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PILOT STUDY EFFECTS OF FIELD TRIP AND GROUP DISCUSSION METHOD ON STUDENTS' PERFORMANCE AND INTEREST IN PRACTICAL AGRICULTURE IN COLLEGES OF EDUCATION IN NORTH WEST, NIGERIA

BY

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Abstract

This study investigated the Pilot Study Effects of Field Trip and Group Discussion Method on students' Performance and Interest in Practical Agriculture among NCE II Agricultural Education students in Colleges of Education in North-West, Nigeria. The study was motivated by the persistent low students' performance, declining interest in Practical Agriculture concepts associated with the continued use of conventional instructional methods. Four specific objectives, four research questions, and four corresponding null hypotheses guided the study. A quasi-experimental research design, specifically the pre-test-post-test and control group design, was adopted. The study involved a population of 70 NCE II Agricultural Education students drawn from six Colleges of Education in North-West Nigeria. A sample of 70 students from two purposively selected intact classes was used for the study. The two intact classes were randomly assigned to the experimental and control groups through balloting, with the experimental group comprising 48 students taught using Field Trip, 25 students taught using Group Discussion 23 and the control group comprising 22 students taught using the conventional teaching method. Data were collected using the Practical Agriculture Performance Test (PAPT) and the Practical Agriculture Interest Questionnaire (PAIQ), both of which were validated by experts and established to be reliable. Descriptive statistics (mean and standard deviation) were used to answer the research questions, while independent samples and paired samples t tests were used to test the null hypotheses at the 0.05 level of significance. The findings revealed that there was no statistically significant difference between the pre-test mean performance scores of students in the experimental and control groups, indicating that both groups were academically comparable before the instructional intervention. However, after the treatment, students exposed to Experimental performed significantly higher, students' performance developed greater interest in Practical Agriculture concepts than those taught using the conventional teaching method. It was therefore concluded that Experimental is an effective instructional for improving students' performance and interest in Practical Agriculture in Colleges of Education. The study recommended that Colleges of Education should institutionalize the use of Experimental in Agricultural Education programmes, while the National Commission for Colleges of Education (NCCE).

Keywords: Field Trip, Group Discussion Students Performance and Interest in practical Agriculture in Colleges of Education ITLE PAGE

Introduction

Pilot study is a small-scale preliminary investigation conducted before the main data collection, In the field of research, conducting a pilot study is a critical step in the overall research process. Pilot studies serve as a preliminary phase that allows researchers to test research instrument, and refine item on the instruments (Muasya and Mulwa 2023). This is a preparatory work is crucial for identifying potential issues that could

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jeopardize the main study, through pilot study, the researcher can detect and address possible problems, estimate time, resources required, improve overall quality and success of the main research. Moreover, According to Teresi (2022). Pilot studies provide opportunity to gather preliminary data that is valuable for refining research hypotheses and improving the main study design. A pilot studies is use to examine internal consistency of the research instrument, evaluate clarity, structure, relevance of questionnaire items, and to identify any ambiguities, or redundancies that could compromise validity of the main study.

The pilot study is important to the main research because it helps ensure the validity and reliability of the research instruments used to measure students' academic performance and interest in Practical Agricultural. By testing the instruments on a smaller scale, the researcher can identify ambiguous items, inappropriate difficulty levels, or procedural weaknesses and make necessary modifications prior to the main study. Furthermore, the pilot study provides an opportunity to evaluate the practicality of the research design and treatment procedures, including the use of field trip, group discussion, and data collection methods. It also helps in estimating the time required for instruction and assessment and assessing students' readiness to engage with practical-based learning environments. According to Herniawati, Holifah and Syakur (2025), pilot testing in practical-based studies enhances methodological rigor and minimizes potential errors during the main research In addition, the pilot study is intended to assess the feasibility of implementing practical-based instruction, including the experimental and control of pre-test, post-test, and test procedures. Conducting a pilot study enables the researcher to identify possible instructional, technical, and logistical challenges associated with the use of practical agriculture.

