

## Presenting A Paradigm Model for the Effect of Educational and Research Interactions Between Faculty Members, Students, and Librarians on Scientific Outputs Using a Grounded Theory Approach

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### Abstract

**Purpose:** This study aimed to develop a model illustrating the impact of research interactions among faculty members, students, and librarians on scientific outputs, employing a grounded theory approach.

**Methodology:** This qualitative research utilized a systematic grounded theory method. Data were collected through semi-structured interviews using snowball sampling. Twenty interviews were conducted with faculty members and librarians at the University of Mazandaran. Data analysis followed the three-stage process of open, axial & selective coding, leading to the design of a qualitative model.

**Findings:** From a total of 364 open codes identified, 63 axial codes were derived, culminating in 16 selective codes. A paradigm model was established, with "the improvement of research interactions among faculty members, students, and librarians in scientific production" as its core (axial) category. This model encompasses causal conditions, contextual factors, intervening conditions, strategies, and consequences.

**Conclusion:** Given the scarcity of studies examining factors affecting the educational and research interactions within this community, this research plays an essential role in identifying informational needs and providing specialized resources to support researchers and enhance scientific outputs. The documented interactions, collaborations, and shared experiences among faculty, students, and librarians are pivotal in advancing the university's developmental goals, completing programs, and empowering the institution to undertake large-scale national and challenging research projects.

**Value:** As a pioneering investigation, this study examines the role of interactions among faculty members, students, and librarians at the University of Mazandaran in the context of scientific production.

**Keywords:** *Educational Interactions, Research Interactions, Scientific Outputs, Grounded Theory.*

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## Extended Abstract

**Introduction:** Enhancing the quality of interaction among students, faculty members, and librarians contributes significantly to students' academic, social, and professional development. Furthermore, findings from numerous theoretical studies suggest that productive faculty-student interactions outside the classroom are often a direct extension of educators' instructional behaviors within it.

**Purpose:** Diverse forms of professional and research engagement by faculty members-extending beyond classroom activities-foster more authentic academic interactions with students. Accordingly, this study aims to develop a model illustrating the impact of research interactions among faculty members, students, and librarians on scientific outputs, using a grounded theory approach.

**Methodology:** This study employed a qualitative research design based on the systematic grounded theory methodology. Data were collected through semi-structured interviews, utilizing a snowball sampling technique. Twenty interviews were conducted with faculty members and librarians at the University of Mazandaran. The data analysis followed the three-stage grounded theory process of open, axial, and selective coding, from which the final qualitative research model was derived.

**Findings:** The analysis revealed that from a total of 364 initial open codes, 63 axial codes were developed, ultimately leading to the identification of 16 selective codes. The core category of the derived paradigm model is "**Improving research interactions among faculty members, students, and librarians in scientific production.**" This central category is framed by the following interconnected elements: **Causal Conditions:** Training skills and information literacy, interaction and knowledge exchange, knowledge management, and communication; **Contextual Factors:** Information and research consultancy, information resources, socio-cultural and economic constraints; **Intervening Conditions:** Specific organizational considerations and disadvantages of research information disclosure; **Strategies:** Fostering a culture of academic communication, utilizing information and communication technology (ICT), managing information resources, reforming organizational structures, evaluating scientific output; **Consequences:** Enhanced scientific production, efficient cost management, and effective teamwork.

Detailed data corresponding to these components are presented in Table 1.

**Table1. Results of the Coding Process Across Studied Groups**

Dimensions	Axial Coding (Category)	Open Coding (Concepts)
Causal conditions	Skills Training and Information Literacy	Training on the use of information resources; Information-seeking skills training; Educational and research consulting; Training in modern learning methods.
	Experiential Knowledge Sharing	Faculty-librarian interaction; Participation in educational and research planning; Student-librarian interaction; Interest and motivation in teamwork.



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<b>Dimensions</b>	<b>Axial Coding (Category)</b>	<b>Open Coding (Concepts)</b>
	Knowledge Management and Communication	Information dissemination, knowledge sharing, and knowledge transfer; Sharing of educational and research knowledge and findings; Educational and research needs assessment; Identification of required infrastructures; Identification of research priorities
<b>Contextual Conditions</b>	Information & Research Consultancy	Information consultation and retrieval; Academic and research consultation; Identification of research needs and priorities; Reference consultation and information services.
	Information Resources	Quality of research and educational resources; Access to educational and research resources; Selection of resources and acquisition methods; Knowledge of information resources; Type of information resources.
	Socio-Cultural and Economic Constraints	Lack of a culture of participation; Lack of desire to absorb knowledge; Lack of desire to disseminate knowledge; Lack of desire for research; Lack of desire for learning; Cultural weakness; Funding challenges for research.
<b>Strategies</b>	Building an Academic Communication Culture	Faculty-to-faculty educational and research interactions; Teamwork and collaboration; Educational and research communications; Student-to-student and student-to-librarian educational interactions; Faculty-to-student educational and research interactions; Faculty-to-librarian educational and research interactions; Cultivating a culture of knowledge dissemination and acquisition; Cultivating a culture of teamwork.
	Utilizing Information and Communication Technology (ICT)	Use of modern educational technologies; Use of modern educational methods; Use of modern research software; Use of new research methods.
	Information Resource Management	Collection and management of research data; Organization and processing of information resources; Making educational and research resources accessible; Information exchange and sharing; Information and knowledge retrieval.
	Organizational Structure Reform	Centralized structure; Organizational hierarchy; Educational and research structure reforms.
	Evaluation of Scientific Output	Assessment of scientific outputs; Identification of scientific outputs; Qualitative evaluation and selection of research and resources; Evaluation of information systems and networks; Design of information systems.
<b>Intervening Conditions</b>	Organizational-Specific Considerations	Violation of educational and research rules and guidelines; Lack of awareness and adherence to educational and research ethics guidelines; Lack of awareness of scientometric and bibliometric principles; Lack of regulations for approving research proposals and projects.
	Disadvantages of Research Information Disclosure	Lack of transparency in research results; Inability to analyze research information.
<b>Outcomes</b>	Increased Scientific Output	Growth in scientific outputs
	Cost Management	Preventing resource wastage; Proper utilization of resources.
	Teamwork	Enhancing participation; Participatory decision-making.



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Based on the identified indicators pertaining to the impact of academic and research interactions among faculty members, students, and librarians on the scientific outputs of the University of Mazandaran, a conceptual model was developed. This model consists of 16 main categories and 63 core components. The analysis followed the systematic grounded theory approach as proposed by Strauss and Corbin.

**Conclusion:** Given the scarcity of research examining the factors that influence educational and research interactions within this academic community, this study plays an essential role in identifying informational needs and facilitating access to specialized resources to support researchers and enhance scientific outputs. The documented interactions, collaborations, and shared experiences among faculty, students, and librarians are instrumental in advancing the university's strategic development goals, completing key programs, and empowering the institution to undertake large-scale and challenging national research.

**Value:** As a pioneering investigation, this study is the first to systematically examine the role of tripartite interactions among faculty members, students, and librarians at the University of Mazandaran in the context of scientific production.

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