Artificial Intelligence (AI) is now a major driver in the transformation of higher education in the world. It is used both as an automated grading tool and smart tutoring that provides students with personalized learning opportunities and real time feedback. According to scholars, AI can transform the academic practices and become more efficient, less burdensome, and assist learners to work around the hindrances, be it language or cognitive (Zawacki-Richter et al., 2019). The rise of AI has rendered the use of AI tools more important in graduate-level education.

Personalized learning is one of the most popular advantages of AI in education. Keuning et al. (2018) note that AI-based solutions can be adjusted to the needs of separate students and enable them to advance at their own pace. It can be especially helpful in the field of language learning, where applications like Grammarly and ELSA Speak can offer customized feedback and pronunciation advice. Not only do these applications enhance language proficiency, but they also enhance the confidence of the learners since they provide the non-judgmental feedback immediately.

Another aspect that has been hailed as AI is the increase in accessibility. As Holmes et al. (2021) observe, AI applications diminish the education barriers by offering real-time assistance that helps students with different backgrounds to better perceive academic material. Non-native speakers of English can use such apps as LingQ and QuillBot that are able to simplify difficult texts to make academic sources more accessible. This ease of access is particularly meaningful in a multilingual society like Pakistan in which proficiency in the English language is a key ingredient of higher education.

Although there are these benefits, the issue of unintended consequences of AI integration has been brought up. Dillenbourg (1999) stresses that collaborative study culture, which is a peer-to-peer interaction and collective problem solving is crucial in the development of deep learning and critical thinking. Johnson and Johnson (2009) also say that group learning builds very critical soft skills which include teamwork, communication and conflict resolution. The growing dependency on AI tools threatens to take away these advantages by promoting alienated, machine-mediated modes of study.

Various researchers have reported the possible negative effects of AI in education. Holmes et al.

(2021) warn against relying on AI-created summaries and solutions at the cost of originality and critical thinking. In the same vein, Zawacki-Richter et al. (2019) note that, although AI can boost efficiency, it can reduce collaborative interaction, thus, transforming the social character of the academic societies. The results indicate that the role of AI in education is complex in relation to both opportunities and challenges to graduate-level students.

AI tools have also shown a lot of potential in the sphere of language learning. ELSA Speak and Grammarly can be used to support students in perfecting their linguistic abilities by offering instant correction and feedback. But researchers claim that excessive use of these aids can contribute to superficial learning, in which learners are preoccupied with getting the answers right, instead of getting into the details of language constructions (Keuning et al., 2018). This stress demonstrates the importance of finding the balance between AI-facilitated learning and collaborative learning where critical discussions and further insight are promoted.

The implications of AI in collaboration learning are also explained in theoretical terms. The social constructivist theory by Vygotsky (1978) also highlights the relevance of social interaction in the development of cognition, which means that students should learn best through dialogue and co-construction of knowledge. The growing use of AI may thus destroy these guiding values, which will result in fewer chances of peer interaction and shared sensemaking.

The study of cultural aspects of AI implementation in education has started globally. The research in the Western world tends to emphasize the positive changes in AI enhancement of individual learning, yet it rarely speaks about the effect AI may have on the common studying process. This omission is problematic in that team learning is not only the key to academic achievement, but also fundamental in equipping the students with professional workplaces that require them to work in teams, communicate (Johnson and Johnson, 2009).

The literature of AI in education is under-represented in South Asia and, especially, Pakistan. The current researches have mainly revolved around technology adoption, perception of students, and institutional preparedness towards digital transformation. Not many have taken a critical stance to the role of AI in collaborative study culture, peer interaction, and community-building of the academic field. Since Pakistani universities have cultural focus on group learning, this gap is especially important and deserves special attention in the form of research.Research Gap

Although the recent research on AI in education has become global, the majority of studies have focused on the use of AI in education to improve individual learning, adaptive assessment, and individual feedback. Social and cultural aspects of AI implementation, namely, the effects of AI on cooperative studying, have been comparatively neglected (Keuning et al., 2018; Holmes et al., 2021). This neglect is not very good as the collaborative learning is necessary to enhance critical thinking, originality and interpersonal skills.

The gap in research is greater in Pakistan. Although higher institutions like COMSATS, IIUI, NUML, and QAU have adopted the use of technology-enhanced learning, the scarcity of scholarship has studied the role of AI tools in influencing the culture of combined study in the graduate level. Cultural and institutional disparities between the South Asian and the Western setting imply that the results of the international literature cannot be implemented directly. This implies the need to localize research to discern the two-fold effect of AI; both facilitating and disruptive to collaborative study practices in Pakistani higher education.

