Egyptian Journal of Social Work (EJSW) http://ejsw.journals.ekb.eg
ISSN: 2356-9204 Vol 20, Issue 1, June2025

Artificial intelligence applications and achieving quality of group work research

Amany Salah Mohammed Khalaf(Ph.D.)
Assistant professor at group work Department
Faculty of Social Work – Helwan University

Abstract

The present study aimed to determine the nature of the relationship between artificial intelligence (AI) applications and achieving the quality of group work research. Following the descriptive analytical approach, the social survey method was used with a purposive sample of (185) researchers in the Department of Group Work in the Faculties of Social Work in Egypt. The study concluded that there is a statistically significant positive correlation between the use of artificial intelligence applications and the quality of group work research.

Keywords: AI applications, quality of research, group work

Introduction:

Scientific research is a fundamental pillar of human knowledge in all areas of life. It has become one of the measures of progress and civilization in the world. Scientific research has long helped humanity discover and benefit society, leading to development and prosperity in all areas of life. It has utilized technology and knowledge as effective tools for optimizing the investment of available resources to achieve development and progress (Al-Khatib, 2003, p.7). The importance of scientific research is growing in our contemporary world because it paves the way for a developed society capable of keeping pace with change in all its forms. Social research, particularly social work research, is one of the most crucial pillars for achieving social development in society. Societal phenomena, issues, and problems are studied in all fields and at various levels with precision and objectivity (Abul Nasr, 2017, p. 41).

Group work research is considered part of social work research and is conducted by a group of researchers from various institutions and fields. They employ various methods for gathering information, with some relying on traditional paper-based methods and others utilizing electronic methods (Rubin & Babbie, 2011, p. 599). The electronic method of obtaining information is a product of the technological revolution and the advancement of communication and information technology, which has made obtaining knowledge easier and more accurate compared to traditional methods. Therefore, Kerr and Popenici (2017) concluded that it is necessary to explore modern technological developments to adopt new technologies in higher education and scientific research. Molala and Mabaya (2023) attempted to develop electronic group services and recommended the development of a set of policies that enable researchers to practice

electronic group services in a safe and ethical manner. Shrivastava (2023) emphasized the importance of educating students in a manner consistent with technological developments so that they can explore and enhance their knowledge of these topics, thus opening the way for innovation through new perspectives on society.

With the constant development of technology, group work researchers have not only utilized electronic resources but have also expanded their use to include artificial intelligence (AI) applications in research and analysis processes. Hence, Zuhair (2023) illustrated that artificial intelligence can generate high-quality research in scientific fields in general. Mhlanga (2023) also identified how artificial intelligence techniques can be used to cause changes in teaching group work practice. Othman (2023) indicated how AI can be used as an introduction to teaching digital professional practice in group work. In this regard, Mustafa (2024) studied the attitudes of social work researchers toward using AI applications in scientific research.

The study concluded that researchers tend to use AI applications in conducting their scientific research. AI applications help group work researchers analyze data instantly and accurately, surpassing traditional methods. This is confirmed by a study (2022), which showed that many applications have emerged in research group work, including ChatGPT, a Chabot developed using trained transformer technology, used in translation, text classification, dialogue, chat systems, information summarization, question answering, creative writing, and automated code writing (Al-Omran, Jado, 2024, p. 137). Michel et al. (2023) noted that ChatGPT can be a useful tool but should not replace human intelligence. Data Analytics is another application that helps design effective intervention programs based on scientific evidence and present information in tabular form for easy analysis. It also provides a suite of statistical programs, such as Excel and SPSS, which aid in making decisions based on accurate data and information. With the multiplicity of applications used by group work researchers in their scientific research, the study investigates whether these applications achieve the quality of their scientific research, represented by their commitment to scientific research ethics and adherence to its methodological steps. Accordingly, the study problem can be formulated as verifying the validity of the study's main hypothesis: There is a positive, statistically significant relationship between artificial intelligence applications and achieving the quality of group work research.

The study, thus, aims to obtain the following objectives:

1. Investigating the relationship between artificial intelligence applications and achieving the quality of group work research.
2. Identifying the relationship between some demographic variables and the use of artificial intelligence applications.
3. Determining the relationship between some demographic variables and the quality of group work research.

