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## Developing Research Skills among Undergraduate Students by Student-centered Active Learning Approaches

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### **Abstract**

*Developing research skills among undergraduate students is a very challenging task for teachers. Studying research skills/ the course on research methods, students also find it daunting, especially undergraduate students. Students are novices in this course, and they do not see the relevance and value of research skills. As a result, they find it boring and not useful for their professional life and feel uninterested and unmotivated to study this course. Teachers have a double responsibility: to clarify the basics of research skills and involve the learners in research with interest. The study intends to determine if research skills are developed through student-centered active learning approaches that may motivate students to perform better. For this purpose, data was collected from 60 participants (15 teachers, and 45 students). Then, the data was coded in the descriptive analysis by using SPSS (Statistical Package for the Social Sciences-version 26). These teachers are either teaching this course or have already taught it and students are either studying or have already studied it. The research findings revealed the necessity of enhancing understanding through motivation and involving students through activity-based and student-centered approaches. Further, the study recommends that teachers adapt teaching materials according to the nature of this course and the students' needs (their prior knowledge, context, interest, etc.).*

**Keywords:** *Activity-based approach, Materials, Research methods, Research skills, Student-centered approach*

### **Introduction**

Research is a systematic process to find the answer to prevailing questions in the concerned field or investigate the facts of a problem related to the field, supported with evidence, description, explanation, and examples, to analyze them and provide the truth behind the facts. According to Zoltan Dornyei (2011, p.15.), "research simply means trying to find answers to questions," and according to Drew (1980), the main purpose of research is to solve problems and to increase knowledge. Creswell (2009, p.25) calls it "... the process of making claims and then refining or abandoning some of them for other claims more strongly warranted". In the opinion of Peter T. Markman *et al.* (2011), the research paper is a systematic presentation of the investigated facts, providing the evidence one needs to defend the results, contributions, or opinions.

Lundahl (2008) has viewed that knowledge of research methods is essential and critical to promoting analytical and critical thinking. Kumar (1999) has opined that research is not only a set of skills but a way of thinking. The problem arises from research that most undergraduate

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or postgraduates do not possess a strong foundation, especially in the practical aspects of conducting research. This deficit adds monotony and frustration for both teachers and students. Therefore, it is a big challenge for practitioners to motivate students to produce a research paper while teaching the vast research methodology content. The course 'Research Methods' introduces various aspects of writing to students by helping them develop critical thinking. In fact, a teacher supports students on their way to analytical, critical thinking, and independent study. Due to the specific nature of instruction and guidance, research skills pedagogy can be considered a unique form of teaching. Still, research skills instruction for undergraduate students is challenging for a teacher. Commonly taught content in this course is research mechanics, conducting literature searches, reading articles, and writing research projects. The course presents qualitative and quantitative research as complementary approaches to educational research. It assists the students in formulating research questions, collecting relevant data relating to questions, forming questionnaires, evaluating data, and presenting results, and asking further questions based on the findings (Rubin & Babbie, 2004; Nind, Curtin & Hall, 2016).

### Course Objectives

1. To help students understand and critique research in language learning.
2. To present a balanced view of a range of research methods.
3. To provide the principles and practices involved in writing research papers.
4. To enable students to read and study research papers and to produce a research proposal of their own.
5. To help them formulate research questions, collect relevant data, and analyze and interpret it.
6. By the end of the course, students are expected to develop (a) familiarity with both the theoretical and practical aspects of research and (b) the ability to read research papers and to produce a research proposal and paper of their own.

Research methodology instructions facilitate learners to make inferences and evaluate information critically and promote problem-solving and critical thinking (Thyer, 2000; Bell, 2014; Curtin & Hall, 2018). In some universities, the course 'Research Methodology' is introduced to the learners about which they do not have prior knowledge. There is an absence of context, less engagement, or no engagement with the material. This adds to the challenges to the pedagogy of research skills. So, the students' claim that this course is boring is logical, but at the same time, its knowledge is essential and critical to their future development and professional life.