Research Design

The research design applied in this study was qualitative research design to investigate the role of

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Artificial Intelligence in enhancing collaborative study culture among graduate level students in Pakistan. The selection of qualitative methods was based on the fact that it will be required to understand the experiences, perceptions, and attitudes of the participants regarding the AI integration in academic practices deeper (Creswell, 2014). Semi structured interviews were used to describe both the enabling and disruptive aspects of the use of AI in collaborative learning. The design was especially well adapted to reveal the social and cultural implication of AI that is usually neglected in quantitative design.

Theoretical Implication

The literature is based on the social constructivist theory of Vygotsky (1978) who argues that social interaction plays a central role in cognitive development. This framework has it that learning is best realized when the students participate in dialogue, collaboration, and jointly construct knowledge. This principle is becoming endangered by the growing use of AI tools that shift learning to individualized and machine-mediated activities. With the research being put in the framework of social constructivism, the study also sheds light on the conflict between technological progress and cooperative culture, providing theoretical comprehension of how AI is capable of changing the principles of graduate-level learning.

Also, the thematic analysis model of the work by Braun and Clarke (2006) was used to examine interview results. This model gave a methodological way of identifying, analyzing and reporting trends in the data so that the results were rigorous and representative of the lived experiences of the participants.

Sample and Study population.

The study participants were graduate level students at four large universities in Islamabad, which are COMSATS University Islamabad (CUI), International Islamic University Islamabad (IIUI), National University of Modern Languages (NUML), and Quaid-i-Azam University (QAU). A purposive sampling method was applied in the selection of the participants so that the sample comprised of the students who actively participated in the use of AI tools in their study activities. The given approach was selected to make the data as relevant as possible to the goals of the research (Patton, 2015).

The study involved 120 students, who were of different academic disciplines in the humanities and social sciences. This was an adequate sample size which reflected a broad spectrum of opinions and provided the opportunity to conduct a comprehensive qualitative study.

Data Collection Methods

The semi-structured interviews were used to collect data, and it offered the flexibility to investigate the experiences of participants and also ensured consistency in interviews. All the interviews were done face to face or online (lasting between 30-45 minutes) depending on the availability of participants. The interview questions were aimed at the way students perceive AI tools, the effects of their use on collaborative learning processes, challenges and opportunities linked to AI integration.

Interviews were recorded through the consent of the participants and transcribed verbatim to make them credible. Field notes were also made in order to record non-verbal cues and situational details. The informed consent and confidentiality issues were closely followed in the data collection process due to ethical aspects (Cohen, Manion, and Morrison, 2018).

Method of Analysis

The thematic analysis model by Braun and Clarke (2006) was used as the main source of data

analysis in the study. This method has been chosen due to the ability to offer a flexible but systematic system of identification, analysis, and reporting patterns in qualitative data. This is especially true of thematic analysis, which is particularly useful in understanding a complex social phenomenon, including the role of AI in the culture of collaborative studies, since it allows the researcher to go beyond superficial descriptions and discover deeper interpretations of the experiences of people who participated in the study.

The analysis was initiated by familiarizing the data; the interview transcripts were read many times in order to have a holistic picture of how the participants viewed the issue. At this phase, first notes have been made to emphasize on some recurring ideas, feelings, and experiences connected to AI use in team study activities.

Secondly, preliminary coding was done. All the transcripts were analyzed in an organized manner and significant portions of the text were coded in order to assess key aspects of the data. Codes were semantic (direct statements of the participants) and latent (implications or assumptions underlying the statements). This made sure that it managed to capture both the overt effects of AI tools to study culture and the nuanced effects.

After the coding, the researcher started working on the development of themes, during which similar codes were placed in larger categories. As an illustration, the codes that are associated with such themes as academic and linguistic enhancement were grouped together and formed the theme of improving vocabulary, engaging in instant feedback, and confidence building. On the other hand, the theme of cognitive weakening included the codes like the decreased originality, impaired critical thinking and reliance on AI summaries.

The themes were later examined and narrowed down to make them coherent and consistent. This was done by ensuring that the themes represented the coded data well and also, whether they were in line with the entire dataset. Certain themes were also combined whereas others were divided to have clarity and precision.

Upon completion, the themes were outlined and named giving straight forward labels that represented them. Direct quotations of the participants were used to support every theme to describe the findings as well as to make it more credible.

Lastly, the themes were analyzed with reference to the social constructivism theoretical framework (Vygotsky, 1978). This has enabled the researcher to place the findings in a larger scholarly context on how AI tools facilitate and undermine the collaborative learning traditions.

Such strict use of the thematic analysis approach helped the study to generate valid, reliable and insightful findings, providing a balanced point of view on the dual influence of AI on the graduate level collaborative study culture.

