



ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION STUDENTS' OPINION ON UNDERGRADUATE RESEARCH PROJECT SUPERVISION

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Abstract:

The study assessed by determines the Supervised Undergraduate Students (SUS) opinion on Undergraduate Research Project (URP) supervision and Gender difference on SUS opinion on URP supervision. Content analysis design was used for the study. The study consisted of two (Federal and State) universities, Abubakar Tafawa Balewa University, (ATBU) Bauchi from North East and Benue State University (BSU) Makurdi from North Central geo political zones of Nigeria. The population of the study consisted of 434 final year supervised undergraduate research project students. Proportionate stratify random sampling was used to select 205 (122 male and 84 female) SUS. Supervised Undergraduate Students Opinion (SUSO) questionnaire was developed, validated and used for the data collection. Hypothesis was tested at $\alpha=0.05$ level of significance. To ensure the quality of the analysis, table was used where the co researchers made transparent process from raw data to results in form of tally and frequency. The data was analyzed using conceptual analysis and Chi Square test. URP supervisors were appointed in respective of their expertise or field of specialization; male and female SUS differs significantly ($X^2 = 96.265$, $df= 10$, $p<0.05$) on opinion regarding URP supervision were among the findings from the study. Some of the

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recommendations from the study include academic staff with administrative responsibility to be exempted from URP supervision; similar study to be carried out with Post Graduate thesis supervision.

Keywords: assessment, vocational education students, supervised undergraduate students, undergraduate research project supervisor

1. Introduction

The significance of assessing Supervised Undergraduate Students (SUS) opinion on Undergraduate Research Project (URP) supervision could not be emphasized. It gives direction for action to be taken by those with responsibility or in charge of URP coordination such as departmental research project coordinators.

Vocational and Technical education is used as a broad term in the educational process involving, in addition to general education, the study of technologies in acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (FGN, 2004). The major courses studied in vocational and technical education include: Business Education, Agricultural Education, Building Technology Education, Woodwork, Metal work, and Automobile Education, Electrical and electronic Education.

SUS refers to those final year students from the department of Vocational Education who had submitted their approved research project to the department for the fulfillment for the requirement of award of degree in neither Vocational Technology Education (VTE) nor Vocational Education (VE). Lambert, 2013 observed that a research project is an essential aspect of many undergraduate degree programs the study seeks to determine the opinion of the students on URP supervision so as to improve the quality of URP. URP as inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline i.e., area of student specialization (Conference on Undergraduate Research [C.U.R], 1997).

For a research student to carry research work successfully at undergraduate or post graduate level a supervisor is appointed for the student. Supervision is defined as one-to-one interaction between a supervisor and a student (Yeoh and Doan, 2012). Yeoh and Doan (2012) observed that supervision is essential in supporting and facilitating students in research studies. It also acts as an important component in determining the success or failure of students. Good supervisory practice help students fulfill their potential and contribute to university research project (Abiddin, Hassan and Ahmad, 2009). Showman, Cat, Holloway and Wittman (2013) observed that the contribution of supervisor in the students' mentor relationship is crucial in promoting efficient and sustained URP. A positive and collaborative interaction between student

and supervisor will enhance the student experience and increases the prospect for successful outcome of the research project (Sub group of Undergraduate Students Committee, 2012).

However, Madan and Teitge (2013) caution that URP supervisors need to be aware of their students potential interest in research. Supervisors should be friendly, approachable and flexible, knowledgeable and resourceful, and encourage students to work and plan independently (Azure, 2016). The supervisor must provide timely and constructive feedback to manage time effectively (Ali, Watson and Dhingra, 2016). Supervising URP can present special challenge such as the task of supporting apprentice researchers unused to both concepts and terminology of research (Lambert, 2013). Craul (2011) observed that one third of supervisor s do not adhere to all ethical guidelines for research. Yusuf (2017) called for seminar on role of supervisors and students in research project supervision. Ali et al., 2016 called for the need of research that explored opinions of students on research supervision, so that it could be used to develop strategies for promoting student supervisor relationships and enhance the student experience. All these are acknowledged.

However, there is scanty literature on exploring URP. Large body of literature focused on postgraduate supervision. URP provides the bases for future research work experience. Adequacy or otherwise of the URP experience would have effect on future research work. In view of this, there is need to study SUS opinion based on their experience on URP supervision with the hope for improving the quality of URP supervision.