### Activity-based and Student-centered Approaches to Research Methods Pedagogy

A student-centered activity-based approach to the pedagogy of research methodology is highly effective compared to the traditional approach. It is based on involvement, participation, and interaction (Forsberg *et al.*, 2019). The traditional lecture-based approach leads to a monotonous learning environment because students remain unmotivated and find the course unexciting and dry. In activity-based and student-centered approaches, instructors engage the learners in active learning, solving problems, researching, and writing research papers. Bonwell and Eison (1991) explain activity-based and student-centered approaches as "instructional activities involving students in doing things and thinking about what they are doing" (p.83). Consequently, learners get involved in practical and deeper learning. According to Chickering and Gamson (1999, p.76), seven practical principles of active pedagogy are:

1. student-faculty contact
2. cooperation among students

3. active learning
4. prompt feedback
5. emphasis on time over the task
6. communicating high expectations and
7. respecting diverse talents and ways of learning

Active learning facilitates direct involvement with research that leads to the likelihood of the subject material and deep learning compared to passive learning. Similarly, Petress (2008) has classified some features of active learning. Learners initiate questions to clarify their doubts, and queries, challenge idea processing, and content connect present learning with past knowledge, develop skills, remain motivated, and discuss their ideas and others' ideas. Similarly, Aguado (2009) is concerned with more emphasis on a practical approach- learning by doing. Further, McGrath and MacEwan (2011) talk about the advantages of activity-based learning because students are seen as more actively engaged in the whole learning process through acts of 'doing', 'being' and 'critically reflecting' than in didactic teaching, where they perform only the act of 'knowing' (p.23). Likewise, researchers as mentioned earlier, Gleason *et al.*, (2011) also listed some strategies to involve learners in the activity-based approach of research skills pedagogy, such as *think-pair-share* (problem-solving alone, comparing and sharing), *minute-writes* (a response to an open-ended question in one or two minutes), *student presentations* (doing research on an assigned topic and presenting it to the class). Apart from these *case studies*, there are some other aspects, such as (situational research related to the course material), *Socratic questioning* (checking students' progress by asking questions about the subject materials), and *puzzles/paradoxes* (problem-solving situations). Therefore, active learning strategies build motivation and multiple skills- analytical, problem-solving, critical thinking, and creating own theories from different perspectives (Barraket, 2005; Gellis, 2008; Allen & Baughman, 2016). Many studies have claimed that activity-based and student-centered approaches to research methods instruction motivate and encourage students to a higher level of thinking and develop research skills and knowledge (Aviles, 2002; Prince, 2004; Richmond & Hagan, 2011; McDermott & Dovey, 2013; Nguyen *et al.*, 2021). In addition, Al-Kumaim *et al.*, (2021) point out supervisors can project research topics with specific protocols and objectives, to guide the students. This view is similar to those of (Draper & Harrison, 2011; Okpala *et al.*, 2017). They support that it is the responsibility of skilled teachers or supervisors to guide and train the students/researchers in every step.

Despite the advantages of these approaches to teaching research skills, instructors fail to implement them completely in their research classes. As in one semester, which consists of only 12-15 weeks, it is challenging to cover all the materials according to the learners' needs and engage them in the planned research activities (Lea, Stephenson & Troy, 2003). Then there are various assessment tasks for undergraduate research methods courses like outlines, literature reviews, summaries, commentaries, questionnaires, research proposals, and projects. To apply a variety of assessments in a short period is indeed difficult. Next, students' negative responses and resistance towards active learning are evident because student-centered active learning strategies demand direct involvement in class activities, hard work and punctuality (Owens *et al.*, 2020). Students manifest resistance due to poor evaluations and enrollments of weak students in the course (Winkler & Rybnikova, 2019). However, the success of the research pedagogy lies in effective assessment, which follows a good blend of students' abilities, skills, growth, and potential with intended learning outcomes (Wakeford, 2003). However, Wigfield and Eccles (2020), state that students respond negatively to student-centered active learning when they do not feel competent enough to practice several in-class activities, or they do not

find it worth the time because of the tutors' failure to implement active learning in research methods class successfully.

Many studies are available on the application of student-centered active learning. The present study aims to answer these research questions. The researchers aim to find out the relevance of these approaches to the explicit teaching of research methods in the context of undergraduate language learners and their interest in adopting these approaches.