Data Analysis

Thematic analysis model by Braun and Clarke (2006) was used to analyze the data, and it helped the researcher to identify the recurrent patterns and themes in semi-structured interviews with graduate-level students in a systematic manner. The assessment showed that the facilitating and disruptive impacts of AI tools on group-based culture of study were complex. The results are described below in details in large thematic categories.

Development of Academic and Linguistic Acculturation.

One of the themes that dominated was the academic and linguistic advantages of AI tools. Most of the respondents stated that they had a better experience with the use of Grammarly, QuillBot, and ChatGPT as it enhanced their writing, vocabulary, and syntax. According to students, AI offered

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immediate feedback that gave students opportunities to perfect their academic work before receiving peer or teacher feedback. The ability to correct grammar and pronunciation was valued by non-native speakers of English especially and enhanced their confidence when discussing in a group. This theme is indicative of the functionality of AI tools as scaffold assistants, which allow students to engage more actively in group environments.

Personal Organization and Time Management.

Efficiency in academic activities was another theme that was found. The respondents observed that AI tools saved a lot of time as they produced summaries, simplified complex texts, and provided quick solutions to problems. This effectiveness enabled the students to spend more time on other academic duties. Nevertheless, even though AI boosted productivity, some of the respondents agreed that they depended on AI results rather than get into more collaborative discussions. This implies that efficiency, which is useful, can result in discouragement of group based problem-solving unintentionally.

Inspirational and Confidence Building.

Some students have referred to AI tools as inspirational tools. AI minimized anxiety related to academic writing and presentations by offering real-time corrections and recommendations. The participants said that AI made them feel more confident to contribute in group discussions because they felt better prepared and with the language capacity. This motivational factor was especially important when it comes to the students that were reluctant to study in groups before because of language or fear of error.

Cognitive Weakness and Dilution of Originality.

Besides the beneficial effects, a theme of critical thinking was cognitive weakening related to the use of AI. Most of the participants have also acknowledged that they tended to rely on AI-generated summaries and paraphrased material instead of actually reading texts carefully. Such dependence diminished creativity and deteriorated thinking ability. The students admitted that AI simplified the work process, but it also decreased the level of profound collaborative discussion because discussions were frequently based on AI-suggested materials instead of individual thoughts.

Dependency and Risk of Accuracy

Another issue that the participants expressed was excess reliance on AI tools. Others claimed that they credited AI-produced responses without checking their validity, thus sometimes misleading or shallow cognition. This reliance threatened to kill the collaborative process, since the students were not as likely to question or cross validate information when studying in groups. The dependence on AI outputs therefore undermined the critical assessment, which is the core of collaborative learning.

Communication and Interaction with peers.

Interestingly, AI tools were discovered to improve communication skills in some circumstances. According to students, AI-assisted language correction helped them to become more fluent and pronounce words more correctly, they were more confident in dialogues during classes. Other people claimed that AI made peer support unnecessary, as students were now able to count on technology and not on their group members to clarify a point. This two-fold effect emphasizes the paradoxical nature of AI: on one hand, it will enhance individual interaction, but on the other hand, it can suppress human communication.

Individual and Collective Learning.

The last theme was the conflict between personal effectiveness and team work. Students realized

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that AI tools were quite an important asset to their personal learning and scholastic achievements, but they also admitted that they interfered with the old collaborative culture. The results indicate that AI can positively influence students, but there is also a negative possibility of encouraging individualism and undermining the collective processes that encourage teamwork, creative work, and critical thinking.

Summary of Findings

All in all, it was found that AI tools had a positive effect on academic performance, linguistic proficiency, confidence, and efficiency. They, however, also compromised depth of cognition, decreased originality and lowered collaborative interaction. The two-sidedness of the effect of AI implies the idea that it has to be integrated in a balanced fashion, and technology has to complement but not substitute peer-to-peer interaction.

Discussion

The results of the research point out the dual influence of the AI tools on the collaborative study culture among graduate-level Pakistani students. On the one hand, AI applications, including ChatGPT, Grammarly, Quillbot, etc., proved to boost academic performance, linguistic proficiency, and confidence. Conversely, they undermined originality, critical thinking, and intensive collaborative interaction. The paradox is an expression of conflict between a technological development and a socio-cultural tradition in higher education.

The beneficial effects are consistent with the world literature that focuses on the importance of AI in enhancing productivity and accessibility. According to Zawacki-Richter et al. (2019), AI tools help to simplify academic activities, and students have the opportunity to engage in learning of a higher order. On the same note, Keuning et al. (2018) outline the customized assistance offered by AI, which is especially essential to the non-native English speakers. These advantages are particularly important in the Pakistani context, where English is a highly important academic necessity. Students also stated that AI resources allowed them to get rid of language barriers and participate in group discussions more actively.

