

Using Students' Research Journals to Assess Their Research Knowledge and Skills Development in Interactive Research Methodology Tutorials

استخدام المذكرات البحثية للطلاب لتقييم تطور معارفهم ومهاراتهم البحثية في دروس منهجية البحث التفاعلية

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Abstract

This study explores students' experiences of learning research methodology subject in a series of interactive tutorials. Students of English at Batna 2 University were taught research methodology subject through interactive tutorials. In order to find about students' development in research knowledge and skills, they were asked to write research journals naturally describing their journey of learning about scientific research. In addition, one-on-one semi- structured interviews with (N=15) students were also conducted to gather more data in order to clarify what the research journals ambiguously reported about research knowledge retention and skills development. A content analysis of these two instruments revealed that students appreciated the interactive tutorials way of teaching as they have appraised each tutorial in their journals. Being able to identify researchable problems, writing good research questions, identifying variables and arriving at logical hypotheses demonstrate also research knowledge growth and skills attainment.

Keywords; Research knowledge and skills; research journals; interactive tutorials

ملخص:

تستكشف هذه الدراسة تجارب الطلاب في تعلم مادة منهجية البحث في سلسلة من الدروس التفاعلية. لقد تم تعليم طلاب اللغة الإنجليزية في جامعة باتنة 2 مادة منهجية البحث باستعمال دروس تفاعلية تعتمد على تدريس المجموعات الصغيرة. ومن أجل الاطلاع على مدى تطور معارف ومهارات الطلاب البحثية، طُلب منهم كتابة مذكرات بحثية تصف بشكل طبيعي رحلتهم في تعلم البحث العلمي. زيادة على ذلك، تم إجراء مقابلات فردية شبه منظمة مع (عدد = 15) من الطلاب لجمع المزيد من البيانات من أجل توضيح ما ذكر في المذكرات البحثية بشكل غامض حول احتفاظ الطلاب بالمعارف والمهارات المكتسبة حول البحث العلمي. كشفت تحليل محتوى هاتين الأدوات عن تقدير الطلاب لطريقة الدروس التفاعلية، حيث قاموا بإعطاء تقييمات إيجابية لكل درس في مذكراتهم. إن القدرة على تحديد المشكلات القابلة للبحث، وكتابة أسئلة بحثية جيدة، وتحديد المتغيرات والوصول إلى فرضيات منطقية تظهر أيضاً نمو المعرفة البحثية واكتساب مهارات البحث العلمي

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1. Introduction

Under special conditions of the COVID-19 pandemic, a health protocol has been issued by the Ministry of Higher Education in Algeria and it is meant to teach and learn in a safe environment. As a consequence, some pedagogical decisions have been taken. Adopting small group teaching becomes mandatory to respect social distancing in classes. So, instead of teaching the whole group consisting of approximately 40 students, the group is divided into three sub groups. In addition, lectures should be uploaded to teachers' websites at least 15 days before onsite teaching to take place.

With these administrative organizational decisions, it is deemed essential for teachers to change their teaching methods and techniques in order for students to achieve better results. Teaching research methodology to third year EFL students, at the department of English, Batna 2 University, required effective use of the small group teaching techniques. It should be noted at this stage that though research methodology is a TD (*Travaux dirigés*) course that is it is based on practical tasks; teachers at this department rely heavily on lecturing. Taking students' psychological state into account, we opted for using experiential teaching through active and interactive tutorials where students worked in small groups of three students and of course social distancing was respected protecting students from any contamination. Students were asked to record their reflections on their learning of research methodology for a period of one month in a form of research journals. Students were given some guidelines as how the journal might be written but they were also given the freedom to creatively organize their journals and reflect on their learning about research. Research journaling has been effectively used by researchers to reflect on their research process while conducting their research projects (Borg, 2003) and it was recommended especially for beginner researchers (Lamb, 2013). However, no study was found to focus on particularly tracing research knowledge and skills development through personal research journals.

During the interactive tutorials students were collaboratively conducting their small research projects and for each step of research one tutorial has been offered. Four tutorials was the number that we could have in one month as the class is scheduled once a week. During this period students have actively learnt about formulating research problems, identifying variables and their types, determining objectives, developing hypotheses, and reviewing the literature. So, the purpose of this qualitative study is to explore the research methodology knowledge development among undergraduate EFL students and to find about the usefulness of interactive tutorials in advancing this knowledge. Accordingly, this exploratory study asks the following question:

How does participating in interactive research methodology tutorials shape undergraduate EFL students' research methodology knowledge and skills?

