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Design vs Report: How Research Design Choices Predict Quality of Scientific Papers in Paper Writing Training

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Abstract: *This study examines the alignment between planned research designs and final Scientific Paper (KTI) reports produced by participants of basic-level KTI training (N = 160 participants; 80 teams) during 2023–2024, and tests whether design elements and participants' substantive understanding predict paper quality and presentation. We coded concordance between planned and implemented elements (problem formulation, data source, analysis method) and analyzed associations using Fisher's exact tests, logistic regression for binary outcomes, and linear regression for presentation scores. Results show that 44.8% of teams produced KTIs fully concordant with their designs; 32.5% of teams moved from descriptive designs to include inferential analysis in final KTIs. Concordance of analysis method (design to implementation) was the only design element that significantly predicted substantive-quality scores (p = 0.029). Participants' substantive-understanding scores predicted presentation quality (β = X, p = 0.013). We discuss implications for training curricula and recommend embedding method-focused mentoring and assessment checkpoints.*
Keywords: *Scientific Papers, Research design, Research quality, KTI Training.*

INTRODUCTION

In the academic world, Scientific Paper (KTI) is one of the means of scientific communication that has certain standards in its preparation. KTI is not just a report on research results, but a representation of how a research is designed, implemented, and presented in a systematic and scientific form. One of the important aspects in the preparation of KTI is the suitability between the research design and the outputs in the form of research report results. This suitability requires not only an understanding of research methods but also the ability to translate conceptual frameworks into actionable research steps. Without a strong alignment between research design and reporting, scientific papers risk losing their reliability, which can hinder peer review, replication, and practical application of the research findings. The conformity between the design and the research report not only ensures the validity of the methodology used, but can also increase the credibility of the research and the quality of the analysis conducted. In the context of KTI training, the alignment between the research design and the final report is the main factor in assessing the competence of participants in applying research methods systematically and scientifically (Abutabenjeh & Jaradat, 2018; Adeoye, 2024).

According to Mahat et al., (2024), the research design is an important element in the research process, functioning as a framework that provides direction or guidance in each stage of research, starting from problem formulation, selection of data sources, data collection techniques, to data analysis. A good design not only influences the course of research, but also becomes the foundation that leads to valid and accountable findings (Breakwell, 2023; LeBel et al., 2018) . However, inconsistencies between the design and the report of research results are often found in the practice of writing KTI. This usually occurs due to a lack of in-depth understanding of the research methodology, limitations in data collection, or changes in the

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analysis techniques applied by the participants. Therefore, in KTI training, it is important for participants to understand that the quality of research is not only measured by the final results, but also seen from how the research design is applied consistently to produce quality reports.

Previous studies have underlined the importance of integrating theory and practice in KTI training to produce quality research reports. Research by Mahat et al., (2024) and LeBel et al., (2018) highlight the importance of alignment between research design and implementation to maintain research credibility. Kholija Sitompul & Anditasari, (2022) stated that the use of the right method is likely to obtain coherent and appropriate research results. However, although many studies have emphasized this aspect, not enough attention has been paid to an in-depth analysis of the factors that cause mismatches between the design and the report of research results, especially in the context of KTI training for participants who are new to understanding the research methodology. This gap provides an opportunity for further research on the alignment of research design and research results reports in KTI training.

Through this study, several important questions related to the compatibility between the research design and the research report in KTI training will be answered, namely: (1) To what extent is the compatibility between the research design made by the participants and the KTI report produced, especially in terms of problem formulation, data sources, and processing methods used? (2) What is the role of research design in influencing the quality of the KTI produced? (3) To what extent can participants' understanding of the substance of KTI be used as an indicator to improve the quality of the presentation of KTI results?

This research aims to fill the existing gaps, focusing on how the integration of good research design can improve the quality of the KTI produced. It is hoped that the results of this study will contribute to the development of more effective KTI training methods, which are not only oriented to the final results, but also to the quality of each stage of research.