Hence, the study hypotheses are as follows:

1. There is a statistically significant positive relationship between artificial intelligence applications and the quality of group work research.
2. There is a statistically significant relationship between some demographic variables and the use of artificial intelligence applications.
3. There is a statistically significant relationship between some demographic variables and the quality of group work research.
4. There are statistically significant differences between master's and doctoral researchers on the variable of use of artificial intelligence applications.
5. There are statistically significant differences between master's and doctoral researchers on the variable of quality of group work research.

The study concepts are defined as follows:

Each concept in the research on the quality of group work is defined below.

- Quality is defined as a high quality, status, or something as it should be (Webster, 1996, p. 1161).

- Research refers to an organized and objective attempt to study a specific problem to arrive at general principles (Ghaith, 1995, p. 384).

- Scientific research denotes a systematic and organized effort to study a specific problem that needs a solution. It contributes to the construction of general knowledge and corrects human knowledge (Pryman, 2012, p. 4).

- **Social research** is an organized investigation to gain new knowledge about social phenomena and problems (Sapkota, 2009, p. 1).

Social work research is defined as the application of research methods to address problems encountered by social workers in their professional practice (Rubin & Babbie, 2011).

- The quality of group work research within the framework of this study is defined as

1- A strategy adhered to by the researcher and practiced skillfully to develop, improve, and enrich group work research (descriptive, evaluative, experimental) to improve the level of services provided to group members within the institution.
2- The quality of group work research in this study is measured by the following:

A. Determining the extent to which group work researchers adhere to scientific methodological steps when conducting their research (descriptive, experimental, or evaluative), beginning with selecting the research title, formulating the study problem, objectives, and scientific hypotheses, defining procedural concepts, determining the type of study, tools, and research sample, collecting and analyzing data, and discussing the research results.

B- Determining the extent to which researchers working with groups adhere to the ethics of scientific research, including scientific integrity, respect for intellectual property rights and individual differences among the research subjects, objectivity, and privacy and freedom for the research subjects.

The Concept of AI Applications:

Intelligence is defined linguistically as the ability to analyze, synthesize, distinguish, choose, and adapt to different situations (Omar, 2008, p. 818).

Intelligence is also defined as the ability to learn and interact with various situations, acquire, understand, apply, analyze, and infer from knowledge (Kumar, 2008).

Artificial intelligence is defined as a set of computer programs that solve problems through thinking processes similar to those of the human mind. Most of these programs are built on a set of rules, such as the rules of logical reasoning, which enable computers to think, see, speak, hear, and move (Al-Yajzi, 2020, p. 82).

Artificial intelligence applications are defined as "a science that relies on intelligent machines, using computer programs, that focus on simulating human behavior using computer hardware and software capable of thinking in a way that mimics the human brain" (Jain, 2019, p. 147).

In the present study, AI applications are defined as

1- A set of artificial tools, programs, and technologies used by group work researchers in their scientific research.
2- They can simulate group work researchers and help them perform various research tasks with minimal time, effort, and cost.
3- These applications may contribute to the quality of group work research.
4- According to this study, these applications include ChatGPT and Data Analytics.

A- ChatGPT is an application that can link and rephrase phrases, provide scientific references and previously documented and accurate studies, and assist in preparing research tools and providing accurate instant translation.

B- Data Analytics is an application that helps design effective intervention programs based on scientific evidence. It displays information in the form of tables to facilitate analysis. It also provides a set of statistical programs, such as Excel and SPSS, which helps in making decisions based on accurate data and information.

Theoretical Guidelines of the Research:

The current study is grounded in communication theory, a key theory in professional practice. Communication occurs between two or more people when the receiver interprets the sender's message as is (Zastrow, 2001, p. 130).

Communication theory can be utilized in this study by

1- Identifying the elements of the communication process while the researcher is conducting scientific research using artificial intelligence applications. These elements are represented by the sender (i.e., the researcher) and the receiver (i.e., the artificial intelligence applications). The message is the search for specific information or data. Feedback is the acquisition of accurate and objective information that helps develop the researcher's research capabilities and achieve quality research by working with groups.
2- Communication theory can also be enhanced by determining communication channels between researchers and AI applications, which facilitate access to information and enable quality research when working with groups.