2. Literature Review

2.1. Tutoring and Research Methodology Teaching

In the new but old system of LMD, developing students' research skills has been attributed high significance. As a response to the demands of the 21st century requirements which particularly emphasize involvement of students in scientific inquiry, curricula at higher education were redesigned and pedagogical decisions were taken to effectively guarantee students' development of research knowledge and skills (Brew, 2013). In all Algerian universities and institutions students of all disciplines take courses of research methodology at undergraduate and postgraduate levels. At the undergraduate level, students are supposed to develop basic research knowledge and skills at the third year of their bachelor degree.

Our teaching experience of research methodology to undergraduate EFL students for five years unfold trials and errors with the goal to raise students' motivation, satisfaction and more importantly learning of research knowledge and skills. As a novice teacher, I blindly lectured following the other colleagues of the same course. However, after one semester of work I realized that this traditional teaching method maybe is good for other subjects but never for teaching research methodology especially at this level. Students were not motivated to study and they complained that the subject is hard to understand because of its technicality. Hence, their results were always not promising. Reviewing the few existing literature documenting research methodology pedagogy revealed that research methodology is challenging, students' motivation for this subject is low, anxiety might even be caused, and hence students' retention is threatened. So, our teaching worries had some background in the literature and an action research project was urgent to carry out.

Research literature focusing on teaching research methodology to particularly undergraduates has documented experimenting with different teaching strategies aiming at especially integrating students in their learning. Ball & Pelco (2006) used multiple student-developed research projects as a form of active cooperative learning approach in teaching research methodology to undergraduate psychology students. They argued that by including active-learning experiences in research methods teaching in a form of group research projects, one can avoid the risk of making students' motivation even lower. They strongly believed that "Learning to do research and to critically evaluate research practices are better facilitated by training critical research problem-solving and reasoning skills than by having students memorize research terms and definitions." (Ball & Pelco, 2006, p. 152) and they recommend using group-project approach because it takes students to

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deeper levels of the research process understanding. Hardway and Stroud (2014) found that "An active learning approach, in which students are afforded a range of opportunities to pursue research topics that are personally meaningful, is an effective pedagogical approach even when students enter the course with relatively less positive attitudes toward the process of research" (p. 386).

Measuring students' knowledge, skills, and learning gain was the focus of the study carried out by Turner et al. (2018). Through their longitudinal study, they strongly believe that "self-assessment, reflection and dialogue around research methods education could foster relationships that scaffold and capture learning" (Turner et al. 2018, p. 244). Hence, students' academic development in this area primarily depends on engagement with, discussion about, and self-evaluation of the whole process of the journey of research methods. It is worth critically concluding this section by quoting Imafuku, et al. (2015) who stressed that "An important aspect of facilitating students' active participation in research lies in keeping a balance between tutors' intervention and students' autonomy at each step of the research process." (p. 54). Thus, it is unlikely that there is a magic formula for advancing students' research performance outcomes but both teachers and students need to actively act their roles in order to progressively build knowledge and skills which enable them to be effective researchers.

Tutorials, seminars, and problem-solving classes are identified as forms of teaching that are applied in higher education when the size of a group of students is small (less than twenty). As a teaching method, a tutorial is considered just appropriate with the smallest number of students that can be up to five students. Tutoring is believed to raise students' knowledge of the subject matter and to develop their academic skills. In his highly praising words, Ferreira (2013) considered "Tutoring as a real possibility of a training model and a way to develop competences and knowledge with quality and excellence" (p. 217). In addition, Herrmann (2014) found that deep approaches to learning are highly stimulated in tutorials which apply effective interactive strategies. Accordingly, tutorials give students the chance to actively participate in constructive learning tasks. Thus, in order to develop higher order thinking skills, to engage students in more focused academic dialogue, and to change students' attitudes toward their learning, tutorials are the best means.