### Research Questions

1. Does this course facilitate developing research skills among undergraduate students?
2. What problems do teachers face while teaching the course Research Methodology?
3. How much do the activity-based and student-centered approaches assist tutors in involving learners in learning and doing research?
4. How much do teachers become successful in guiding students in producing successful and publishable research projects/papers.

The undergraduate students come to the universities without prior knowledge of doing research, and some are not even familiar with a research paper/project. Because of these factors and the didactic teaching method, they find the course dry, boring and irrelevant to their further studies and professional career. As a result, either they do research methods courses unwillingly, being unmotivated, or plagiarize their project entirely or to a large extent. The researchers in this study have attempted to evaluate activity-based and student-centered approaches to teaching research methods. These undergraduate students can get motivated, perform better, and develop problem-solving abilities and research skills when tutors involve them in authentic and active tasks.

### Methodology

To assess the validity and reliability of applying action-based and student-centered approaches in developing research skills of final-year undergraduate students, the investigators have collected direct feedback from teachers and students who practiced these approaches in their teaching and learning. The researchers formulated two questionnaires- each containing 14 closed and ordinal variables. The questionnaire items were constructed on a 5-point Likert Scale, starting from strongly disagree to strongly agree. The questions were based on the mixed method approach- qualitative and quantitative and the researchers' own experiences and unstructured observations of teaching research methods over ten years.

### Participants

The questionnaires were distributed among 60 participants- 15 teachers and 45 students. The tables below show the percentage of teachers and students who participated.

**Table 1-** Teacher participants

Gender	Percentage
Males	33.33
Females	66.66

Table 1 shows that among the 15 participants, 5 were males (33.33%) and 10 were females (66.66). All the selected teacher participants were either currently teaching or have taught

Research Methods to undergraduate students at the English departments of higher education institutes and universities. The teacher participants had 5 to 15 years of teaching experience in teaching research methods and 5 to 25 years of teaching experience at universities in general. Their ages ranged from 30-55 years.

**Table 2-** Student participants

Gender	Percentage
Males	44.44
Females	55.55

Table 2 shows that among the 45 students, 20 were males (44.44%) and 25 were females (55.55%). The student participants were EFL students who had studied research methods at the undergraduate level, and now they are studying for an M.A. in Applied Linguistics, Translation or pursuing a Ph.D. in Language, Linguistics, or Translation. The students' ages ranged from 20 to 30 and had experience in research project writing.

### Procedure and Data Analysis

The two questionnaires were formulated on Google Forms- one for teachers and the second for students. The researchers compiled the questionnaires based on observations and with the help of the pre-existing literature. The selected teachers were forwarded its link by email and WhatsApp, and teachers teaching research methods also distributed its link to the students in their research methods classes. The data was collected within 15 days. The responses were analyzed to discover whether the findings supported the hypothesis. A descriptive statistical analysis of data was made on SPSS (Version 26), tabulating minimum, maximum, mean, and standard deviation. The responses presenting higher than 3 and 4 mean scores were considered to largely support the hypothesis. The research has some limitations. For this study, only 15 teachers and 45 students participated. If the research participants had been more, the results might have been different.

The hypothesis of this research paper has been framed based on the researchers' observations of the students' unwillingness to study the course and their perception of underestimating the value and relevance of the course to their further studies and careers. Very few students who were motivated were seen working hard to do research and write the papers by themselves. The learners also, in general, find the course very lengthy, stressful, and challenging. Therefore, they end up plagiarizing the whole research projects/papers, buying them online, or hiring someone to write the projects for them. Hence, it was hypothesized that if a student-centered activity-based approach had been explicitly implemented in the pedagogy of research methods, students' performance would improve, develop their interest in learning research skills, and achieve the course objectives related to the intended course learning outcomes.

### Findings

The tables below present the minimum, maximum, mean scores, and standard deviations, tabulated separately for teachers' and students' feedback on research methods of teaching and learning.