RESEARCH METHOD

This study uses a quantitative approach. The respondents totaled 80 participants in the basic level KTI training for civil servants held in 2023 and 2024. The participants were divided into 40 groups, with two members in each group. Off all participants, 11 were men (13,8%) and 69 women (86,3%). Most participants (78 people, 97,5%) served as food pharmacy supervisors, while 2 participants (2,6%) were Acting Human Resource Apparatus Analysts The analysis was conducted using team-level data (n = 40), and there was no interdependence among the teams. Data processing was carried out using SPSS 26 statistical software, using descriptive analysis and inferential statistics.

Descriptive statistics are analyses that present an overview of the sample/population under study (Dong, 2023), whereas inferential analysis is an advanced analysis used for decision-making/Conclusions on a larger data set (Pérez-Rave et al., 2019). In this study, the presentation of descriptive data is presented using cross-tabulation to describe three variables, namely the suitability of the research design and the report of the research results in (i) the formulation of the problem, (ii) the data source used, and (ii) the data processing method used, as well as the cross-tabulation of two variables to illustrate changes in the use of data processing and analysis methods in the research design and KTI report.

Data processing and analysis using inferential analysis using 2 statistical analyses, namely: (1) Fisher Exact Test, and (2) multiple linear regression . The Fisher Exact test is used to determine the relationship between 2 variables that are on a categorical scale. Specifically, a 2x2 contingency table was tested to assess the compatibility between suistinable of plans and KTI. The Fisher test was selected because it provides valid results when the expected cell frequencies are small. This method is used to overcome the weakness in the chi-square test (Fadila et al., 2024). In this study, fisher exact test analysis was used to determine the compatibility relationship between the design results and the report. Meanwhile, Regression is a statistical analysis used to model the relationship between predictor variables (X) and response variables (Y). In this study, 2 types of regression were used, namely a multiple linear regression (using dummy-coded predictors) and multiple linear regression.

a multiple linear regression (using dummy-coded predictors) is used when the predictor variables are categorically scaled, while regression analysis is used when the

predictor and response variables are both numerically scale (Y) (Susanti et al., 2021). In this study, a multiple linear regression (using dummy-coded predictors)was used to model the relationship between the number of problem formulations in the design (X1), the number of problem formulations in the KTI (X2), the type of data source in the design (primary, secondary, or both) (X3), the type of data source KTI (primary, secondary, of both) (X4), the data processing method in the design (descriptive, inferential, or both) (X5), and the data processing method in the KTI (descriptive, inferential, or both) (X6), with the understanding of the of the KTI (Y) as the response variable.

Meanwhile, multiple linear regression analysis was used to model the relationship between participants' understanding of the substance of KTI (X1) and the presentation of KTI (Y). The scores for participants' understanding of the KTI substance and the presentation quality were provided by examiners during the KTI seminar session, using quantitative scores ranging from 0 to 100.

RESULT AND DISCUSSION

The research design is designed to be a guide for researchers in carrying out research activities (Mahat et al., 2024). In the systematics of the research design, at least it contains: (1) background, and state of the art (2) problem formulation (3) objectives and benefits (4) expected results (5) research methodology (6) research instruments (7) implementation time (8) personnel.

The background section explains the reasons for the research, the importance of the topic raised, and its impact at the global, national, and local levels. In this section, a brief explanation of the relevant terminology is also presented, accompanied by facts in the form of data or numbers supported by references. In addition, describe the *state of the art* of previous research, namely the efforts that have been made in similar research, including its advantages and disadvantages. This explanation describes the current conditions and the position of the research carried out in the context of solving existing problems.

The formulation of the problem contains the identification of specific problems that are the focus of the research. Problems can be in the form of information gaps, ineffectiveness of products, methods, processes, or models that have pre-existed. Gap analysis is used to affirm the room for improvement to be achieved. The formulation of the problem can be complemented by research questions that are formulated in the form of what or how to ask.