Interactions in tutorials are presumably indispensable. The amount of time spent in tutoring requires effective collaboration between tutors and students and among students themselves. Shaw, Carey and Mair (2008) insisted that "The success of the tutorial is, therefore, a consequence of the tutor's and students' capacity to engage with each other as collaborators within the classroom setting." (p. 704) and that "Increasing interaction in a

tutorial can provide the foundation upon which students can engage with a range of concepts and ideas: ‘knowing that’ builds on ‘knowing how’” (p. 712). Hence, though in a tutoring session the tutor may lecture, discuss, directly give feedback, and assess students' learning easily; it is imperative for the tutorial to be successful that in all these tasks interactivity should be accounted for.

2.2. Students' Research Journals

Reflecting on one's learning can unveil deeper understanding of the how and what of knowledge construction (Engin, 2011). As a learning strategy, reflection through journal or diary writing has been extensively researched and results revealed its effectiveness for students. Lew and Schmidt (2011) studied reflection journals and they have given the following definition:

Reflection journals are essentially written records that students create as they think about various concepts learnt, about critical incidents involving their learning or about interactions between students and teachers over a period of time for the purpose of gaining insights into their own learning. (p. 520).

So, keeping a learning journal for a certain course can upgrade students' learning gain, improve their thinking and increase retention of course concepts (Borg, 2003). To fully benefit from active and interactive learning environments, Wallin, Adawi and Gold (2016) urged teachers to ask students write reflective journals in which they critically reflect on the content of the course and their learning behavior. They concluded their study by citing the major benefits of journal writing for the students “Reflective diaries can help students to have integrated learning experience by facilitating the integration of disciplinary and personal knowledge and skills, as well as provide an additional aspect to active learning” (p.9). Thus, by looking back at their learning experiences for a certain period of time, students can develop self-reflection skill which allows them to rethink their learning styles, strategies, and their learning products; and to find about how much learning goals have been achieved by assessing knowledge growth in a certain area.

By reading students' journals, teachers can be informed about students' learning attainment and the effectiveness of their teaching in general. As a course evaluation means, journals reveal about opportunities the course content and the teaching behaviors can offer and about challenges students may encounter. Vinjamuri, Warde, and Kolb (2017) stated that “The diary entries provide instructors with windows into their students' learning processes that enable them to create scaffolding opportunities that support students in developing confidence” (p.1). Indeed, using students' personal narratives about their learning experiences as an assessment instrument does

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not only inform about students' academic progress but it can also inform about the teaching content, methods, tasks, and environment in general.

Among the very first researchers who used and discussed the usefulness of research journals especially during the research process was Borg (2003). He defined research journal as "A form of reflective writing which researchers engage in during a project and through which they document their personal experience of the research process" (Borg, 2003, p. 157). In this qualitative study, research journals were found to be helpful in recording experiences of the research process which can later help the researcher trace his course of development as a researcher. This is further emphasized by Engin (2011) who considered research journals as *Internal dialogues* which are "...a significant scaffolding tool in my own construction of research knowledge and identity" (p.297). Therefore, the research journal is useful instrument to the researcher during all the project stages and we expect that it will be very helpful for novice researchers as they will be helped by their retrospective thinking of the What and the How of research methodology knowledge acquired during their class sessions. It is worth mentioning that studies on writing research journals were particularly based on personal experiences of the researchers (Borg, 2003; Engin, 2011) and no study tried to examine other peoples' research journals, so this small scale study is meant to drive a new direction of research toward undergraduate students' research journals as a new area of research.

3. Method and tools

In educational research, students' learning experiences were analyzed qualitatively and quantitatively depending on study objectives. Journal studies, in methodology, are classified as "exploratory-interpretive" category, in that they typically utilize non-experimental designs, qualitative data, and interpretive analyses" (Bailey, 1991, p. 61). Hence, in this study, we aimed at deep analysis of undergraduate students' experiences of learning about research methodology through interactive tutorials. Therefore, we opted for the qualitative design in which we have relied on both students' research journals followed by in-depth semi-structured interviews.