Methodology

Following the descriptive approach, the current study employed a social survey method using a purposive sample.

Study tool

The study relied on a questionnaire to address its hypotheses, with a particular focus on identifying the relationship between AI applications and the quality of group work research among graduate students in the Department of Community Service. This approach is based on previous research and studies related to the study variables.

The study tool included two dimensions:

First, AI applications, including ChatGPT application and Data Analytics application; second, the quality of group work research, including adherence to scientific research procedures and adherence to scientific research ethics.

- The researcher relied on content validity and presented the study tool to six social work professors. Based on their feedback, some statements were modified or deleted, and the questionnaire was finalized. To verify the reliability of the tool, the researcher used the split-half method on five individuals from the research community. The reliability coefficient for the Guttman test reached 0.789, a high and acceptable value. Therefore, the results derived from the tool can be relied upon.

Sample

The total study population was (242) individuals. A systematic random sample of (185) individuals was then drawn up according to the following conditions:

- The participants should be researchers enrolled in master's and doctoral programs at faculties of social work in Egypt.
- They were required to be in the process of preparing a dissertation.
- They were also required to use AI applications in their research.
- Data were collected from February 2, 2025, to April 6, 2025.

Statistical Analysis Methods:

The level of relationship between artificial intelligence applications and the quality of group work research was assessed using the arithmetic mean, with the beginning and end categories of the three-point scale being "yes" (3 points), "somewhat" (2 points), and "no" (1 point). The data was coded and inserted into a computer. To determine the length of the three-point scale cells (lower and upper limits), the range was calculated as "highest value - lowest value" (3 - 1 = 2). This range was divided by the number of scale cells to obtain the corrected

cell length (2/3 = 0.67). This value was then added to the lowest value in the scale, or the beginning of the scale, which is the correct one, to determine the upper limit of that cell.

Table (1) presents the arithmetic mean level for the phrases and dimensions of the questionnaire.

If the average value of the expression or dimension ranged between 1 - 1.67	**low level**
If the average value of the phrase or dimension ranges between more than 1.67 - 2.34	**Average level**
If the average value of the expression or dimension ranges between more than 2.34: 3	**high level**

The following statistical methods have been applied: frequencies and percentages, arithmetic mean, standard deviation, range, t-test, multiple regression analysis, simple regression analysis, Pearson's correlation coefficient (R), and coefficient of determination (R^2).

Study Results:

Table (2) Correlation Between AI Applications Dimensions and Quality Outcomes in Group Work Research (N =185)

Dimensions	Adhering to Scientific Research Methodology	Adhering to Scientific Research Ethics	quality of group work research as a whole
Chat GPT application	**0.426	**0.275	**0.388
Data Analytics application	**0.538	**0.436	**0.538
Artificial intelligence applications as a whole	**0.578	**0.429	**0.556

Table (2) indicates the statistically significant positive correlation between AI applications and the quality of group work research, as the value of Pearson's coefficient reached (0.556**), which is significant at a level of (0.01). This was evident in the following indicators: There was a statistically significant positive correlation between AI applications and adherence to scientific research steps, as the value of Pearson's coefficient reached (0.578**), which is significant at a level of (0.01). In addition, there was a statistically significant positive correlation between AI applications and adherence to scientific research ethics, as the value of Pearson's correlation coefficient reached (0.429**), which is significant at a level of (0.01).

Thus, the study's first hypothesis was validated, confirming a statistically significant positive correlation between AI applications and quality group work research.

Table (3) shows the characteristics of the study sample and the results of testing the second and third hypotheses of the study (n=185).