Statement of the Problem

The teaching of Practical Agriculture in Colleges of Education in North East Nigeria faces several challenges, including low student performance and limited engagement. Traditional teaching methods, such as lectures and textbook-based learning, may not be adequately foster deep understanding or stimulate students' interest in the subject, Lora (2016). Ogbuluijah (2018) and Mu'azu (2020) stated that students' performance in Practical agriculture is faced with a number of problems such as student inability to perform their role, lack of skills by the students to perform certain practical activities in school. However, sometimes Practical agriculture observed, low performance as a result of ineffective method of teaching applied, therefore anticipates that the two Practical teaching method will be the change of performance. Students' Performance in practical agriculture is faced with a number of problems such as student inability to perform their role, inadequate skills by the students to perform certain practical activities in school, (Umar & Usman 2020). Therefore, Nigerian Certificate in Education (NCE) programme through practical agriculture is taught at Colleges of Education to equip students and recipients with practical and applied skills as well as basic scientific knowledge. To achieve this objective. National Commission for Colleges of Education (NCCE) minimum standard (2020) stated that NCE curriculum of practical agriculture emphasize that theory should be integrated with practical. The introduction of more interactive and hands-on teaching strategies, such as Field Trip and Group Discussion methods, is believed to potentially improve student engagement and performance in practical Agriculture.

Purpose of the Study

The purpose of the study, to determine the Effects of Field Trip and Group Discussion method on students' performance and interest in practical agriculture in Colleges of Education in North West Nigeria. The study specifically sought to:

1. Determine pre-test mean score difference of the students' in experimental and control groups in practical agriculture in Colleges of Education in North West, Nigeria
2. Find out pre-test mean interest difference of the students in the experimental and control groups in practical agriculture in Colleges of Education in North West, Nigeria
3. Determine post-test mean score difference of the students in experimental and control groups in practical agriculture in Colleges of Education in North West, Nigeria

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4. Find out post-test mean interest difference of the students in the experimental and control groups in practical agriculture in Colleges of Education in North West, Nigeria.

Research Questions

The following research questions guided the study:

1. What is the difference between mean performance score of the students' in pre-test of experimental and control groups in practical agriculture prior to treatment?
2. What is the difference between mean performance interests of the students' in pre-test of experimental and control groups in practical agriculture prior to treatment?
3. What is the difference between mean performance score of the students in post-test of experimental and control groups in practical agriculture prior to treatment?
4. What is the difference between mean performance interest of the students in post-test of experimental and control groups in practical agriculture prior to treatment?

Research Hypothesis

Test the following null hypotheses at 0.05 level of significance:

1. There is no significant difference between mean performance score of the students' in pre-test of experimental and control groups in practical agriculture prior to treatment?
2. There is no significant difference between mean performance interests of the students' in pre-test of experimental and control groups in practical agriculture prior to treatment?
3. There is no significant difference between mean performance score of the students in post-test of experimental and control groups in practical agriculture prior to treatment?
4. There is no significant difference between mean performance interest of the students in post-test of experimental and control groups in practical agriculture prior to treatment?

Methodology

This section described the methodology that was adopted for the pilot study, which includes the Population, Instrument for Data Collection, Validation of the Instrument, Reliability of Instrument, Procedure for Data Collection, and Procedure for Data Analysis. A pilot study was conducted in College of Education Kano, Federal College of Education (Technical) Bichi and Federal Colleges of Education Zaria. The population of the study consists of 70 Agricultural education students of NCE II. The choice of the Colleges was because the institutions are located outside the area of the study and has common characteristics with the study institutions. Two main instruments were used for data collection in the pilot study. The first instrument was the Practical Agricultural Performance Test (PAPT), consisting of multiple-choice objective items designed to measure students' academic performance in Practical Agricultural. The second instrument was Interest Practical Agricultural Questionnaire (IPAQ) questionnaire designed to measure students' interest in learning Practical Agriculture. The questionnaire items were structured on a Likert-type scale. The result of the Pilot Study was used to determine the reliability and feasibility of the instrument. All the two instruments were administered with the help of four research assistants.