3.1. Research Context and Participants

We conducted this small- scale research study at the department of English, Batna 2 University, with (n=15) undergraduate third year students. For one month, these students were taught research methodology by the researcher herself and they were solicited to keep research journals for this limited period of time. The only instruction given to the students is that in addition to their own chosen entries (which, of course, should be related to their journey of research knowledge acquisition and application), they should also reflect on their learning from the interactive tutorials. Forming groups of three students, we aimed to teach students during each tutorial a step of the

research process. So, students were also asked to reflect on their experiences of learning about research methodology in groups. The tutorials were in form of activities students cooperatively did and later the tutor evaluated their research knowledge development according to their answers of these activities. It is worth mentioning that prior to tutorials these students were taught online using the researcher's university website and a Google Classroom application. Students were supposed to develop their research knowledge and skills in the following areas: the nature of the scientific educational research, identification of research problems and questions and classifying them as qualitative or quantitative, knowing the different types of variables and being able to especially identify dependent and independent variables in a research study, determining objectives and arriving at testable hypotheses, and deciding on the content of the literature review. Accordingly, in the data analysis section, we will try to trace students' developments in these areas.

3.2. Data Collection Instruments

To serve the purpose of this study which is finding about EFL undergraduate third year students' research knowledge and skills development, we have used two qualitative data gathering tools: the research journals and the in-depth semi-structured interviews. From the 15th of December 2020 to the 13th of the January 2021 students were asked to keep journals reflecting on their journey of learning about research methodology. After they have submitted their journals and they have finished their midterm exam, the in-depth semi-structured interviews were held online. All the 15 students accepted to be interviewed and their answers were highly useful for the results of this study.

4. Results

For each data gathering tool there is a valid method of analysis. In this qualitative study, we adopted for a content analysis method for both the journals and the interviews. As far as the journals are concerned we followed Borg (2003) who suggested that "The process[of data analysis] involved reading the journal, identifying and labeling reflective processes occurring in the data, identifying relationships between these processes, and searching for common sequences amongst them" (p.161). This means that the analysis was done through the phases of: gathering the journals from the students, reading them, identifying common themes, and interpreting the relationships between the themes which suggested an answer to the research question of this study.

The analysis of the interviews have undergone a similar process, but the themes were decided upon before hand; that is, because the interviews were designed with the purpose to discover more about students learning about research methodology from interactive tutorials and the experience of writing research journals for the first time, the ten questions were divided

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into two categories: the interactive tutorials and research journal writing. After the analysis of the interview, data were discussed and compared, and major findings were summarized.

4.1. Analysis of the journals

Bailey (1991) said that "The data analysis maybe done by the diarist himself or by an independent researcher using the learner's diary as data." (pp.60-61), and in the case of this paper, the students' journals were analyzed by the researcher herself. The analysis involved both the format and the content of the journals.

For this research study, the format of the students' research journals was chosen to be as described by Ohly et al. (2010) "...open format where participants record events, thoughts, feelings, and behaviors using their own words" (Ohly et al., 2010, p. 80). An open format journal does not restrict the students by a certain structure and it does not confine them to certain entries; they are not required to answer any limited set of questions designed by the researcher. In addition, they were written in small notebooks and they are handed directly to the researcher (they are not done online). The length of the journals ranges between 5 pages to 17 pages. The handwriting is readable; it is colorful, and there is a mixture of writing and drawings in a form of diagrams and "Emoji" showing particular emotions, and some stickers were put to highlight important ideas. Most of the journals documented clear dates and there are just three which were messy and disorganized; that is, sometimes the dates were mentioned and sometimes they were not. Interestingly, there are some students who have chosen to label their entries such as "Getting to know more", "Not knowing", and "better understanding". Students preferred to offer an introduction to their journals explaining the state of their research methodology knowledge and the reason why the journal is written.

The journals included different types of entries. Denscombe (2010) has mentioned in his research methodology book (see reference) that the data gathered from journals can be classified as factual data, significant incidents, or personal interpretations; all these types of data were found in students' journals. Usually each entry started by what happened in each tutorial and a description of what the teacher or the students have said or done.

The first tutorial was about understanding the meaning and scope of educational research. Students complained about the number of activities, but they were satisfied with the content of activities. They reported that in spite of the fact that they have been introduced to this concept in their second year in a TTU (Techniques de Travail Universitaire) course, they did not understand the how and the why of research in education. Here are some extracts from the students' journals.

“I like this tutorial because it lets us discover more about research and get more ideas about it.”

“From the first tutorial we were asked to do, I figured out few things: a method is a particular way, technique, or process for doing something.”

“Interviewing our ILS teacher about research was pretty interesting; we got a lot of ideas.”