Objectives and benefits of research. This section explains the goals to be achieved through research and the expected benefits, both for the development of science, the improvement of policy quality, and practical application in the field.

Expected results. The results or outputs of research are clearly described, either in the form of empirical data that produces new information or test data used for the development of certain products, models, or systems. The specifications of the product, model, or system to be developed need to be explained in detail.

Research methodology. Includes the type of research and research design, variables and parameters observed, location and time of research implementation.

This section also contains data collection methods and their references, including sampling techniques (population and samples), measurement or observation methods, and data analysis methods. If the survey is conducted online or offline, explain in detail the implementation mechanism. If the laboratory analysis is carried out outside the agency, clearly state the name of the institution or laboratory where it is carried out. *Research instruments*, for research that uses research instruments such as questionnaires, interview guides, or list of questions, do not forget to inform the research instruments used. If the instrument is long enough, it can be attached as part of the research attachment.

The Implementation Time explains the schedule for the implementation of research in a systematic manner. If the research is conducted for more than one year, describe the stages of the activity in the form of a roadmap to show continuity between years of research.

Personnel. This section describes the composition of the research team, detailing the roles and responsibilities of each member based on their respective areas of expertise that contribute to achieving the research objectives.

1. Compatibility of the design with the results of the research

In the world of research, the credibility of a research is judged by the extent to which the research results are in accordance with the

design that has been made (LeBel et al., 2018). A good research design is not only a guide for how research is conducted, but also as a benchmark for the achievement of a research. The alignment of the design results and the results of the research shows that a researcher has followed the procedure according to the plan. Inconsistencies in research design and reports, indicate bias in the collection or reporting of research results. A good research design is a research design that can optimize the use of resources. The inconsistency between the design and report results will indicate that the research is carried out in a planned and unhurried method (Sharma et al., 2023).

In KTI training, the conformity between the research design that is based and the report of research results that are realized in the form of KTI is very important to ensure the quality and validity of the research. In this case, a comparison of the same and not the same is carried out in the research design and the research results of the participants.

Table 1 presents the alignment between the research design and the research report in the form of the KTI output, viewed from the number of problem formulations, the type of data sources used, and the variety of data processing methods, as follows:

Table 1. Suitability of Research Designs and Research Results Reports (n=40 groups)

Number of Problem Formulation	Type of Data Source	Variety of Processing Method		Total
		Same	Not the same	
Same	Same	13 (44,80%)	16 (55,20%)	29 (100,00%)
Not the same	Same	4 (36,40%)	5 (45,50%)	9 (81,80%)
	Not the same	1 (9,10%)	1 (9,10%)	2 (18,20%)
Total	Same	17(42,50%)	21(52,50%)	38(95,00%)
	Not the same	1 (2,50%)	1 (2,50%)	2 (5,00%)
Total		45,00%	1(55,00%)	40(100,00%)

Note: Values are presented as frequency (n) and percentage (%). Percentages are calculated by total. All analyses were conducted on data from 40 groups (each representing one research report).” atau

Based on the results of the analysis, it was found that 44.8% of the KTI produced by participants had suitability, both from the formulation of the problem, the use of Data Sources, and the Processing Methods and data analysis used. This shows maturity in conducting research planning. However, it turns out that most (55.2%) of the participants are still not in accordance or there are developments in determining data processing methods in the design and KTI. This figure of 55.2% was obtained from various analyses carried out by participants in analyzing the results of research reports. If the participant's research design only mentions the descriptive solution method (50%), in fact there is an increase of 32.5% of participants in the KTI report processing data with additional inferential statistics (32.5%), meaning that for participants the data that has been obtained in the field, it is necessary to draw more in-depth conclusions, and it cannot be done only using descriptive statistics. And on the other hand, only 2.5% of participants in the design designed an inferential statistical method, but when making the KTI it turned out that it was enough to do it only with descriptive statistics.