Thus, the study aims at assessing Supervised Undergraduate Research Project (SURP) students' opinion on Research Project Supervision (RPS). Specifically the study assessed to determine the SUS opinion on:

- URP supervision.
- Gender difference on SUS opinion on URP supervision.

1.1 Hypothesis

The Null hypothesis was tested at $\alpha= 0.05$ level of significance.

H₀: There is no significance difference of opinion between male and female SUS on undergraduate research project supervision.

2. Methodology

Content analysis design was used for the study. Bengtsson (2016) observed that content analysis is a research method that provides a systematic and objectives to make valid inferences from verbal, visual or written data in order to describe and quantify specific phenomena. The study consisted of two (Federal and State) universities, Abubakar

Tafawa Balewa University, (ATBU) Bauchi from North East and Benue State University (BSU) Makurdi from North Central geo political zones of Nigeria. The population of the study consisted of 434 final year supervised undergraduate research project students. Of this population, 175 were from Department of Vocational and Technology Education (VTE), Faculty of Technology Education (FTE) from ATBU, Bauchi and 259 form Department of Vocational Education (DVE), Faculty of Education (FE) from BSU, Makurdi.

Proportionate stratify random sampling was used to select 205 (122 male and 84 female) SURP students.

Table 1: Proportion of SURP students as used in the study

| University | | ATBU | BSU | Total |
|------------|--------|------|-----|-------|
| Gender | Male | 56 | 65 | 121 |
| | Female | 27 | 57 | 84 |
| Total | | 83 | 122 | 205 |

Open structured questionnaire title Supervised Undergraduate Students Opinion (SUSO) questionnaire was developed validated and used for the data collection. The students were asked to state their opinion on how the URP supervision could be improved. One of the advantages of the questionnaire was its ability to enable the respondent to feel free that they have been able to speak their mind though it may be difficult to code especially if multiple answers are given (Dawson, 2013). The SUSO was validated by the URP coordinators from department of Science Education (ATBU). The instrument was administered and collected by the co researchers from their respective universities.

2.1 Validity and reliability of the data

To ensure the quality of the analysis, table was used where the co researchers made transparent process from raw data to results in form of tally and frequency. Similarly, in the analysis process, human mistakes caused by fatigue errors interpretation and bias (Bengtsson, 2016) are always possible. To avoid this, the collected data was shown among the 4 co-researchers and 4 weeks was given for each (co-researcher) to submit analysis after which group compilation was made.

To ensure the dependability (stability) or the tendency for coders to consistently re-coding the same data in the same way over a period of time or the tendency for a co-researchers (group coders) to classify categories membership in the summary, coding discussion tract were kept and used.

The data was analyzed using conceptual analysis where facts from the collected data text were coded and presented in the form of frequency expressed as a percentage

of actual number of key variable (Phillips, 2000). The analysis was done separately (male and female).

The study would be significance to undergraduate research project supervisors, departmental research project coordinators and researchers in similar field of study.

2.2 Analysis and Interpretation

On the process of conceptual analysis of the obtained data on determining the SUS opinion on RPS,4 themes with sub-themes under each were used for the clarification, categorization and interpretation of students' opinion.

Table 2a: SUS opinion on URP supervision on the theme Administration

| Theme | Sub-theme | Frequency | Percentage |
|-----------------------|--|-----------|------------|
| Administration | i. Supervision to be faculty affairs. | 23 | 11.2 |
| | ii. Uniformity on format for writing project to be issue by the Faculty and project topic approval to be in 2nd semester at 300 level. | 21 | 10.2 |
| | iii. Those with administrative responsibilities should not be appointed to supervise undergraduate students. | 30 | 14.7 |
| | iv. Group project work to be introduced so as to reduce the students' supervisors' ratio. | 18 | 8.9 |
| Total | | 92 | 45 |

Table 2a above, shows the result obtained from the analysis and interpretation of the theme administration on the opinion of SUS on the URPS.

Table 2b: SUS opinion on URP supervision on the theme Qualification

| Theme | Sub-theme | Frequency | Percentage |
|-------------------------------------|---|-----------|-------------|
| Qualification and Experience | Appointment of URPS to be based on experience and area of specialization. | 27 | 13.2 |
| Total | | 27 | 13.2 |

From Table 2b above, 13.2% of the SUS were of the opinion that appointment of URP supervision should be based on experience and area of specialization of the supervisor.