**Table 3-** Descriptive statistics of teachers' feedback on teaching research methods

Variables	N	Minimum	Maximum	Mean	Std. Deviation
1. I think the course 'Research Methodology' is challenging for the EFL students of B.A Hons.	15	1	5	4.00	1.309
2. My students had no idea about researching before studying the course.	15	4	5	4.73	.458
3. I find this course helpful for students in their further studies.	15	5	5	5.00	.000
4. I find that the course unfolds the basics of doing research and provides a complete understanding of how to do the research.	15	4	5	4.53	.516
5. The time allocated to study/teach research methodology is insufficient to understand the course's nature, conduct the research, and write a research project.	15	4	5	4.60	.507
6. Activity-based approach assisted my students in performing better and developing their research skills.	15	4	5	4.88	.380
7. Student-centered approach facilitated my students in getting involved in the learning process of research methods and motivated them.	15	4	5	4.85	.399
8. I believe that this course should be taught for two semesters, as one semester is not enough.	15	4	5	4.80	.414
9. I find that, to some extent, plagiarism is a result of the pressure to study the course and complete the research project in a short period.	15	1	5	3.73	1.387
10. I suggest that in one semester, the basic concepts of research should be taught, and students should write a research paper/project in the second semester.	15	3	5	4.47	.834
11. I feel that one prescribed book is not enough to understand the steps in conducting research.	15	3	5	4.27	.884
12. Other necessary teaching materials must be used with the prescribed book to clarify the research concepts and steps.	15	3	5	4.53	.640
13. I think an experienced teacher should teach this course.	15	3	5	4.60	.737
14. I feel that the number of students in the research methodology class should not exceed 15 or 20 students to give proper time to supervise the projects.	15	3	5	4.67	.724

The mean scores of the teachers' collected responses for the need to apply activity-based and student-centered approaches in the research methods instruction revealed that most of the teacher participants' feedback was in favor of implementing these two approaches in their research classes to develop research skills among final year undergraduate students. The participants strongly supported this idea as they scored more than 4 points on a 5-point Likert Scale in all the items except variable numbered 9. They were as follows 1 (M=4, S.D.=1.309), 2. (M= 4.73, S.D.= .458), 3. (M= 5, S.D.= .000), 4. (M=

4.53, S.D.= .516), 5. (M= 4.60, S.D= .507), 6. (M= 4.88, S.D= .380), 7. (M= 4.85, S.D= .399), 8. (M=4.80, SD=.414), 10. (M= 4.47, SD= .834), 11. (M=4.27, SD= .884), 12 (M=4.53, SD= .640), 13. (M=4.60, SD= .737), and 14. (M=4.67, SD= .724). Only variable numbered 9's mean score was 3.73, and the standard deviation was 1.387. No variable scored less than 4 points which means the data completely supported the researchers' proposed idea for the research methods instruction.

**Table 4 -** Descriptive statistics of students' feedback on studying research methods

Variables	N	Minimum	Maximum	Mean	Std. Deviation
1. I think that the course 'Research Methodology' is challenging for the EFL students of B.A Hons.	45	1	5	3.84	1.147
2. I had no idea of doing research prior to studying the course.	45	1	5	3.04	1.522
3. I find this course helpful in my further studies.	45	2	5	4.20	.991
4. I find that the course unfolds the basics of doing research and provides a complete understanding of how to do the research.	45	1	5	4.00	1.039
5. I think the time allocated to study research methodology is insufficient to understand the course's nature, conduct the research, and write a research project.	45	1	5	3.60	1.321
6. I believe that this course should be taught for two semesters, as one semester is not enough.	45	1	5	3.76	1.334
7. Activity-based approach assisted me in learning better and developing research skills.	45	3	5	4.60	.739
8. Student-centered approach facilitated and motivated me to be involved in the learning process of research methods.	45		5	4.73	.694
9. I believe that, to some extent; plagiarism is a result of the pressure to study the course and complete the research project in a short period.	45	1	5	3.93	1.318
10. I suggest that in one semester, the basic concepts of research should be taught and students should write a research paper/project in the second semester.	45	1	5	3.60	1.304
11. I feel that one prescribed book is not enough to understand the steps of conducting research.	45	1	5	3.93	1.318
12. Some other necessary teaching materials must be used with the prescribed book to clarify the research concepts and steps.	45	2	5	3.76	.957
13. I think an experienced teacher should teach this course.	45	3	5	4.36	.883
14. I feel that the number of students in the research methodology class should not exceed 15 or 20 students to give proper time to supervise the projects.	44	1	5	4.50	.521