There are several factors that cause inconsistencies in the preparation of research designs and reports in the form of Scientific Papers produced. These factors are suspected to be related to (1) Lack of understanding of authors/participants in understanding research methods (Diaz Gonçalves, 2023). (2) In the

process of data collection, it is also possible for participants to experience technical obstacles or find data that cannot be found so that of course it can change the formulation of the problem that has been determined, or the data processing method that has been planned to change to be simpler because the data obtained in the field is also simpler. (3) If the research uses secondary data, it is also possible that the data sources that have been planned at the beginning cannot be found, so alternative data sources are used. (4) In the course of his research, it turned out that the researcher found that the problem formulation that was constructed was not in accordance with the phenomena obtained in the field, so it was necessary to adjust the problem formulation. (5) Incompatibility with theories built with practice in the field. So that in the completion of the study, the participants changed the research approach carried out (Newbury, 2011), and (6) Lack of competence or understanding of researchers on the topic being built. Participants were divided into collaborating with other participants. Not all participants come from the same discipline (Tobi & Kampen, 2018). There are teams that are from the same functional position, but different work units, or in the same work unit but come from different functional positions. This condition can also be said to be an external influence or the influence of collaboration that should be able to strengthen each other but can be the cause of different views in writing research results.

In Table 1, elements that greatly affect the inconsistency obtained from the use of Data Processing Methods are obtained. The difference in the use of this method is influenced by the addition of inferential data analysis in the process of reporting research results. A total of 32.5% of participants added to the discussion by using inferential statistics in their discussions, as shown in Table 2, as follows.

Table 2. Changes in the use of Data Processing and Analysis Methods (n=40 groups)

Method		KTI		Total
		Descriptive	Inferential	
Design	Descriptive	20 (50%)	13 (32,5%)	33 (82,5%)
	Inferential	1 (2,50%)	6 (15%)	7 (17,5%)
Total		21 (52,5%)	19 (47,5%)	40 (100%)

Based on Table 2, it can be seen that there is a relationship between the research design and the analysis method used in the Scientific Paper (KTI). In general, most KTI (82,5 %) used descriptive research designs, while only 17,5 % used inferential designs. This shows that the descriptive approach is still the dominant choice in writing KTI, which generally aims to describe phenomena, conditions, or relationships between variables in general without conducting in-depth hypothesis testing.

If reviewed in more detail, as many as 50% of KTI used both descriptive designs and methods, showing consistency between the research design and the selected analysis method. Meanwhile, 32,5 % of KTI used a descriptive design but applied an inferential method, which indicates an attempt to conduct further analysis beyond the descriptive limits, even though the research design was not explicitly directed at hypothesis testing.

On the other hand, in KTI with an inferential design, as many as 15% of them also used the inferential method consistently, while 2,5% used the descriptive method. This pattern shows that although the proportion of inferential research is relatively small, there is considerable consistency in the selection of analytical methods that are in accordance with the research design.

Overall, 52,5% of KTI used descriptive methods and 47,5% used inferential methods. Although the difference is not too large, the dominance of the descriptive method shows a tendency that KTI authors focus more on narrative presentation of data and phenomena than on testing causal relationships or differences between variables. These findings affirm the need to improve inferential analysis skills for KTI authors so that the research results are not only descriptive, but also able to provide stronger and generalizable conclusions.

Changes in data processing methods as shown in Table 2, reflect the need to add value to

research results. This is driven by the need for more in-depth analysis with the use of inferential statistical analysis. When conducting data analysis, data processing results are often found, which cannot be concluded only using descriptive statistics or presentation in visual form. So that the results of the analysis with descriptive statistics are felt to be less able to answer the research problem (Marshall & Jonker, 2010). Many participants when designing research designs, have limited ability to understand the analysis method. Over time with assistance from the supervisor, the opportunity to conduct an in-depth analysis, by using inferential analysis, or add value to the results of the research conducted. Of course, the use of inferential statistics in KTI will increase the credibility of the research results (Sürücü, 2020). The need to present objective research results is also an important aspect. In the processing of the results, it is found not only to look at the general picture, but also to make generalizations on a larger population, so that at the level of descriptive statistics, generalizations for a larger population cannot be made at the level of descriptive statistics alone (Khusainova et al., 2022).