Table 2c: SUS opinion on URP supervision on the theme Accessibility

| Theme | Sub-theme | Frequency | Percentage |
|----------------------|--|-----------|-------------|
| Accessibility | i. Supervisors to write should write their project days and time on their door post. | 18 | 8.8 |
| | ii. Supervisor should see their students at least once in 2 weeks. | 19 | 9.3 |
| | iii. Orientation lectures to both students and supervisors and Faculty library need to be equipped with relevant books, journals and e-journals. | 26 | 12.7 |
| Total | | 63 | 30.8 |

SUS opinion on URP supervision on the theme accessibility shows 30.8 % were of the opinion of the subthemes as shown on the Table 2c above.

Table 2d: SUS opinion on URP supervision on the theme Feedback

| Theme | Sub-theme | Frequency | Percentage |
|-----------------|--|-----------|-------------|
| Feedback | i. Mistakes and errors (grammar, spelling) should be clearly stated in simple terms for students | 12 | 5.9 |
| | ii. Supervisors to assist students on how to go about the corrections. | 11 | 5.4 |
| Total | | 23 | 11.3 |

Table 2d shows the percentages obtained from the analysis and interpretation of the themes feedback, 5.9% and 5.4 % were obtained respectively on the 2 sub themes as shown (Table 2d).

Table 3a: Gender differences on SUS opinion on URP supervision

| Theme/ Sub-theme | Frequency | Percentage |
|--|-----------|------------|
| Administration | | |
| i. Supervision to be faculty affairs. | Male 14 | 11.5 |
| | Female 9 | 10.8 |
| ii. Uniformity on format for writing project to be issue by the Faculty and approval of project topic to be in 2 nd semester at300 level. | Male 12 | 9.8 |
| | Female 9 | 10.8 |
| iii. Those with administrative responsibilities should not be appointed to supervise undergraduate students. | Male 11 | 9.0 |
| | Female 7 | 8.4 |
| iv. Group project work to be introduced so as to reduce the students' supervisors' ratio. | Male 18 | 14.8 |
| | Female 12 | 14.5 |
| Qualification and experience | | |
| i. Appointment of URPS to be based on experience and area of specialization. | Male 16 | 13.1 |
| | Female 11 | 13.3 |
| Accessibility | | |
| i. Supervisor to write should write their project days and time on their door post. | Male 11 | 9.0 |
| | Female 7 | 8.4 |
| ii. Supervisor should see their students at least once in 2 weeks. | Male 11 | 9.0 |
| | Female 8 | 9.6 |
| iii. Faculty library need to be equipped with relevant books, journals and e-journals | Male 15 | 12.3 |
| | Female 11 | 13.3 |
| Feedback | | |
| i. Mistakes and errors (grammar, spelling) should be clearly highlighted for students. | Male 7 | 5.7 |
| | Female 5 | 6.0 |
| ii. Supervisors to assist students on how to go about the corrections. | Male 7 | 5.7 |
| | Female 4 | 4.8 |

Table 3a above, shows gender difference on themes and subthemes of SUS opinion on URP supervision.

Table 3b: Chi Square test on gender difference

| | Value | df | Asymp.Sig(2-sided) |
|-------------------------------|---------------------|----|--------------------|
| Pearson Chi-Square | 96.265 ^a | 10 | .001 |
| Likelihood Ratio | 130.607 | 10 | .001 |
| Linear-by -Linear Association | 65.923 | 1 | .001 |
| N of Valid Cases | 205 | | |

a.6Cells (27.3 %) has expected count less than 5. The minimum expected count is 1.62 Result on Table 3a was used to test the H_0 at $\alpha=0.05$ level of significance. From the result on Table 3b, chi square (X^2) = 96.265, $df= 10$, $p = 0.001$ at $\alpha=0.05$ was obtained. However, the H_0 was rejected at $p<0.05$ level of significance.

3. Findings

- URP supervisors were appointed in respective of administrative responsibility of the academic staff such as dean, head of department or examination officer.
- URP supervisors were appointed in respective of their expertise or field of specialization.
- Some of the URP supervisors are not polite on their comments or corrections on URP work.
- Male and Female SUS differs significantly ($X^2 = 96.265$, $df= 10$, $p<0.05$) on opinion regarding URP supervision.

4. Discussion

In discussion the results from the analysis and interpretation of data obtained from the study, certain limitations such as difference on SUS opinion based on location(geo political zone) and deliberate excluding names of URP supervisors to be exempted from the URP supervision as cited from the opinion of the respondents must be acknowledged.