The students' responses were not very different from teachers' responses about using student-centered active learning in the research methods pedagogy. Students responded with at least 3 points on a 5-point Likert Scale. It shows that students also agreed with the importance of employing these two approaches to get the best results in learning research skills. The mean scores and standard deviations were obtained as 1 (M=3.84, S.D.=1.147), 2. (M= 3.04, S.D.= 1.522), 3. (M= 4.20, S.D.= .991), 4. (M= 4.00, S.D.= 1.039), 5. (M= 3.60, S.D.= 1.321), 6. (M= 3.76, S.D= 1.334), 7. (M= 4.60, S.D= .739), 8. (M=4.73, SD=.694), 9. (M=3.93, S.D.= 1.318), 10. (M= 3.60, SD= 1.304), 11. (M=3.93, SD= 1.318), 12 (M=3.76, SD= .957), 13. (M=4.36, SD= .883), and 14. (M=4.50, SD= .521).

The findings show that the teacher participants agreed that the course Research Methods facilitates developing research skills among students. In *Table 3*, items no 3 and 4 show that the mean score is 5 for both items. This indicates that the teachers strongly agree that the course unfolds the basics of doing research and provides a complete understanding of how to do research. Moreover, the teachers agree that there are various factors that affect the teaching of this course. Items 5, 11, 12 and 14 have mean scores of (4.60, 4.27, 4.53, and 4.67). This reveals the difficulties teachers face while conducting the course. First, the time allocated to understand the course's nature, conduct the research and write a research project is not enough. Second, one prescribed book is not enough, and teachers feel that other materials should be incorporated for a better understanding of the course. In addition, items 6 and 7 scored (4.88 and 4.85) respectively. Teachers agree that the activity-based approach assisted students in performing better and developing their research skills. It involved students in the learning process of research methods and motivated them.

However, in *Table 4*, in items 11, 12, and 13, the mean scores are (3.93, 3.76, and 4.36). This shows that students believe if more materials outside the prescribed textbooks are incorporated, it can help them perform better. Moreover, they opine that experienced teachers can guide them into producing publishable research projects and papers.

## Discussion

It is revealed very clearly why students find the course boring and challenging. In addition, how important it is for the student's active engagement in learning research skills is also clear as both teachers and students believe that an activity-based approach helps learners to perform better. They perform poorly without active learning. This is very similar to the studies in which it is stated that activity-based and student-centered approaches motivate and encourage students to a higher level of thinking. (Aviles, 2002; Prince, 2004; Richmond & Hagon, 2011). However, various factors affect the application of student-centered active learning, for example, students' resistance and negative response to active learning, lengthy course, limited time, preparing the modules according to the application of these approaches, and large classes to monitor their involvement activities and various types of assessments (Lea, Stephenson & Troy, 2003; Owens *et al.*, 2020; Winkler & Rybnikova, 2019). Moreover, teachers and students strongly agree that a skilled and experienced teacher/ supervisor is needed to properly handle the course and guide the students/researchers. This is like the views expressed by Draper and Harrison (2011) and Okpala *et al.*, (2017). They support that it is the responsibility of skilled teachers or supervisors to guide and train the students/researchers in every step.

Teachers teaching or have taught this course face these problems, and their supervisees do not follow them up regularly because of the monotonous classroom environment. They cannot



cope with the nature of the course and fail to manage their time. As a result, by the end of the term, some of them either buy research projects or plagiarize them (Wigfield & Eccles, 2020).

The question that arises here is why they show resistance to active learning and plagiarize their research projects. The answer lies in many reasons, such as:

1. lack of involvement
2. lack of proper guidance
3. lack of knowledge
4. lack of time management
5. lack of motivation
6. incompetent students and teachers

First, all the above problems should be considered to stop plagiarism. Secondly, the department must form some rules and implement them strictly. Teachers must adapt teaching material according to the needs and context of learning. More focus should remain on active learning, directly involving students in the learning process, doing research themselves, and writing research projects/papers through a variety of assessments (Allen & Baughman, 2016; McDermott & Dovey, 2013). A practical, reliable, and valid assessment method can have a combination of assessments that can check students' performance, progress, abilities, and skills. The assessment should cover the course's objectives related to the intended course outcomes.