“Hard work always brings good results”

What is common among all entries is that students have included what they have learnt from each tutorial in a form of short summaries of the main points. It is interesting that students have included even points that are not mentioned in the handout; this shows their interest in learning about research methodology.

However, students demonstrated worries and even sometimes stressful emotions particularly after the second tutorial which was about identifying researchable problems. Some students have written:

“(emoji of sadness) still struggling with variables and research problems.”

“Today our research question was not accepted by the teacher, so we have to change it.”

After the third tutorial which focuses more on the identification of variables and knowing the difference between quantitative and qualitative questions, students were able to identify their own research problems and write their research questions. Here are some extracts of what they have said after tutorial two and three:

“Once you have your topic in mind, you write your research problem (main cause of doing research) research statement (why the problem is happening) then; you ask your main research question. Now you just passed from general to specific.”

Both positive and negative reflections on what was going on within each group have been also reported by students. Some students were very satisfied with the idea of working in groups. According to them, group members were cooperative in achieving the objectives of each tutorial, and they find interactivity achieved in each tutorial helpful in gaining more research methodology knowledge. For example some students said:

“All my group members were present and we did our best in the tutorial.”

“The teacher accepted to change my group, and I was so happy. So, I feel the new group members are collective.”

“The course of research techniques helped us in strengthening group work and share different ideas and knowledge. It really enhances the spirit of cooperation between students.”

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However, negative attitudes toward working in groups were also identified but they make the minority. Students, who are of this position, said that because of their personal considerations, group work causes a hindrance to the development of their skills in a classroom. Here is an extract of this opinion:

“In fact, I do not like team work because it causes many problems.”

After the third tutorial students showed great confidence in writing researchable questions especially that they can easily identify variables of their own research questions. Students were also able to identify research objectives and know how the hypothesis can be built on the basis of logical relationships between the independent and the dependent variables.

The last tutorial, that is the fourth for the first term, was devoted to explaining some basics of how the literature review should be done. In their journals, students have reported difficulty of the task of reviewing the literature especially in terms of summarizing, paraphrasing and quoting data. Since it is common among all students that reviewing the literature is a complicated stage, we decided to offer another tutorial on it again in the second semester focusing more on the writing aspect and the use of the APA style.

At the end of the tutorials, students were both happy and sad. They were happy because they have learnt a lot about research from this course and they were sad because they wanted the course to last longer. Here is what some students have written:

“We accomplished many exercises and learnt many techniques that may even help us in our daily life. We got a lot of experiences, new information, new ideas, and we increase also our desire to do research more and more.”

“I think my research journey is full of excitement, surprises, challenges, uncertainties, and many emotional ups and downs.” “I really feel sad. This module made us survive the spirit of research, and also our teacher was so much helpful.”

4.2. Analysis of the Interviews

As it has been mentioned earlier, the purpose of the semi-structured interviews is to solicit deeper understanding of the process of research knowledge acquisition from the part of the undergraduate EFL students during interactive tutorials. The data gathered from 15 students are going to be qualitatively analyzed using content analysis technique.

On the interactive tutorials

There is a general agreement among the interviewed students that though tutoring is an effective teaching method, it is not widely used by teachers at this department. Only two students said that they have been taught by this method in a written expression course. That is, the first time students

experienced tutoring is through the research methodology course. As a first experience, there is mixture of attitudes towards tutorials but satisfaction dominated them. For example one student said that “I think that tutoring help students to help themselves and assist and guide them to the point at which they became an independent learner” and another one said “Personally, I think it is a great method of teaching; it is helpful and very useful.”

The third, fourth, and the fifth questions were about the tutorials that were particularly designed for these students in the research methodology course. The aim of these questions is to find about the strengths and weakness of the four tutorials and to know about students’ suggestions to ameliorate our tutoring techniques as it will be continued to be used in the second semester. The analysis of the students’ answers revealed that students were satisfied to some extent with their participation in the process of their research methodology knowledge construction. In addition, students agreed that thanks to these tutorials their research skills developed. For instant, a student said “Actually after these tutorials I figured out that my knowledge improved and developed and even my research information become more and benefit me a lot.” and another one said “All these tutorials are very direct in helping with research making skills”.