Result on Table 2a, shows the SUS opinion on URP supervision on the theme administration and its sub-themes. From the result (Table 2a), 45% of the SUS were of the opinion that URP supervision to be faculty affairs (11.2%), uniformity on URP format for all the departments in the faculty 10.2%. While the sub-theme on project topic approval to be done in second semester at 300 level instead of the usual first semester of the final year attracted opinion of 10.2 % of the respondents. The sub-theme iii, on Table 2a attracted 14.7 % which is the highest percentage on the sub-theme categories on the theme administration. Extracted from SUS opinion on this, reads: *The Dean and others who have administrative responsibilities should be exempted from the URP supervision*. Also, from the result on Table 2a, SUS were of the opinion that the faculty to introduce group project work. This attracted 8.8 % of the SUS opinion on the URP supervision. Extracted from the data obtained from the SUS opinion reads: *the department should reduce stress for the supervisors and students by assigning moderate and reasonable number of students to supervisors through introducing group project work*. Finding from this revealed that URP supervisors were appointed in respective of administrative

responsibility of the academic staff such as dean, head of department or examination officer.

Table 2b, revealed the SUS opinion on the sub-theme on under the theme Qualification and experience. From the result on Table 2b, it was shown that 13.2 % of the SUS were of the opinion that appointment of the URP supervisors to be based on supervisor level of experience and area of specialization. Extracted from the data obtained on SUS opinion on this, reads: *my opinion goes to the department on appointment of supervisors to students should be related to students and supervisor areas of specialization. So as to improve the quality of the URP; my opinion is that department should identify competent supervisors who have knowledge and experience based on the student area of study.. as it is in such situation that the supervisor could provide the needed guidance and academic assistance to student.* Finding from this, revealed that, some of the URP supervisors were appointed in respective of their expertise or field of specialization. The finding contradicts Azure (2016) who urged that supervisor should be knowledgeable and resourceful in the field he is supervising.

From the result tabulated on Table 2c, 30.8 % of the SUS were of the opinion that URP supervisor should be accessible to student. Extracted from data obtained from SUS opinion reads: *I'm of the opinion that time, and days for project students to be written on supervisor's door post.*

SUS opinion on feedback as tabulated on Table 2d, show that 11.3 % of the SUS were of the opinion that spelling mistake, grammatical errors and other related corrections should be underline and clearly stated for the student to comprehend. In addition to that, the supervisor should assist student on how to go about the correction. Extracted from the SUS opinion from the data obtained, reads: *I find it difficult to understand the correction on what my supervisor want to me to do.; the correction is always in adequately explain to me; should be exempted from URP supervision, he discourage us by his comment using un meaningful word i.e., recast and un polite words such as poor or false statements on our project work.*

Finding from this, revealed that some of the URP supervisors are not polite on their comments or corrections on URP work. The finding contradicts Ali et al., (2016) who advocated that supervisor must provide timely and constructive feedback to student.

Result on Table 3a, was used to test the H_0 which stated that, there is no significance difference of opinion between male and female SUS on URP supervision. Table 3b, revealed the result on the H_0 tested at $\alpha = 0.05$ level of significance. From the result on the Table 2b, Chi Square ($X^2 = 96.265$, $df = 10$, $p = .001$) was obtained. Thus, the H_0 was rejected for $p < 0.05$ level of significance. Table 3a shows the SUS opinion tabulated on gender difference. From the result (Table 3a), the total percentages on opinion for the four themes (Administration, Qualification and experience, Accessibility

and feedback) shows that male percentages= 45.1, 13.3, 30.3 and 11.4 and female percentages = 44.5, 13.3, 31.3 and 10.8 on the URP supervision. However, these difference in percentages of opinion between male and female SUS was statistically significant ($X^2 = 96.265$, $df= 10$, $\rho<0.05$). Finding from this, revealed that male and female SUS differs significantly on opinion regarding URP supervision.

5. Conclusion

The study assessed the USU opinion on URP supervision from two (Federal and State) universities located at North East and North Central geopolitical zones of Nigeria. Data obtained, analyzed and interpreted from the sample of 205 SUS opinion on URP supervision revealed how URP supervision takes place in the study universities. The SUS opinion as expressed from the study, findings and recommendation given hoped to provide gateway for improvement of quality on URP supervision; and open doors for research studies on URP supervision in universities and other tertiary institutions such as Colleges of Education and Polytechnics.

6. Recommendations

- Academic staff with administrative responsibility to be exempted from URP supervision.
- Appointment of URP supervisors to be based on supervisor expertise and area of specialization.
- Orientation lectures for both URP supervisors and students to be organized by URP coordinators in each department.
- Similar study to be carried out with Post Graduate thesis supervision.

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