# Students' Perception on the Course Educational Research: A Case Study in One of the Private Universities in Ghana

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**Abstract**

The current study sought to identify the perception of teachers (with diploma as their highest level of education) on the teaching and learning of the Educational Research course during the Fall 2017 semester in one of the private universities in Ghana. With a survey research design, three hundred and thirteen teachers, who were enrolled in the Fall 2017 Sandwich programme, were randomly sampled to participate in the study. The findings revealed significant differences between male and female teachers in terms of how they perceived the teaching of research, relevance of research and their statistics anxiety. Also, the age independent variable indicated a significant difference on the statistics anxiety construct only whereas the other two constructs were not significant. There were significant correlations among age, years of teaching, and statistics anxiety. The implication of the study for practice is discussed.

**Keywords**: Educational Research, Statistics, Teachers, Relevance, Years of Teaching

## Introduction

Research is one of the finest skills that a country's educational system should seek to improve its teaching and learning in order to help students develop the requisite skills. In our daily lives, we need research findings as a basis for personal and professional decision taking. Research, broadly speaking, helps to advance knowledge, improve practice and inform the policy direction of the country (Kothari, 2003; Creswell, 2012). Due to the consistent effort by advance countries to do research and use data as the basis of their decisions, it should have been easy for developing countries to follow suit. Instead of expending adequate resources into the conduct of research that has already been done by other developed countries, it would be easier to locate such studies and look at how they can be modified to suit our unique situations. Could it be that people in sub-Saharan Africa have so many problems due to the poor attention that the sub-continent has given to evidenced-based research?

There are many issues that students at the universities and colleges go through when doing their project works, long essays, thesis or dissertations. In some universities and colleges, students enroll in the research course at a time when they will not be required to use the knowledge learnt from the course to write up their projects. When under-graduate students take the research class at earlier classes but are required to write their projects in their final year, students are more likely to have some level of difficulty. Again, if students do not get a lecturer with the requisite foundational knowledge in the area, it is more likely the class will not be meaningful to the students. Consequently, students will not be motivated to attach the needed importance to learning the course. It has also become a problem that students studying the course are allowed to work on projects that are related to the conduct of research. Instead, lecturers of the course focus more on the paper and pencil test. When this happens, it becomes difficult for the students to have authentic knowledge in conducting their own research.

## Statement of the problem

There has been a growing practice where leadership of universities employ lecturers based on their respective disciplines. However, when it comes to the teaching of Educational Research, the default mentality is that every lecturer should be able to teach Educational Research regardless of whether it is qualitative or quantitative design. For this reason, universities hardly employ qualified people (lecturers who have a terminal degree in research) to teach the course (Educational Research). The question is "do all lecturers have the research skills and other competencies to enable their students learn meaningfully during research class? If qualified faculty in research are not hired to teach the course, can any other lecturer teach the class as effective as the one who has a terminal degree in research? This has been the order of the day where universities do not necessarily employ lecturers with the requisite degree. The effect is that it is more likely students will struggle to undertake their own research.

## Purpose of the study

The purpose of the study was to use survey research design to identify the perception of in-service teachers (with diploma certificates) on the teaching of Educational Research course in the Fall 2017 Sandwich programme. Based on the purpose, the researchers decided to focus on three thematic areas: the knowledge of statistics, relevance of statistics and statistics anxiety in comparison with the demographic background (gender, age and years of teaching) of the respondents.

**Research Questions**
**Based on the problem outlined in the above, the following research questions were posed:**
1. Is there any difference in the three constructs (*teaching of research, relevance of research and statistics anxiety*) based on gender?
2. Is there any difference in the three constructs (*teaching of research, relevance of research and statistics anxiety*) based on age?
3. Is there any difference in the three constructs (*teaching of research, relevance of research and statistics anxiety*) based on years of teaching?
4. Is there a relationship between age and the three constructs?
5. Is there a relationship between years of teaching and the three constructs?
6. Is there a relationship between *age* and *years of teaching of* respondents?

**Review of related literature**
This review focuses on three themes that underpin the study and they are: rationale for research methods in higher education; approaches for teaching research methods in higher education; and statistics anxiety among students.

**Rationale for research methods in higher education**
Research skills are important outcomes of educational training. Students need to demonstrate a clear ability to conduct independent inquiry during and after their studies. It is a lifelong skill required in virtually any field of human endeavor. These vital educational outcomes are acquired through the systematic science promoted through research method courses. As a result of its universal application in the curriculum, research methods courses are usually compulsory (Ni, 2013).

