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Improving the Quality of Research Proposals through the Utilization of Information Technology and Multicompetence

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Abstract. This research aims to identify the challenges faced by students when preparing research proposals and to describe the use of information technology and various competencies that can improve the quality of student research proposals. Despite the lack of interest in pursuing a career as a researcher, students are required to complete a final project that requires research skills. Students are trained in writing proposals, data collection, data analysis, and other research related tasks. Data analysis was carried out in a quantitative descriptive manner. The research respondents consisted of 110 Bali State Polytechnic (BSP) students who had taken research methodology courses, selected purposively. The findings show that the use of Google Scholar is rated as excellent, while the utilization of BSP campus repositories, the Publish or Perish web application, Sinta accredited publications, reputable journals, and Mendeley is rated as good. The results also confirmed that proficiency in English and computer skills significantly supported the smooth preparation of research proposals. To improve the quality of student research proposals, attention needs to be paid to six main areas: selection of research topics, provision of more intensive guidance, guarantee of access to international journals and Sinta or Scopus indexed articles, use of plagiarism detection websites, enrichment of teaching materials with comprehensive references, and improvement of lecturers' ability to explain teaching materials.

Keywords. information technology, multicompetence, research methodology, research proposal.

1. Introduction

The continuous advancement of learning technology is essential for adapting to modern needs. Challenges often arise from integrating audio, video, and internet technologies in educational contexts. Technology, defined as the application of scientific techniques and materials to achieve goals or solve problems, plays a crucial role in this process and information technology comprises tools that facilitate information processing tasks [1][2].

Quality human resources must possess 6C competencies: communication, collaboration, creative thinking, critical thinking, computational logic, and caring [3]. Enhancing human resources in a corporate setting is vital for effective management, particularly through improving employee competence and commitment [4]. Palan's iceberg model outlines six aspects of competence: knowledge, skills, values, self-concept, character, and motives [5].

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Students are encouraged to acquire 21st century skills, essential for the Industrial 4.0 era, as outlined by SN Dikti No.3 of 2020. Consequently, teaching and learning must equip students with the 6Cs to master new literacies in data, technology, and human interaction pertinent to Industry 4.0.

In higher education, students are required to write papers on specific subjects and complete a final assignment related to their research interests. Undergraduate and applied undergraduate programs in Indonesia ensure the achievement of graduate competencies through final assignments, which may include theses, prototypes, or projects, either individually or in groups. These programs also implement project based curricula and other learning and assessment forms to demonstrate competency achievement [6]. Research methodology courses are instrumental in assisting students with their final assignments in the D4 study program. These courses not only focus on research but also on adapting and demonstrating positive behaviours, preparing students to face everyday challenges effectively. Students are taught to be sceptical, analytical, and critical as part of the scientific method.

The Research Methodology course aims to enhance the quality of student thesis writing. Students are expected to develop a professional attitude, acquire sufficient knowledge of research methodology, and apply it in their field. Additionally, students should be able to prepare better research proposals and theses, ultimately publishing research that meets scientific writing standards and is accessible to the academic community. The Code of Federal Regulations [7] stated that research involves systematic investigation, including development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Research methodology encompasses the practices of conducting research in a way that ensures valid and reliable results, achieving research objectives [8].

Research methodology courses cover various topics that must align with the study program curriculum. These courses are consistent with other courses in the program and play a crucial role in guiding final assignments. Research knowledge and skills are essential for students to become critical thinkers who can approach problems logically and systematically.

Students and graduates must distinguish between right and wrong, opinion and fact, theory, and practice. Research and its application to real-world problems benefit students significantly [9]. Scientific research begins with identifying a problem from a phenomenon or research gap, formulating research questions, analysing data, and publishing results [10]. Initial publications typically take the form of reports and can later appear in journals or other formats. Students who develop research skills gain self-confidence and the ability to analyse problems systematically and objectively [11][12]. These skills enable them to quickly identify problems and devise solutions from multiple perspectives. This research aims to identify the challenges students face when preparing research proposals and to describe the role of information technology and multicompetences in enhancing the quality of student research proposals.