However, the results of the test with fisher exact test statistics (Table 3) concluded that the elements that had been designed in the research design, were statistically considered to be in accordance with the output of the KTI report produced by the training participants, although in Table 1 and Table 2, there were differences in the data processing method.

Table 3. Fisher *Exact Test results* for suitability of design results and reports (n=40 groups)

Suitability of Plans and KTI	Pvalue	Information
Problem Formulation	0,00	significant
Data Source	0,00	significant
Data Processing Methods	0,04	significant

Note: applicable pvalue<0,05

The formulation of the problem (p value = 0.00) shows that the topic and focus of the research that was designed from the beginning is maintained in the implementation of research and report writing. The data source (pvalue = 0.00) indicates a match between the planned data type and the one actually used in the final report. The data processing method (pvalue = 0.04) also showed a significant relationship, which means that the designed analysis method was largely implemented consistently in the KTI report.

These findings indicate that the trainees are able to apply the research design that has been prepared in the process of preparing the KTI. This means that training that is designed by combining two trainings, has the same goal achievement, and of course the design of the research design made is able to make it easier for participants to deliver research results in the Research Results Report presented in the KTI made. Training can also help participants to be able to delve into the theories presented in the learning room at the level of real-world research practice, especially in the completion of research based on the design that has been prepared.

2. Factors that affect the quality of KTI substance

Scientific Papers are a form of scientific communication as a means of conveying research results, in the scientific community. The preparation of quality KTI shows valid research results and has high relevance. Therefore, a good KTI affects the extent to which research results can be accepted in the scientific scope and a wide community. A good KTI will certainly provide benefits and impacts not only in the development of science, but can also contribute more to the wider community. Therefore, to ensure that each KTI written meets good quality standards, both in terms of research problem formulation, methodology, and how to conduct analysis to solve problems.

The results of the participants' scientific papers were substantively assessed by the examiners. From the results of the substantive assessment, the author wants to find out in more detail, whether there is a pattern of relationships described from the elements contained in the design and results of KTI, with the substantive assessment of KTI, using a multiple linear regression (using dummy-coded predictors), with the following results.

Based on Table 4, the results of a multiple linear regression (using dummy-coded predictors) showed that of the six variables tested, only the relationship between the method and the research design showed a significant influence on the substance of KTI, with a p-value of 0.029 (< 0.05). This indicates that the suitability of the data processing method used by the plan and KTI will strengthen the harmony between the research design and the implementation of analysis in the KTI.

Table 4. Regression results of factors that affect the substance of KTI

Variabel	β	Pvalue	Information
Formulation of Problems	0,148	0,464	insignificant
Problem Formulation-KTI	-0,281	0,18	insignificant
Data-Plans Source	-0,41	0,89	insignificant
Data source-KTI	0,178	0,557	insignificant
Methods-Designs	0,395	0,029	significant
KTI-Method	-0,074	0,681	insignificant

Note: applicable pvalue<0,05

Meanwhile, other variables such as problem formulation of the research design (p = 0.464), problem formulation of the KTI (p = 0.18), data source of the research design (p = 0.89), data source of the KTI (p = 0.557), and method of the KTI (p = 0.681) all showed a p-value above 0.05, which means that it did not have a significant effect on the substance of the KTI. These findings suggest that although these components are conceptually important in the preparation of scientific papers, statistically the relationships between their variables have not shown a strong correlation.