A number of studies have investigated into the goals of research methods in diverse academic contexts (Aguado, 2009; Alemanne, 2018; Canning & Gallagher-Brett, 2010; Chu, 2015; Ciarocco, Lewandowski, & Van Volkom, 2013; Crowe, Ceresola, & Silva, 2014; Gray et al., 2015; Hoffman, 2013; Howard & Brady, 2015). Most of these studies approach their aims by examining the disciplinary context and norms within which research methods is applied. As observed by Ni (2013), owing to its universal applicability for scientific inquiry, research methods courses have been considered core in many curricula. Pfeffer and Rogalin (2012) outlined a number of benefits (citing Schutt, Blalock and Wagenaar, 1984) for teaching research methods. Among others, they reasoned that research methods courses can expose students to the need to conduct research; it can help students understand the differences between deductive and inductive reasoning and equip them with the skills to apply appropriate methods on each of them; it can expose students to the necessity of ethics in research; and it can also help unearth potential areas for new investigation.

The goals for teaching research methods may vary as one institution and or a department may emphasize some aspects of research methods. According to Aguado (2009), in the social sciences, emphases may be placed on the variety of research questions that may be asked, as well as the type of research questions that may be posed in sub-disciplines within the field. Other interests may include outlining the research process to students and equipping them with data-gathering skills and use of computer software for data gathering (Hartnett, 2013; Johnston, 2006).

These goals are to remind any educator of research methods to be mindful of the pedagogical expectations of the course. In other words, teachers of research methods must outline clear instructional goals pointing to the rationale for and need to learn research methods. Such an undertaking will assure students of the need to embrace the course, contribute to student retention, and lead to re-orientation of the value of research among students (Alemanne, 2018).

**Approaches for teaching research methods**
The quest for the most effective pedagogical factors that enhance learning and retention of knowledge among students continues to motivate research into new instructional methods beyond the traditional lecture method. In the era of ICT, many pedagogical efforts are integrating collaborative technology and the likes (Boyle et al., 2014; Dinauer, 2018; Vasquez-Colina, Maslin-Ostrowski, & Baba, n.d.). Ramirez (2018) investigated into the preferred methodology for learning standard precautions among undergraduates in Nursing. The study found that a controlled group performed better when exposed to self-instruction via a computer simulated course. The author concludes that teaching methods that integrate ICTs are effective and preferred by students for learning. The study by Ramirez espouses valuable lessons on relevant teaching approaches for research methods, having emphasised the superior advantages of self-learning computer programmes over traditional teaching methods. This is perhaps due to the constructivist nature of technologies in nurturing independent, authentic experiences of learners (Natalia & Darren, 2016). Not surprisingly, Ni (2013) found that, despite noted challenges of

persistence among students, online teaching methods for research methods is less intimidating, and improves the quality and frequency of interaction between learner and instructor. The study concludes that between classroom and online learning, effective teaching and learning is markedly improved through online learning in research methods among public administration students.

Other studies examine the role of games that facilitate teaching and learning of research methods. Games retain great pedagogic value, whether traditional or computer-based (Boyle et al., 2014; Natalia & Darren, 2016). Natalia and Darren (2016), in their exposition of the Curveball Game, demonstrate the immense value in traditional gaming in teaching research methods. The game was a staff-student collaborative initiative at Leeds Beckett University in the United Kingdom designed to enhance problem-solving among undergraduate students in the social sciences undertaking a research project. The game involved assigning students to two groups of nine members each and assigning a problem-based task. At the end of the game, the majority of the students who participated in it viewed it as "very" or "quite" useful for, among others, understanding the research process, designing research, research ethics and methodological issues in research.

Patka, Miyakuni and Robbins (2017) explored the potential of Photovoice (PV) for teaching research methods among counsellors. According to the authors, "PV is a community-based participatory research method that involves individuals actively making meaning of the world around them". Similar to the "Curveball Game", PV was implemented as a series of processes and this involved identifying a research questions; developing a photograph and interpretation; discussing the photographs and interpretations in a group discussion; transcribing the transcript of the discussions; and analysing the resulting qualitative data. This process helped students to understand the research question development, improved their reflectivity, and the need to be ethical during the research process.