Variables	Responses	Frequency	%	Artificial intelligence applications as a whole	quality of group work research as a whole
Gender	Male	45	24.3%	-0.012	-0.066
	Female	140	75.7%		
Gender	Under 25 years old	53	28.6%	0.100	0.125
	From 25 to under 30 years old	57	30.8%		
	From 30 to under 35 years old	39	21.1%		
	From 35 or more	36	19.5%		
Study level	Master's degree	113	61.1%	-0.044	0.027
	PhD degree	72	38.9%		
University	Helwan University	70	37.8%	**0.207	0.119
	Fayoum University	22	11.9%		
	Beni-Suef University	25	13.5%		
	Aswan University	35	18.9%		
	Assiut University	33	17.8%		

Table (3) indicates no correlation between demographic variables and the use of artificial intelligence applications. The results indicated no significant relationship between gender, age, academic stage, and the use of AI applications, as the correlation coefficients were not statistically significant. However, the university variable showed a significant relationship with AI application use at a level of (0.01). Therefore, the second hypothesis of the study, shown below, was rejected: "There is a statistically significant positive relationship between artificial intelligence applications and achieving quality in group work research."

Table 3 also shows no correlation between demographic variables and the quality of group work research. The results indicated no significant relationship between variables such as gender, age, academic stage, and university, and the quality of group work research, as the correlation coefficients were not statistically

significant. This led to the rejection of the third hypothesis of the study: "There is a statistically significant relationship between some demographic variables and achieving quality in group work research."

Table (4) illustrates the ranking of artificial intelligence application dimensions (n=185).

N	Dimensions	MEAN	Standard Deviation	Ranking
1	**Chat GPT application**	1.49	0.311	1
2	**Data Analytics application**	1.46	0.348	2
Artificial intelligence applications as a whole		1.48	0.277	Low

Table (4) shows that the level of artificial intelligence application use is (low), with a mean score of (1.48), falling within the range of 1.00 to 1.67. The ranking of AI application use among graduate students is as follows: ChatGPT ranked first with a mean score of (1.49), followed by Data Analytics with a mean score of (1.46).

Table (5) indicates the ranking of dimensions of group work research quality (n=185)

N	Dimensions	Mean	Standard Deviation	Ranking
1	**Adhering to Scientific Research Methodology**	1.41	0.310	2
2	**Adhering to Scientific Research Ethics**	1.42	0.335	1
quality of group work research as a whole		1.41	0.292	Low

Table (5) demonstrates that the level of group work research quality is (Low), with a mean score of (1.41), falling within the range of 1.00 to 1.67. The ranking of dimensions of group work research quality among graduate students is as follows: Adherence to research ethics ranked first with a mean score of (1.42), followed by adherence to research methodology with a mean score of (1.41).

Table (6) shows the differences between master's and doctoral students on the variables of artificial intelligence application use and group research quality (n=185).

Variables	Indicators	n	Mean	Standard Deviation	T-Test
Artificial intelligence applications	**Master's degree**	113	1.49	0.252	0.594
	PhD degree	72	1.46	0.313	
quality of group work research	**Master's degree**	113	1.40	0.264	0.359
	PhD degree	72	1.42	0.333	

Table (6) illustrates no statistically significant differences between master's and doctoral students in the use of AI applications, with a t-value of 0.594, which is not statistically significant. The results revealed that master's students were the group that benefited the most from AI applications, with a mean score of 1.49. Hence, the fourth hypothesis of the study, stated below, was rejected: "There are statistically significant differences between master's and doctoral students in the use of artificial intelligence applications."
Table (6) also shows no statistically significant differences between master's and doctoral students in group work research quality, with a t-value of 0.359, which is not statistically significant. The results demonstrated that doctoral students were the group that adhered the most to group work research quality, with a mean score of 1.42. Accordingly, the fifth hypothesis of the study, shown below, was rejected, which states: "There are statistically significant differences between master's and doctoral students in group work research quality."

Discussion

The results of the quantitative study demonstrated a statistically significant positive relationship between artificial intelligence applications and achieving the quality of group work research. Moreover, there is a statistically significant difference between artificial intelligence applications and achieving the quality of group work research. This validates the study's first hypothesis. This aligns with Zuheir's (2023) findings that AI can generate high-quality research in scientific fields in general. Additionally, Saleh and Nassar (2024) confirmed the role of artificial intelligence applications in developing the scientific research skills of graduate students at the Faculty of Social Work, Al-Azhar University. Eid and Eid (2024) also highlighted the role of AI in developing the educational process and supporting scientific research in universities, and they also pinpointed the opportunities and challenges of employing AI in scientific research.