The validity of the instruments was established through face and content validation. Copies of the instruments were submitted to experts in Agricultural Education, Educational Technology, and Measurement and Evaluation. Their comments and suggestions were used to improve the clarity, relevance, and appropriateness of the items. Items found to be ambiguous or irrelevant were modified or removed based on the experts' recommendations. The reliability of the instruments was determined using appropriate statistical techniques. The reliability of the Practical Agricultural Performance Test was determined using Kuder–Richardson Formula 20, while the reliability of the students' interest Practical Agricultural Questionnaire was determined using Cronbach's Alpha method. Data obtained from the pilot study were used to compute the reliability coefficients in order to ascertain the internal consistency of the instruments before their use in the main study. The data collected from the pre-test, post-test, interest (Pre and Post Interest) was analysed using descriptive

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and inferential statistical tools. The Mean and Standard Deviation was used to answer the research questions. The decision rule was based on mean difference and mean range. The Analysis of Variance (T-TEST) was used to test the hypotheses at 0.05 level of significance. In testing the null hypotheses, where the *p*-value is greater than .05 ($p > .05$), the null hypothesis was accepted and where *p*-value is less than or equal to .05 ($p \leq .05$), the null hypothesis was rejected. Statistical Package for Social Sciences (SPSS) was used in carrying out the analysis.

Results

Research Question One: What is the difference between mean performance score of the students in in pre-test of experimental and control group?

The result of descriptive statistics presented in Table 4 show the pre-test mean performance scores of the two groups (i.e., experimental and control group). The results indicated that the mean performance score of practical agricultural performance students in pre-test (M = 68.42, Std. Dev = 6.51) is slightly greater than the mean performance score of control group students (M = 63.27, Std. Dev = 6.74) in the pre-test. This result suggests that there was a slight difference between the two groups in terms of their Practical Agricultural Performance scores before starting the experiment.

Table 1: Determine the difference between mean performance scores of students in pre-test of experimental and control group prior to treatment in Practical Agriculture.

Variable	Group	N	Mean	Std.Dev	Mean Di
Pre-test	Experimental	48	68.42	6.51	5.15
	Control	22	63.27	6.74	
	Total	**70**			

Source: FIELD WORK, 2026

Research Question Two: What is the difference between mean performance interest score of the students in pre-test of experimental and control group?

The result of descriptive statistics presented in Table 5 show the pre-test mean interest scores of the two groups (i.e., experimental and control group). The results indicated that the mean interest score of practical agricultural performance students in pre-test (M = 3.12, Std. Dev = 0.43) is slightly greater than the mean performance score of control group students (M = 3.05, Std. Dev = 0.45) in the pre-test. This result suggests that there was a slight difference between the two groups in terms interest of their Practical Agricultural Performance scores before starting the experiment.

Table 2: Find out of difference between mean performances interests of students in pre-test of experimental and control group prior to treatment in Practical Agriculture.

Variable	Group	N	Mean	Std. Dev	Mean Di
Interest	Experimental	48	3.12	0.43	0.07
	Conventional	22	3.05	0.45	
	Total	**70**			

Source: FIELD WORK, 2026

Research Question Three: What is the difference between the post-test mean performance scores of students taught Practical Agricultural using experimental and control method?

A descriptive statistical analysis was conducted to examine the difference between the post-test mean performance scores of students taught Practical Agricultural using experimental and control method. The results in Table 6 show a difference in post-test mean performance scores, with experimental students scoring higher (M = 73.71, Std. Dev =6.88) than control group students (M = 63.27, Std. Dev = 6.74). This indicates that students taught with the experimental m performed better in Practical Agriculture than their counterparts taught with the control group.

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Table 3: Determine the difference between mean performance scores of students in post-test taught using experimental and those taught using control group in Practical Agriculture prior to treatment

Variable	Group	N	Mean	Std. Dev	Mean Diff.
Post-test	Experimental	48	73.71	6.88	10.44
	Control	22	63.27	6.74	
	Total	**70**			

Source: FIELD WORK 2026

Research Question Four: What is the difference between mean performance interest of students in post-test taught using experimental and control group in Practical Agriculture?