However, students also complained about certain aspects of these tutorials. The first tutorial was long, and for three tasks time was not enough to complete. As such, students were asked to complete and send them via email. Indeed, our expectation were a bit high that for each activity students need just ten minutes to complete, but in reality they needed more, that is why we went beyond the timing scheduled for each activity. Thanks to their immediate feedback sent via Google classroom application we have adjusted the other three tutorials. Just one student said that she did not like working in groups. The timing of the tutorial that is one hour per week was a hindrance to the success of the tutorials.

On research journal writing

Students welcomed the idea of writing journals and they described this as good strategy to better learn about what they learned from research methodology course. First of all, some students said that writing daily life journals is part of their daily tasks and they have already acquired the skills of journal writing but they have never been asked to write a research journal. Other students, however, have never written a journal let alone a research journal. When asked about the extent to which writing research journals, which mainly report on their learning of research methodology knowledge, they have answered by acknowledging the role such research journals play in the evaluation of their research knowledge attainment and skills development. Here are some extracts of students’ answers:

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"Yes, I do think that using journals will help me reflecting on my learning and evaluation of my research abilities."

"Of course I do because this kind of journals is part of the research itself; it is the bridge between the research problem and its solution"

Students said that the guides that are provided by the teacher helped them visualize how the journal should be organized. However, we have found that some journals are just note-taking documents. These students seemed just not that much serious about the task of research journal writing though they have not been obliged to do so.

5. Discussion

This qualitative personal narrative study tried to uncover significant skills development in the life of undergraduate EFL students; that is, it aims at finding about their research methodology knowledge and skills retention from research methodology interactive tutorials. Results of the above analyses of both the journals and the semi-structured interviews show that students have built and developed basic knowledge and skills of scientific research; and they have faced obstacles as well. In addition, students were exited to write research journals reporting on their learning about the methodology of research.

It is reported and confirmed by the students that now they can distinguish between research problem and research questions (quantitative and qualitative), and they can decide about their study objectives. Moreover, they developed a basic knowledge of how a literature review is approached and how to arrive to a tentative hypothesis depending on their reviews of the available literature. We later also evaluated students knowledge application by asking them to prepare in groups of three students research proposals including all the elements studied during the tutorials.

The interactive tutorials proved crucial in the process of research knowledge acquisition and skills development. In each tutorial we tried to cover a step in the research process and for a period of one month students could have average knowledge of the basics of the methodology of research. In the second semester students will be exposed to the rest of the steps and they will be asked to write a simplified research paper.

In the conclusion of their research journals, students showed that the task of writing the research journals was a useful tool to reflect on their learning, and they decided to use this technique for the other courses in order to critically evaluate their learning gains from each course.

6. Conclusion

All in all, this qualitative study reveals important results that should be accounted for in order to ameliorate the state of the research methodology teaching especially to EFL students. Using narrative personal inquiry method achieved by the technique of research journal writing in addition to the semi-

structured interviews, we could reach the following results: first, we could make from a research methodology course an interesting subject by focusing more on the application of knowledge rather than just understanding. Writing research journals can be a good indirect and formative evaluation tool of the students' own learning. Hence, students can be active partners in the evaluation of their own knowledge construction and skills development. Finally, the interaction between the tutor and the students reinforces their confidence of the ability of becoming effective researchers. Therefore, it is hoped that this study enriches research methodology pedagogy. To conclude, future studies can retest these results and try to eliminate the limitations mentioned above by asking students to fill guided journals on pre-decided areas of research methodology knowledge.

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Appendix

Students' Interview

You are kindly invited to answer the following questions which aim at finding about your experiences in participating in the interactive research methodology tutorials and in writing research journals. All your answers are very important for our research study and they will be treated with full confidentiality.

On the Interactive Tutorials

1. Have you ever been taught any course through tutorials? If yes, tell us of how was it?
2. What do you think of tutoring as a teaching method?
3. After four tutorials, how do you think of your research knowledge and skills development? High, average, or low. Explain
4. What are the major strengths and weaknesses of these tutorials?
5. What do you suggest to improve the effectiveness of research methodology tutoring?

On Research Journal Writing

1. Have you ever written a journal? For which purpose?
2. Was it your willing to write or because you have been asked to do so?
3. Was writing a research journal hard for you? If yes, why?
4. For this journal, when you read your notes back, in which way you find it useful?
5. Do you think that using journals to reflect on your research methodology learning can help you evaluate your research knowledge and skills development?