To improve the performance of teaching and doing research, teachers and students may consider these points. Most importantly, teachers need to be efficient, have expertise in research methods before teaching this course, and be capable enough to adapt teaching methods and materials to suit active learning to students' levels, needs, and knowledge (Draper & Harrison, 2011). At the same time, learners should have some knowledge of the subject matter and study a prerequisite course in writing skills- summarizing, paraphrasing, critically analyzing, and writing citations before taking this course (Okpala *et al.*, 2017). If tutorial classes are assigned to teachers in their timetable, they can administer more time to supervise and guide students. During these hours, they can divide the class into small groups, and by rotation, each group can discuss their drafts step by step. It is an effective way to enhance communication between teacher and student.

Then, teachers should ensure that students master writing skills through various tasks, i.e., narrowing down a topic, writing an effective thesis statement, paraphrasing, summarizing, commenting, analyzing, and critically assessing other researchers' works. Further from the beginning, instructors can fix the rubric for proper evaluations or assessments, setting up from the main modules of the research project to the structure, formatting, and writing style (Barraket, 2005). It will facilitate students' focus on their research work's major and important components Owens *et al.*, 2020; Winkler & Rybnikova, 2019). Next, Teachers must pilot each section of the research projects to prevent students from plagiarism though it is very time-consuming. This also adds to motivating learners to work sincerely. Instructors should support and supervise learners to ensure the research project is manageable within the limitations of time, length, and material and with appropriate research questions and methods. It is the responsibility of tutors to motivate students to surf various online libraries or sources and go to libraries (Draper & Harrison, 2011; Okpala *et al.*, 2017). Students' motivation helps them participate actively in research activities and build project management, time management, and self-management skills.

Students' direct involvement is imperative to implement student-centered active learning techniques. They should be motivated to contribute their ideas (Forsberg *et al.*, 2019). Students

are novice researchers, yet the opportunity to pursue their ideas will make them feel positive toward active learning as they contribute novel and unique ideas to their research papers, boosting their confidence (McDermott & Dovey, 2013; Nguyen *et al.*, 2021). Students are new researchers who are unaware of how to plan their projects. Therefore, they should be supervised step by step to check whether they are gathering and analyzing their data correctly. They should resolve any problem concerning collecting research material, data, or analysis, and in the exploration process, students must be guided to possess an unbiased and objective attitude (Al-Kumaim *et al.*, 2021).

A semester can be divided into five stages: in the first stage, students can select an area and topic; in the second, they can collect material; in the third, they can prepare their plan and collect the data; in the fourth stage, they can write the first draft; and in the fifth stage, they can put the project in the final form. Teachers can set this timeline according to the dates; these deadlines should be announced to the students from the beginning of the semester. At the time of research papers or project submission, if a presentation or viva is conducted, it would assist teachers in evaluating students' approach toward their work, their involvement, and the originality of their research work (Richmond & Hagon, 2011). Universities should provide enough resources to research like a library, the Internet for searching research material, language labs, and the availability of data analysis software.

## Conclusion

There is a dire need for teachers to help their students in developing skills in navigating, interacting, and learning effectively. Research skills are the essential skills that students need to master during their study of the course Research Methods. Therefore, to conclude the findings of this research, it can be claimed that a student-centered activity-based approach can facilitate teachers in developing research skills among novice researchers. The benefits of using active learning in research methods classes show much promise. Students learn better by active involvement in research rather than merely listening to their teachers' theoretical lectures on research methods. They develop skills to gather and review the related literature, frame the research questions, and analyze and interpret the data. Moreover, student-centered active learning adds to the originality of research, and students do not plagiarize or buy the research projects. Hence, they contribute something new and original in their field by publishing their research in peer-reviewed journals and magazines to make it visible to a large audience. All teachers must adopt maximally effective teaching strategies that remove barriers for beginners to learning research methods.

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