From the perspective of a research methodology lecturer, Head of the Study Program, and thesis examiner, one significant challenge for students is identifying research problems. Teaching research methodology is challenging due to the technical complexity of the material. Students often struggle with understanding research methods, accessing desired publications, finding inspiring research problems, and developing research proposals. A potential solution is to integrate information technology and multicompetence approaches to support the quality of student research proposals at the Bali State Polytechnic.

2. Methodology

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This study employs a quantitative research design to gather data for addressing issues related to the preparation of final assignments by BSP students.

2.1 Research Site

The research was conducted at BSP from April to September 2024.

2.2 Object of Research

The focus of this study is on how information technology and multicompetences support the quality of research proposals by BSP students.

2.3 Identified Variables

Three primary variables have been identified as the focus of the study: information technology, multicompetence, and the quality of the research proposals themselves. Information technology refers to the utilization of digital resources such as campus repositories, Google Scholar, Publish or Perish, Sinta, Scopus, and Mendeley. Multicompetence encompasses students' and lecturers' English proficiency, mastery of core courses, and computer skills. Meanwhile, the quality of research proposals is assessed by alignment with study program topics, identification of research gaps, theoretical frameworks, research objectives, novelty, methodology, assignment preparation, classroom and laboratory learning, and evaluation.

2.4 Operational Definition of Variables

Operational definitions standardize measurements for consistency [13]. Detailed indicators include utilization of specific IT resources, assessment of language and technical competencies, and various aspects of research proposal quality.

2.5 Data Sources

The study uses both primary and secondary data. Primary data collected directly through observations, interviews, and structured questionnaires. Responses are measured on a Likert scale ranging from Strongly Agree (SA) to Strongly Disagree (SDA). Secondary data sourced from curriculum documents, semester learning plans (RPS), lecture unit control (SAP), internet resources, and relevant previous research journals.

2.6 Determination of Population and Sample

The population consists of 110 students who have completed the research methodology course at BSP. Respondents were selected purposively, with data collection scheduled to accommodate students' availability.

2.7 Data Analysis

Descriptive analysis was employed to analyse the quantitative data. Responses were measured by a 1-5 Likert scale, interpreted on Table 2.1.

Table 2.1 Average Scale and Interpretation

Intervals	Criteria	Interpretation
4.21 - 5.00	Strongly agree	Very good/ Highly support/Very effective
3.41 - 4.20	Agree	Good/Support/Effective
2.61 - 3.40	Neutral	Good enough/Support enough/Effective enough
1.81 - 2.60	Disagree	Bad/Less support/Less effective

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1.00 - 1.80	Strongly Disagree	Worst/Very unsupported/ Highly ineffective

3. Result and Discussion

3.1 Result

Respondent characteristics are used to determine the diversity of respondents based on age, gender, and alumni from SMA/SMK. It is hoped that these characteristics can provide a clear picture of the respondents relating to the problem and research objectives.

3.1.1 Characteristics of Respondent by Age

Respondent characteristics based on age are presented in Table 3.1.

Table 3.1 Characteristics of Respondents by Age

Age (years)		Frequency	Percent
Valid	18-20	21	19.0
	21-23	88	80.0
	>23	1	1.0
	Total	110	100.0

Table 3.1 shows that most respondents were aged between 21-23 years, 88, with a percentage of 80%, and the least aged > 23 years, namely 1 person, with a percentage of 1%. So, based on the age characteristics of the respondents, most respondents are still young enough to complete their final assignment (thesis) in 2024.

3.1.2 Characteristics of Respondents by Gender

Respondent characteristics based on gender are presented in Table 3.2.