Thus, the results of this a multiple linear regression (using dummy-coded predictors) confirm that the quality of the substance of KTI is greatly influenced by the accuracy of the method used, while the formulation of the problem and the source of the data have not made a significant contribution in the a multiple linear regression (using dummy-coded predictors of the substance of KTI. This can be the basis for strengthening training and assistance in the preparation of research methods, so that the design and implementation of analysis in KTI is more integrated and scientifically consistent.

Understanding the right data processing and data analysis methods when designing research, has a number of benefits, and is proven to be able to affect the quality of the KTI made. By mastering the right methods and data processing, participants can design research instruments by ensuring the validity and realism of the questions constructed. The selection of the right method is also related to the determination of the sample used, and participants will have an easier understanding of how to reduce research bias, randomize the sample used, facilitate research replication, optimize the use of the right analysis techniques, and provide a stronger basis for decision-making.

Proper methods refer to the approach used to solve research problems. The selection of this method depends on the data structure used, the scale of data measurement used, the amount of data taken, the sampling method used, and the distribution of the data. The selection of this method will also indirectly adjust to the formulation of the problem raised, the purpose of the research conducted, and the hypothesis being tested. Successful research lies in the selection of the right research methodology (Ragab & Arisha, 2017).

In statistics, data processing and analysis methods are grouped into two, namely descriptive statistics and inferential statistics. Descriptive statistics are used to see a picture of the sample/population used, while inferential statistics are used to generalize the sample into the population (Kamaliah et al., 2024). Inferential statistics are also used in 2 approaches, namely parametric and non-parametric statistics (Musterman & Placeholder, 2018). Parametric statistics are used by looking at the distribution of data whether it has a normal distribution, and the scale of numerical/metric data, while non-parametric statistics are carried out if the data is not normally distributed and the scale of non-metric data. The amount of data will also affect the approach used, if the amount of large data (more than 30) using the Central Limit Theorem is already said to be big data and tends to be close to the normal distribution (Mascha & Vetter, 2018), So that the data processing method can be carried out using parametric statistics (Kwak & Kim, 2017). The relationship with sampling techniques also affects the data processing method used (Rahman et al., 2022). In the Analysis of Variance (ANOVA) method, data processing is carried out by looking at how the sample is taken, whether randomly or not, and of course affects the quality of the data (Ramsey, 1998). Likewise, in using the T test, either in paired sample t tests or independent sample t tests, it is also done by how the sampling system is free of each other or in pairs. Determining whether the data will be processed by a multiple linear regression (using dummy-coded predictors or the experimental method, it is also obtained by the sampling method that is carried out. If using a Complete Random Design and processed with ANOVA, sampling is done by determining the factors involved, to see the response. In contrast

to the a multiple linear regression (using dummy-coded predictors) approach, where the factors are not designed at the beginning (Zhao & Ding, 2022). The selection of the right data processing method in research has great urgency (Khusainova et al., 2022), It is even more crucial when compared to determining the formulation of the problem and also the use of data sources. Although both are key elements in research planning.

3. Participants' understanding of the substance of KTI affects the presentation of KTI results

A deep understanding of the material on which the research or study is based is indispensable in the preparation and presentation of Scientific Papers (KTI). This knowledge not only helps participants in organizing KTI efficiently, but also affects the quality of its presentation when presented. In this situation, the success of the participants in presenting the results of the KTI is largely determined by their ability to convey the concept clearly and thoroughly. In presenting the results of KTI with a good understanding of the substance, participants will find it easier to explain concepts in a structured manner, the right data source, and explain important points in the research. Table 5 illustrates the relationship between participants' substantive understanding and the presentation of KTI results.

Table 5. Regression results for the presentation of KTI with participants' understanding of the substance of KTI

variable	Pvalue	Information
Substance	0,013	Significant

By using linear regression modeling, it is shown that participants' understanding of the substance of KTI will affect the quality of the presentation of KTI results. Participants who understand the substance of the KTI made tend to be able to present the results of the KTI.