Concerning the second hypothesis of the study, the results showed that there are no statistically significant differences between certain demographic variables and the use of AI applications, thereby rejecting this hypothesis. This may be due to the unity of AI techniques, but the difference is in how they are used in scientific

research. Age, educational level, and the researcher's location do not affect this. This conforms to the findings of Michel et al. (2023) that the use of AI applications could be helpful as a tool, but it should not replace the human mind. Shrivastava (2023) emphasized the importance of educating students with technological developments, enabling them to expand their knowledge, thus opening the way for innovation through new perspectives in society. Crompton and Burke (2023) also highlighted the use of AI applications by graduate students in higher education and scientific research.

For the third hypothesis of the study, the results demonstrated no statistically significant differences between certain demographic variables and the quality of group work research, thereby rejecting this hypothesis. This may be due to the unity of scientific research quality standards in colleges of social work, including adherence to scientific research ethics and adherence to methodological steps when conducting research. This is consistent with Khalaf's (2025) findings that researchers' adherence to scientific research ethics in their use of artificial intelligence tools leads to an improvement in the quality of their scientific research. Molala and Mabaya (2023) contributed to the development of e-group services and recommended the development of a set of policies that enable researchers to practice e-group services in a safe and ethical manner.

Regarding the fourth hypothesis of the study, the results showed no statistically significant differences between researchers at the master's level and those at the doctoral level regarding the variable of using AI applications, thereby rejecting this hypothesis. This aligns with Shamoo and Resnik's (2009) findings that there is a need for more comprehensive education for researchers at all levels, due to existing controversies regarding data integrity, manipulation, and distortion, especially in privately funded research. Furthermore, Kerr and Popenici (2017) concluded that modern technological developments must be explored to adopt new technologies in higher education and scientific research. Alimi (2021) aimed to measure university students' awareness of, access to, and use of artificial intelligence. The results showed that most students were unfamiliar with AI, lacking not only skills in exploring and utilizing digital resources but also awareness and access to these technologies.

Regarding the fifth hypothesis of the study, the results revealed no statistically significant differences between master's and doctoral researchers on the variable of group work research quality, thereby rejecting this hypothesis. This may be due to their commitment to the steps of the scientific research methodology and scientific research ethics. This finding is consistent with Huaya's (2023) research, which identified the most significant challenges facing the use of artificial intelligence, specifically its ethical and responsible use to ensure the privacy and security of information. The study emphasized the need to establish clear policies and regulations to enhance transparency and legal accountability in higher education institutions. It may also be because AI applications are similar across all countries, but the differences stem from how these applications are used and how researchers select and review the information they obtain through them. This is confirmed by the findings of Michel et al. (2023) that the use of AI applications could be useful as a tool, but they should not replace the human mind.

References:

Abu Al-Nasr, Medhat Mohamed (2017). Research Methods in Social Work, Cairo, Arab Group for Training and Publishing.

Abu Saleh, Mohamed Najah, Nassar, Ahmed Saeed Abdel Salam (2024). The Role of Artificial Intelligence Applications in Developing Graduate Students' Scientific Research Skills, published research, Cairo Journal of Social Work, No. (44).

Ali, Essam Abdel Razek Fath El-Bab (2022). Using Artificial Intelligence as a Modern Method in Working with Groups. Published research, Journal of the Future of Social Sciences, Cairo.

Alimi, Adebayo Emmanuel et al(2021): University Students' awareness of Access to, And Use of Artificial Intelligence for Learning in Kwara State, Indonesian Journal of Teaching in Science, Volume (1), Issue (2)

Al-Khatib, Ahmed (2003). Scientific Research and Higher Education, Amman, Dar Al-Masirah for Publishing and Distribution.

Al-Omran, Arwa Fahd, and Gado, Ihab Mustafa (2024). A Proposed Concept for Employing the ChatGPT Application in the Educational Process at the Arab East College for Graduate Studies. Published research, Journal of Artificial Intelligence and Information Security, Egypt, Arab Society for Technological Development.