Table 3.2 Characteristics of Respondents by Gender

	Gender	Frequency	Percent
Valid	Male	50	45
	Female	60	55
	Total	110	100

Based on the gender characteristics of respondents in Table 3.2, there were 50 male respondents with a percentage of 45% and 60 female respondents with a percentage of 55%. The gender characteristics of the respondents show that most female respondents studied at BSP.

3.1.3 Characteristics of Respondents by Type of Secondary School

Respondent characteristics based on the type of secondary school are presented in Table 3.3.

Table 3.3 Characteristics of Respondents by Type of Secondary School

High School		Frequency	Percent
Valid	High School (SMA)	48	43.6
	Vocational High School (SMK)	62	56.4
	Total	110	100.0

Table 3.3 shows the characteristics of respondents based on the type of secondary school, there were 48 respondents from high school graduates with a percentage of 43.6% and 62 respondents came from vocational school graduates with a percentage of 56.4%. So, based on the characteristics of the respondent's type of secondary school, it shows that most respondents came from vocational school graduates.

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3.1.4 Respondents' Suggestions for Improving the Quality of Research Proposals

Respondents' suggestions for improving the quality of BSP student research proposals are presented in Table 3.4.

Table 3.4 Respondents' Suggestions

	Suggestions	Frequency	Percent
1	Research proposal preparation in class is effective for the number of students	20	18%
2	Lecturers should provide references and websites for final assignments	9	8%
3	Guide each chapter of the research proposal	2	2%
4	Discuss thesis progress more often	3	3%
5	Add more hours to Research Methodology Course	1	1%
6	Explain teaching material clearly and understandably	6	5%
7	Teach skimming techniques early to encourage reading journals	1	1%
8	Difficulty in determining the research gap	1	1%
9	Provide input on selecting research topics	17	15%
10	Give access to international journals and plagiarism checking websites	14	13%
11	Clarify guidelines for research proposals	13	12%
12	Emphasize quantitative and qualitative methods differences	2	2%
13	Align research methodology courses with field work practice programs	1	1%
14	Supervisors should guide students better in preparing research proposals	15	14%
15	Provide advanced research methodology materials	2	2%
16	Offer Research Methodology Courses in the final semester	1	1%
17	Proposals and theses are not tested	2	2%
	Total	110	100%

Table 3.4 shows that 18% of respondents' perceptions regarding learning to prepare research proposals in research methodology courses in class is effective because it follows the proportion of students and there are 82% of respondents' perceptions of providing suggestions for improvement.

3.2 Discussion

In this section, the presentation begins by identifying the problems faced by BSP students during the preparation of research proposals, which is then followed by describing the use of information technology and mastery of multicompetences that support improving the quality of research proposals.

3.2.1 Problems Faced During Writing Research Proposals

The problems faced by students while writing research proposals are presented in Table 3.5 which refers to Table 3.4 as the basis for naming the categories of problems faced by students while writing research proposals.

Table 3.5 Problem Categories

	Category	Percent
1	Selection of research topics.	15%
2	Guidance Process.	14%

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3	Access international journals, article websites in Sinta or Scopus indexed journals, and websites to check plagiarism.	13%
4	Guidelines for preparing research proposals.	12%
5	Completeness of teaching materials, references, and websites supporting the final assignment.	8%
6	Learning process	5%

Based on Table 3.5, there are six categories of problems that need solutions to improve the quality of BSP student research proposals. It can be explained that 15% of respondents said that lecturers should provide input regarding the selection of research topics, and 14% of respondents suggested that supervisors should guide their students better in preparing research proposals. 13% of respondents also stated that ideally students would be given links to access national and international journals and given access to article websites in journals indexed by Sinta or Scopus and websites to check plagiarism that are free and reliable. As many as 12% of respondents stated that the guidelines for preparing research proposals needed to be clarified.

Based on the problem category, six categories need attention to improve the quality of student research proposals, namely selecting research topics, a more intensive guidance process, access to international journals, article websites in Sinta or Scopus indexed journals, and websites to check plagiarism, completeness of material. teaching, references, websites supporting final assignments, as well as the lecturer's ability to explain teaching material so that it is easy for students to understand.