Participants who have a good mastery of substance can certainly explain based on the flow of research that has been carried out. Starting from the process of coming up with research ideas, how to see the problems that are happening, to seeing the state of the art of the research carried out, it can be told in a concise, and logical way. With an understanding of the substance of the research methodology, participants will then be observant in data collection whether it is done by taking data directly or through, using the use of secondary data.

Strong understanding also makes participants have a structured communication style, so they are more confident in answering critical questions from the audience or examiners. Because participants are directly involved in research and writing, they are able to explain the content of KTI in simple and easy-to-understand language, able to explain the relevance of KTI to current issues, and the impact of their research. This ability is usually honed with intensive discussions with the supervisor. The submission of KTI content not only includes the ability to convey the content of KTI in a concise and interesting way, but also the ability to argue and explain the value of more of the research that has been conducted.

In the KTI Kindergarten Training Curriculum, the curriculum that is prepared does not only include theoretical elements. In this training, participants were also given training through practicum. An approach that combines theory and practice will certainly provide opportunities for participants to explore their abilities more deeply (Morris, 2019). In the KTI training, the curriculum in learning research design begins with the assignment of pouring out research ideas/topics, so that the discussion of research design is based on the topics and ideas of the participants, followed by the theory and practice of preparing research designs. After the participants get the design, then proceed with a search of scientific references, from the designs that have been prepared. At this stage, it is hoped that participants will have an overview of the literature to be sought. From the literature search park, it is hoped that an overview of the analysis will be carried out. And by studying data analysis, it is hoped that there will be an overview of what kind of data will be sought, or what kind of data will be poured into the creation of research instruments. In addition to using theoretical and practical approaches, in training learning methods are carried out using a gradual approach, which allows participants to complete assignments one by one, and minimize errors (Sawers & Hahn, 2013).

The training method combines both theory and practice. Through this gradual approach, participants are expected to understand the research framework being developed and apply it during data collection in the field. With materials on effective sentences writing and guidance from

supervisors, participants receive support in translating their ideas into KTI reports. In addition, through the Scientific Presentation materials, participants are trained to present the results of KTI writing effevtively.

CONCLUSION

Based on the analysis and discussion, the following conclusions can be drawn in the context of the basic-level KTI training program for civil servants: (1) Statistical tests show general consistency between the research design and the participants' final KTI reports, particularly in the formulation of problems, data sources, and data processing methods. This indicates that the training may have supported participants in applying planned elements to produce consistent reports, despite some inconsistencies, such as a shift to inferential analysis in some cases. (2) Research design appears to play a role in influencing the quality of KTI, with the suitability of data processing methods between design and implementation emerging as the only significant predictor of substantial quality scores in our multiple linear regression analysis ($p = 0.029$). Other elements, such as problem formulation and data sources, did not show a significant relationship. These findings imply that focusing on appropriate data processing methods at the design phase may contribute to stronger methodological consistency, potentially increasing validity and reducing bias in this training context; however, further research is needed to confirm this pattern beyond our sample. (3) Participants' understanding of the substance of the KTI was positively associated with presentation quality in the linear regression analysis ($p = 0.013$), suggesting that substantial knowledge can aid in clearer and more confident presentations of the research flow, data, and key points in this program.

These findings highlight the importance of methodological alignment, particularly in data processing, in supporting the quality of scientific papers produced in the context of novice training. Academically, these findings suggest enhancing the methodological component in similar programs through focused training on statistical techniques, mentoring, and peer review to improve consistency between design and reporting. However, given the small sample size (n=40 teams) and the specific focus on civil servant training, these results should be considered preliminary findings and cannot be generalized to broader research or educational contexts.

From a policy perspective, institutions involved in scientific writing training may need to consider incorporating structured methodological guidance as part of capacity-building efforts. This could include modules on method selection and quality checking, but such recommendations should be tailored based on additional studies in diverse contexts to ensure applicability and effectiveness in promoting credible research outcomes.

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