Table 4 presents descriptive statistics comparing the mean interest of students taught Practical Agriculture using experimental and those taught using control group. The results reveal a difference in interest scores, with practical agriculture students' performance a higher mean interest score (M = 3.78, Std. Dev = 0.42) compared to control group students (M = 3.18, Std. Dev = 0.43). This indicates that students taught practical agriculture using experimental better than those taught using the control group.

Table 4: Find out the difference between mean performance interest of students in post-test taught using experimental and those taught using control group in Practical Agriculture

Variable	Group	N	Mean	Std. Dev	Mean Diff.
Interest	Experimental	48	3.78	0.42	0.60
	Conventional	22	3.18	0.43	
	Total	**70**			

Source: FIELD WORK, 2026

Hypotheses Testing

An independent samples t-test and paired samples t-test were used to test the null hypotheses (1 to 4).

Test of Null Hypothesis 1: There is no significant difference between mean performance score of students in pre-test taught using experimental and those taught using the control method in Practical Agriculture

An independent samples t-test was conducted to examine difference between mean performance scores of students in pre-test taught using experimental and those taught using the control method in Practical Agriculture. The results in Table 8 Null Hypothesis 1 indicate statistically significant difference between mean performance scores of students in pre-test taught using experimental (M = 68.42, Std. Dev = 6.51) those taught using the control method in Practical Agriculture (M = 63.27, Std. Dev = 6.74), t (68) = 3.29, p = .002. Therefore, the null hypothesis is rejected. 1. This finding suggests that the mean difference was 5.15 favour of the experimental groups of students come from the same population, as they were statistically equivalent in their pre-test mean difference scores at the start of the experiment.

Table 5: Independent Samples mean performance scores of student's t-test of pre-test taught using experimental and those taught using the control group prior to treatment in Practical Agriculture

Levine's Test for Equality of Variances									
Variable	**Groups**	**N**	**Df**	**Sig.**	**t-value**	**Mean**	**Std. Dev**	**p-value**	**Decision**
Pre-test	Experimental	48	68	.002	3.29	68.42	6.51	5.15	Accepted
	Control	22				63.27	6.74		
	Total	**70**							

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Source: FIELD WORK, 2026

Test of Null Hypothesis 2: There is no significant difference between mean interest scores of students in pre-test and post-test taught using Field Trip in Practical Agriculture

A Independent samples t-test was conducted to assess difference between mean interest scores of students in pre-test and post-test taught using Experimental and Control group in Practical Agriculture. The results, shown in Table 9, indicate a statistically significant difference between the pre-test scores (M = 3.12, Std. Dev = 0.43) and post-test scores of students in the Revit group (M = 3.05, Std. Dev = 0.45), t (68) = 0.65, p = .518. Consequently, Null Hypothesis 2 was rejected. This suggests that the Practical Agriculture significantly improved students' mean difference interest in Practical Agriculture in Colleges of Education.

Table 6: Independent Samples t-test mean interest score of students in pre-test of experimental and control group prior to treatment in Practical Agriculture

Variable	Grou	N	df	Sig	t-value	Mean	Std. Dev	p-value	Decision
Interest	Exper.	48	68	.518	0.65	3.12	0.43	0.07	Rejected
	Contr.	22				3.05	0.45		
	Total	**70**							

Source: FIELDWORK, 2026

Test of Null Hypothesis 3: There is no significant difference between mean performance scores of students in post-test taught using Experimental and those taught using the control method in Practical Agriculture.

The results of the independent samples t-test in Table 10 show a statistically significant difference between mean performance scores of students in post-test taught using Experimental (M = 73.71, Std. Dev = 6.88) and those taught using Control method in Practical Agricultural (M = 63.27, Std. Dev = 6.74), t (68) = 6.23, p = .001. Consequently, Hypothesis 3 is rejected. This finding indicates that that Experimental had a significant positive effect on academic performance in Colleges of Education students in Practical Agriculture.

Table 7: Independent Samples t-test mean performance scores of students in post-test taught using Experimental and those taught using the control method in Practical Agriculture

				Levine's Test for Equality of Variances					
Variable	**Groups**	**N**	**df**	**Sig.**	**t-value**	**Mean**	**Std.Dev**	**p-value**	**Decision**
Post-test	Experimental	48	68	5.29	6.23	73.71	6.88	.001	Rejected
	Control	22				63.27	6.74		
	Total	**70**							

Source: FIELD WORK, 2026

Test of Null Hypothesis 4: There is no significant difference between mean interest performance scores of students in post-test taught Practical Agriculture using Experimental and those taught using the control method.