3.2.2 Information Technology that Supports the Smooth Preparation of Research Proposals

Learning technology continues to evolve along with the times. Information technology problems in implementing learning are often found in a combination of audio/data, video/data, audio/video, and internet technology. Technology is the application of science (a combination of scientific techniques and materials) to meet a goal or solve a problem [2]. Information technology support as a set of tools that help work with information and perform tasks related to information processing and preparing research proposals is presented in Table 3.6.

Table 3.6 Supporting Information Technology

	Indicator	Average	Information
1	I used the BSP campus repository.	3.74	Good
2	I use the Google Scholar website.	4.29	Very good
3	I use the Publish or Perish website.	3.72	Good
4	I refer to Sinta's accredited scientific publications.	3.67	Good
5	I refer to reputable scientific publications (Scopus, Web of Science, and Thomson Reuters).	3.47	Good
6	I use the Mendeley application for reference settings.	4.18	Good

Table 3.6 provide insight into the effectiveness of current research methodologies and the use of supporting information technology among respondents. Determining and searching for a research topic is an important first step that must be taken. The topics raised are following the study program and are currently trending in the study program science. Students can search for research topics through the campus repository. BSP students have made good use of the campus repository with an average score of 3.74. Furthermore, utilizes the Google Scholar web very

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well with an average score of 4.29, and has used the Mendeley application to organize references well with an average score of 4.18.

3.2.3 Competencies that Support the Smooth Preparation of Research Proposals

Competency is a person's ability which includes knowledge, skills, and attitudes, which can be realized in real work results that are beneficial for themselves and their environment. These three aspects of ability are interrelated and influence each other. A person's physical, mental, and spiritual condition has a big influence on a person's work productivity [14].

Lecturers and students are required to always develop and enrich themselves by learning and seeking new information related to learning and improving the quality of education, including learning research methodology and scientific writing. Lecturers and students must get used to reading to obtain information and continuously improve the quality of learning through changes and developments over time. By using the multicompetences developed as guidelines or standards, institutions can improve individual abilities. Regarding the quality aspect, students become more aware of the competencies, strengths and weaknesses that support the smooth preparation of research proposals so that students have a better opportunity to improve the quality of their research proposals [15]. Competency support is presented in Table 3.7.

Table 3.7 Supporting Competencies

	Indicator	Average	Information
1	I master English and use it to support research activities.	3.62	Support
2	The lecturer who teaches research methodology course masters English to support learning activities.	3.87	Support
3	The preparation of research proposals and theses is in accordance with the core curriculum subjects in the study program.	4.02	Support
4	I master computer skills to support proposal and thesis preparation activities.	4.17	Support
5	My lecturers master computer skills to support learning activities.	4.28	Highly support

Table 3.7 highlights the importance of both language and technical skills in supporting research activities, with both students and lecturers possessing competencies that enhance the research and learning process. Students' perception of lecturers who teach research methodology courses have mastered computer and English skills to support learning activities and the preparation of proposals. It turns out that mastery of computer and English skills by both students and lecturers supports improving the quality of student research proposals. The effectiveness of achieving these results is the implication of several indicators such as Table 3.8.

Table 3.8 Effectiveness of Research Methodology Learning

	Indicator	Average	Information
1	The final assignment in the form of preparing a research proposal and thesis has been effective.	3.95	Effective
2	Learning research methodology courses in class has been effective.	3.95	Effective
3	Learning in the laboratory related to completing final assignments in the form of research proposals and theses is following the Standard Operating Procedure.	3.70	Effective

4	The implementation of the evaluation of research methodology learning is good.	3.95	Effective

Based on Table 3.8, almost all of them stated that the learning process for the Research Methodology Course at BSP had been effective. An interesting indicator from the results of this research shows that giving assignments in learning in the classroom and the laboratory can stimulate student creativity, make students active, and create a comfortable classroom atmosphere in achieving effective learning goals. However, there are still new initiatives and innovations as solutions to overcome challenges as presented in Table 3.5.