Al-Yagzi, Faten Hassan (2020). Use of Artificial Intelligence Applications in Human Resource Management, Cairo, Nile Arab Group.

Charles, Zastrow (2001). Social work with group: using the class as a group leadership laboratory, U.S.A.

Crompton, Helen & Burke, Diane (2023): Artificial intelligence in higher education: the state of the field, International Journal of Educational Technology in Higher Education, Vol. (20), No. (1).

Eid, Basem Eid Ahmed Shehata, Eid, Yasser Eid Ahmed Shehata (2024). The Role of Artificial Intelligence in Developing the Educational Process and Scientific Research in Universities, published research, Journal of the Faculty of Arts, Port Said University, No. 29, Part 2.

Ghaith, Mohamed Atef (1995). Dictionary of Sociology, Alexandria, Dar Al-Ma'rifah Al-Jami'ah.

Huaya, Robert J. A (2023): Higher Education and The Challenges of Artificial Intelligence: period between 2017 and 2022, European Chemical Bulletin, Volume (12), Issue (7), 13 May.

Jain, R. (2019). The Role of Artificial Intelligence in Higher Education: An Empirical Investigation, International Journal of Research and Analytical Reviews, 6(1).

Khalaf, M. A. A. (2025). Artificial Intelligence Ethics in Social Work Education: Measuring the Faculty Members' Awareness Levels in Egyptian Social Work Higher Education Institutions, Egyptian Journal of Social Work (EJSW), 19, (1).

Kumar, E. (2008). Artificial intelligence. L.K. International Publishing Houses Pvt. Ltd.

Mhlanga, D. (2023). The value of Open AI and ChatGPT for the current learning environments and the potential future uses. University of Johannesburg. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4439267

Michele, S., Fabio, S., & Alberto, G. G. (2023). Can artificial intelligence help for scientific writing?. Critical Care, 27(1). doi: 10.1186/s13054-023-04380-2

Molala, T. S., & Mbaya, T. W. (2023). Social Work and Artificial Intelligence: Towards the Electronic Social Work Field of Specialization. Department of Social Work, University of Limpopo. Volume 6(4).

Mustafa, Islam Muhammad Faris (2024). Attitudes of Young Social Work Researchers Towards the Use of Artificial Intelligence Applications in Scientific Research. Published research, Journal of the Faculty of Social Work for Social Studies and Research, Fayoum University.

Omar, Ahmed Mukhtar (2008). Dictionary of Contemporary Arabic, Cairo, Alam Al-Kutub.

Othman, Samar Tariq Hussein (2023). Artificial Intelligence as an Approach to Teaching Digital Professional Practice for Working with Groups, Published Research, Journal of the Faculty of Social Work for Social Studies and Research, Fayoum University.

Popenici, S. & Kerr, S. (2017): Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education, Research and Practice in Technology-Enhanced Learning, 12(22).

Pryman, A. (2012). Social research methods (4th ed.). Oxford, UK: Oxford University Press. Retrieved from https://ktpu.kpi.ua/wp-content/uploads/2014/02/social-research-methods-alan-bryman.pdf

Rubin, A., & Babbie, E. (2011). Research Methods for Social Work (7th ed.). Belmont, CA: Brooks/Cole.

Rubin, A., & Babbie, E. (2011). Research methods for social work (7th ed.). Belmont, CA: Brooks/Cole.

Sapkota, J. R. (2009). Research methodology [PDF]. Retrieved from https://jrsapkota.wordpress.com/wpcontent/uploads/2009/12/reserch

Shamoo, A. E., & Resnik, D. B. (2009). Responsible conduct of research (2nd ed.). Oxford University Press

Shrivastava, Roopal (2023): The Role of Artificial Intelligence in the Future of Education, International Journal of Professional Business Review, Miami, Vol. (8), No. (1).

Webster. (1996). New World Dictionary 3rd ed., N.Y.

Zuheir, N. K. (2023). The potential and concerns of using artificial intelligence in scientific research: ChatGPT case (Preprint). doi: 10.2196/preprints.47049