Nevertheless, those harms make sense in regard to the words spoken by Holmes et al. (2021), who warn that excessive reliance on AI can lead to a lack of originality and undermined critical thinking. These concerns are confirmed in the present study since most of the participants admitted to relying on AI-generated summaries instead of conducting an independent analysis. This addiction compromises the process of collaboration since group discussion tends to be based on machine generated content as opposed to personal input. These results indicate that as much as AI can improve the efficiency of individuals, it will have the danger of destroying collaborative intellectual work that is the main focus of graduate study culture.

Theoretically, the results criticize the social constructivist conceptualization of Vygotsky (1978) that recognizes the significance of societal engagement in cognitive growth. The dependence on AI technologies moves learning to the personalized, machine-based approach, which means that the possibility of peer-to-peer communication and knowledge construction is minimized. This change creates serious questions regarding the future of collaborative learning in the situation when AI becomes the leading way of learning.

Another important aspect of the study is the importance of study collaboration in Pakistani culture. Pakistani universities, in contrast to Western ones, where individualized learning is frequently a priority, historically placed greater value on group study as the community-building exercise of intellectual power. The erosion of this tradition as a result of integration with AI can have more

global social consequences, such as a lack of teamwork and the lack of interpersonal communication. These results present the necessity of local research taking into account cultural and institutional aspects when assessing the influence of AI on education.

Notably, the results argue that AI adoption in higher education cannot be perceived as either positive or negative. Rather, it is to be perceived as a two-fold phenomenon that facilitates and interferes with learning. The question of educationists and policymakers is to provide a balance between the benefits of AI usage and maintaining the traditions of collaboration that train the critical thinking, originality, interpersonal skills.

It is possible to create this balance by creating an academic practice that combines the use of AI tools in the collaborative environment and does not replace them. As an example, students might be asked to use AI to complete initial assignments like grammar or textbook summarization and then discuss the results of AI outputs in groups with a critical assessment and elaboration on outputs. This would enable the technology and cooperation to co-exist and enhance the quality of graduate level education.

Conclusion

The research aimed to explore how the use of Artificial Intelligence (AI) tools can affect collaboration within the study culture of Pakistani graduate students. The results demonstrated a two-fold effect: on the one hand, AI improved academic results, language mastery, confidence, and efficiency, and on the other hand, the state of originality, deteriorated critical thinking, and deteriorated profound collaborative work. This paradox highlights the fact that AI is a very complicated phenomenon in college life because the technological progress allows and interferes with the educational tradition. The beneficial results of the AI integration can show that it is a strong educational tool. ChatGPT, Grammarly and QuillBot tools gave students instant feedback, enhanced vocabulary and easier ways to complete some complex tasks, which helped non-English speakers and gave them confidence in group discussions. The advantages are consistent with the international literature focusing on the ability of AI to make the learning process more personal and more available (Zawacki-Richter et al., 2019; Keuning et al., 2018).

Nevertheless, the adverse effects underscore the dangers of too much reliance on AI. Students also cited that they do not feel as original and strong in critical thinking because of dependency on AI-generated summaries and answers. This reliance is a weakness to the collaborative process as group discussions are usually based on machine outputs as opposed to personal knowledge. These results are echoed by Holmes et al. (2021), who warn that AI can destroy immersive interaction and critical discourse.

In theoretical terms, the paper criticizes the social constructivist paradigm proposed by Vygotsky (1978) that highlights the significance of social interaction in the process of cognitive development. The trend of individualized, machine-mediated learning diminishes the possibility of peer-to-peer conversation and group building of knowledge and there have been arguments about the future of collaborative culture in graduate education.

The undermining of collaborative practices with the introduction of AI in the Pakistani culture where a culture of combined study has always been a core of academic life might also have a more general social context. Loss of teamwork and interpersonal communication as well as poor community-building would not only impact academic results but also career-readiness.

The paper concludes that AI is not to be perceived as a good or bad phenomenon but a two-sided phenomenon that needs to be integratively handled. Educators and policymakers need to find a

balance between the use of the advantages of AI and upholding collaborative traditions. Practical methods may involve suggesting students apply AI to initial actions and promoting group discussions that will be critical and expansive in regards to AI product.

Finally, the results can be used to develop a more sophisticated vision of the role of AI in higher education. The study offers localized information to the world literature by placing the research in the context of the Pakistani context. It stresses the necessity of the balanced integration of AI, in which technology and cooperation will co-exist and improve the quality of graduation education.

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