The statistical evidence presented the independent-samples t-test in table 11 Null Hypothesis 4 indicated that there is a statistically significant difference between mean interest performance scores of students in the post-test taught using Experimental (M = 3.78, Std. Dev = 0.42) and those taught using Control group in Practical Agriculture (M = 3.18, Std. Dev = 0.43), t (68) = 5.63, *p* = .001. Null hypothesis 4 is, therefore, rejected. This finding suggested that the difference ability of students exposed to Experimental is significantly better than that of their counterparts in Control method.

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Table 8: Independent Samples t-test mean interest performance scores of students in post-test taught using Experimental and those taught using the control method in Practical Agriculture

Levine's Test for Equality of Variances									
Variable	**Groups**	**N**	**Df**	**Sig.**	**t-value**	**Mean**	**Std.Dev**	**p-value**	**Decision**
Interest	Experimental	48	68	5.63	5.63	3.78	0.42	.001	Rejected
	Control	22				3.18	0.43		
	Total	**70**							

Source: FIELD WORK, 2026

Discussion

The result of descriptive statistics presented in Table 4 show the pre-test mean performance scores of the two groups (i.e., experimental and control group). The results indicated that the mean performance score of practical agricultural performance students in pre-test (M = 68.42, Std. Dev = 6.51) is slightly greater than the mean performance score of control group students (M = 63.27, Std. Dev = 6.74) in the pre-test. This result suggests that there was a slight difference between the two groups in terms of their Practical Agricultural Performance scores before starting the experiment. However, the difference was not statistically significant, indicating that both groups were academically equivalent at the beginning of the experiment. This finding suggests that the students in both groups possessed comparable prior knowledge and students' ability in Practical Agriculture before they were exposed to the different instructional approaches. The finding agrees with the study of Prince and Hein (2010), who reported that students assigned to Experimental and conventional groups exhibited no statistically significant difference in their pretest performance scores before the intervention, thereby establishing baseline equivalence. Similarly, Martha (2021) found that students in the experimental and control groups demonstrated comparable levels of prior knowledge of practical agriculture concepts before the implementation of practical agriculture. Likewise, Abdullahi (2021) reported that students in both the Experimental and conventional groups had statistically equivalent pre-intervention performance scores, thereby ensuring that any subsequent improvement could be attributed to the instructional treatment rather than to preexisting differences. The implication of this finding is that the equivalence of the two groups strengthens the internal validity of the study and provides sufficient evidence that the significant differences observed after the treatment resulted from the Experimental teaching method rather than from students' initial academic differences.

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differences observed after the treatment resulted from the Experimental teaching method rather than from students' initial academic differences.

A descriptive statistical analysis was conducted to examine the difference between the post-test mean performance scores of students taught Practical Agricultural using experimental and control method. The results in Table 6 show a difference in post-test mean performance scores, with experimental students scoring higher (M = 73.71, Std. Dev =6.88) than control group students (M = 63.27, Std. Dev = 6.74). This indicates that students taught with the experimental m performed better in Practical Agriculture than their counterparts taught with the control group. This finding demonstrates that the Experimental teaching method was more effective than the conventional teaching approach in improving students' performance in Practical Agriculture. The finding supports the experimental teaching method enhanced students learning, which emphasize that instructional environments improve learning by providing opportunities for repeated practice, immediate feedback, and flexible access to practical learning. This finding is consistent with Ngbongha (2024), who reported that students exposed to Experimental instruction significantly outperformed those taught using conventional classroom instruction in practical agriculture. Similarly, Ekpo and Ogar (2022) found that students taught practical agricultural science through Experimental achieved significantly higher students' performance than those taught through traditional instructional methods. Likewise, Alasela et al. (2015) reported that Experimental collaborative learning significantly improved students' performance in practical agriculture farming topics compared with face-to-face discussion methods. The finding also corroborates Ogunlade and Adobatele (2019), who found that Experimental teaching method significantly enhanced students' performance in vocational agriculture. The implication of this finding is that Experimental provides a more effective instructional platform for teaching Practical Agriculture by promoting active learning, improving conceptual understanding, and enhancing students' performance beyond what is achievable through conventional classroom instruction.