4. Conclusion

Attention needs to be given to six key areas to enhance the quality of student research proposals: selecting research topics, providing more intensive guidance, ensuring access to international journals and Sinta or Scopus indexed articles, utilizing plagiarism detection websites, enriching teaching materials with comprehensive references, and improving lecturers' abilities to clearly explain the material. Students effectively search for research topics using the campus repository, which BSP students have utilized well with an average score of 3.74. Students have also made excellent use of the Google Scholar website, with an average score of 4.29, and the Mendeley application for organizing references, with an average score of 4.18. Lecturers teaching research methodology courses generally have strong computer and English skills, which are crucial for supporting learning activities and preparing research proposals. Proficiency in computer and English skills among both students and lecturers significantly contributes to the improvement of the quality of student research proposals.

References

[1] P. Haag, S., & Keen, *Information Technology: Tomorrow's Advantage Today*. New York: McGraw-Hill Companies, Inc., 1996.
[2] H. Marita, L. S., Suparni, A. A., & Rachmi, *Mudah memahami teknologi informasi dan komunikasi*. Yogyakarta.: Yogyakarta: Teknosan, 2021.
[3] I. Febriani *et al.*, *Wawasan Pendidikan*. Kudus: CV Sinar Jaya Mandiri Kudus: CV Sinar Jaya Mandiri Kudus, 2023.
[4] N. Husainah, "Employee Performance and Influenced By Competency, Leadership , and Commitment," *Dinasti Int. J. Educ. Manag. Soc. Sci.*, vol. 4, no. 6, pp. 891–900, 2023.
[5] R. Palan, *Competency Management: A Practitioner's Guide*, eBooks2go, ed. Rosetta Solutions, Inc., 2014.
[6] Mendikbudristek, "Peraturan Menteri Pendidikan, Kebudayaan, Riset, Dan Teknologi Republik Indonesia Nomor 53 Tahun 2023 Tentang Penjaminan Mutu Pendidikan Tinggi," 2023.
[7] ECFR, "Code of Federal Regulations," *National Archives*, 2024. https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-A/part-46/subpart-A/section-46.102 (accessed Feb. 20, 2024).
[8] K. Jansen, D & Warren, "What Is Research Methodology?," 2020. [Online]. Available: https://gradcoach.com/what-is-research-methodology/.
[9] K. H. Braguglia, Kay H & Jacson, "Teaching Research Methodology Using A Project-Based Three Course Sequence Critical Reflections On Practice," *Am. J. Bus. Educ.*, vol. 5, no. 3, pp. 347–352, 2012, [Online]. Available: https://clutejournals.com/index.php/AJBE/article/view/7007.
[10] C. Crouch, "Why research needs to be published in new and accessible formats," *Oxford*

University Press's, 2020. https://blog.oup.com/2020/06/why-research-needs-to-be-published-in-new-and-accessible-formats/.
[11] K. J. Kovach, *Practical Research and Statistics. eBook Partnership.* 2018.
[12] J. E. Leedy, P.D. & Ormrod, *Practical Research (9 th ed). :Upper Saddle River, NJ: Pearson.* 2010.
[13] Purwanto, "Variabel Dalam Pendidikan," *Teknodik*, vol. 10, no. 18, pp. 1–20, 2019, [Online]. Available: https://doi.org/10.32550/teknodik.v0i0.554.
[14] J. Mustafah, *Peningkatan Kompetensi Guru melalui pelatihan dan sumber belajar teori dan praktik*. Jakarta: Jakarta: Kencana, 2011.
[15] S.-C. Wong, "Competency Definitions, Development and Assessment: A Brief Review," *Int. J. Acad. Res. Progress. Educ. Dev.*, vol. 9, no. 3, 2020, doi: 10.6007/ijarped/v9-i3/8223.