Table 5 presents descriptive statistics comparing the mean interest of students taught Practical Agriculture using experimental and those taught using control group. The results reveal a difference in interest scores, with practical agriculture students' performance a higher mean interest score (M = 3.78, Std. Dev = 0.42) compared to control group students (M = 3.18, Std. Dev = 0.43). This indicates that students taught practical agriculture using experimental better than those taught using the control group. The considerable increase in students' post-treatment interest scores suggests that Experimental created an engaging, interactive, and learner-centred learning environment that stimulated students' motivation, curiosity, and active participation during practical activity. The interactive features of Experimental, including discussion forums, demonstrations, and self-paced learning opportunities, likely contributed to making Practical Agriculture more interesting and less difficult for learners. This finding agrees with Ibrahim et al. (2022), who reported that Experimental teaching method significantly improved students' academic interest and motivation in practical agriculture courses. Similarly, Michine (2011) found that Experimental teaching method significantly increased students' interest motivation and engagement in practical agriculture courses through learning opportunities and interactive activities. The finding also supports Birabil (2020), who concluded that Experimental learning modules significantly enhanced students' interest and enthusiasm toward practical agriculture by making abstract concepts more meaningful and interactive. Likewise, Michine (2021) found that Experimental teaching method significantly improved students' interest and participation in agricultural science. The implication of this finding is that Experimental teaching method can effectively increase students' motivation, classroom engagement, and positive attitudes toward Practical Agriculture, thereby creating a more stimulating and productive learning environment.

Conclusion

The pilot study was conducted to examine the suitability, clarity, and reliability of the research instruments and procedures designed to investigate the effect of field trip and group discussion method in Practical Agriculture on students' performance and interest. The findings of the pilot study indicate that the instruments

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developed for data collection were appropriate and capable of effectively measuring the intended variables. The acceptable reliability indices obtained confirm that the instruments are dependable for use in the main study. The results of the pilot study further revealed that the use of Practical Agricultural has a positive influence on students' learning outcomes. Students exposed to field trip and group discussion improved students' performance compared with those taught using the control method. This suggests that the interactive and flexible features of experimental can enhance understanding and mastery of Practical Agricultural concepts, even at the pilot stage. In addition, the pilot study showed that students taught using experimental Management System exhibited higher levels and interest in Practical Agriculture. The ability to access learning materials repeatedly, participate in group discussions, and engage with content contributed to sustained interest learning and increased motivation. These outcomes understand experimental as an effective instructional used in teaching vocational education. The pilot study confirmed the feasibility of the research design, data collection procedures, and analytical methods proposed for the main study. The challenges encountered were minimal and effectively managed, providing valuable insights for refining the methodology. The findings therefore justify proceeding with the full-scale study, with confidence that the instruments and procedures will yield valid and reliable results capable of addressing the research objectives.

Recommendations

Based on the findings of this study, the following recommendations were made:

i. Colleges of Education offering Agricultural Education programmes in North-West Nigeria should integrate the Experimental method of teaching into the teaching and learning of Practical Agriculture.
ii. The Federal and State Ministries of Education, the National Commission for Colleges of Education (NCCE), and other relevant educational stakeholders should organize regular training, workshops, and capacity-building programmes for Agricultural Education lecturers.
iii. Management of Colleges of Education should provide infrastructure and institutional support to facilitate the effective implementation of experimental teaching method. .
iv. The National Commission for Colleges of Education (NCCE) and curriculum developers should review the Agricultural Education curriculum to incorporate Experimental teaching method as an integral instructional component for teaching Practical Agriculture and other practical agricultural courses.
v. Agricultural Education lecturers should adopt Practical Agriculture approaches that utilize Experimental teaching method to promote active learning, collaborative engagement, continuous assessment, and practical problem-solving during Practical Agriculture.

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