Despite the hype, game-based learning approaches in research methods do not enjoy universal appeal among different age brackets. Leyva-Moral and Camps (2015) explored the utility of the Jigsaw Technique to foster student-centred and collaborative work learning approaches in research methods among nursing students at a Spanish university.   The technique is a collaborative learning approach that apportions individual responsibility for the group's success, as each individual's contribution decides the final marks for each member of the group. In their evaluation, the authors found heavy workload concerns especially among less than 22 year old students, compared to older students. Notwithstanding, 89.6%  of nursing students under 22 years of age reported improvement in their team-work skills, compared to 79.6% who viewed the Jigsaw Technique in this light. Generally, the study notes that the programme was not a valuable approach to learning research methods among students compared to traditional teaching methods. This finding, though, is not to suggest that game-based methods for teaching research methods are invaluable. As pointed out in Boyle et al. (2014), the use of problem-based methods, such as games, enable students to be engaged in tasks that could eventually link research to evidence-based practice helping students, in a constructivist framework, to make meaning of their lived experiences of research methods.

To this end, it may be pointed out that despite the utility of games for learning research methods, it is important to recognise that whether one chooses traditional or game-based teaching approaches, they both have their strengths and weaknesses. What is important, however, is for the instructor to recognise the necessity for effective, efficient and engaged outcomes-based learning by integrating these principles in instructional goals (Hoffman, 2013).

**Statistics anxiety among students**
According to Lavasani, Weisani, and Shariati (2014), statistics anxiety involves "the unstable and transient experiences of tension, fear, and intense emotion of the self-dependant neural system in a specific context and situation". It usually occurs when students are learning concepts and terms in statistics. It involves persistent lack of confidence to understand concepts, problems and theories in statistics and a resulting inability to solve questions on them.

A number of studies have examined the phenomenon of statistics anxiety from different points of view: causes and effects (Chew & Dillon, 2014; Condron, Becker, & Bzhetaj, 2018; Huang, 2018; Lavasani et al., 2014; Markle, 2017; Najmi, Raza, & Qazi, 2018; Slootmaeckers, Kerremans, & Adriaensen, 2014; Zare, Rastegar, & Hosseini, 2011); disciplinary and sex differences (Baloğlu, Deniz, & Kesici, 2011; Bourne, 2018; Faber, Drexler, Stappert, & Eichhorn, 2018; Gray et al., 2015; Najmi et al., 2018; Onwuegbuzie & Daley, 1999; Paechter, Macher, Martskvishvili, Wimmer, & Papousek, 2017; Rodarte-Luna & Sherry, 2008; Tonsing, 2018; Ulrich, n.d.; Walsh & Ugumba-Agwunobi, 2002); and strategies for overcoming statistics anxiety (Boyle et al., 2014; Ciarocco et al., 2013; Dinauer, 2018; Dowker, Sarkar, & Looi, 2016; Hartnett, 2013), among others.

Statistics anxiety has been attributed to a number of causes. According to Slootmaeckers et al. (2014), despite numerous causes of the phenomenon of statistics anxiety, students experience this as a result of misconceptions on the difficulty of statistics and mathematics, and also due to the negative influence of peers. In their study, Slootmaeckers et al. (2014) identified three factors with the potential for instigating statistics anxiety

among students: dispositional, course-related, and person-related factors. Dispositional factors are the psychological and emotional characteristics and this involves negative attitudes, perceptions, and perceived weak mathematical skills of students. Whereas course-related factors, also described as situational factors, involve prior experiences with statistics such as bad grades, how the course is taught, as well as negative experiences of students with instructors; person-related factors are concerned with environmental factors such as demographics of students: age, gender, and prior educational attainment among others. The authors noted that even though all three factors have significant effect on statistics anxiety, it is important to focus on the course-related factors, as the other two cannot be controlled by the institution administering the course. The findings revealed that all three factors affect students' perception of statistics and that there was a need to integrate statistics into the general curriculum to not only dispel this fear, but also to foster interest in, and ensure retention of statistical skills.

Gender has been found as a factor for statistics anxiety among students. Chew and Dillon (2014) explored the relationship between statistics anxiety and the personality traits using multivariate research methods. The study found that different personalities experienced statistics anxiety differently. As a result, there was a need for adapted instructional approaches to different personalities. In particular, they found, among others, that females scored higher on the factor of "Agreeableness" than their male counterparts, that is, they were more likely to seek help when they experienced statistics anxiety than males.

Similarly, Zare et al. (2011) posits that cognitive and motivational factors are positively correlated to statistics anxiety. They averred that students' intentions for studying statistics are predicted by their achievement goals which may be one of mastery, approach-performance and avoidance performance. The study found that mastery factors have a negative correlation with statistics anxiety, whereas avoidance performance goals exert a positive effect on statistics anxiety of students.

The significance of these studies is that students who approach statistics with a positive attitude excel, while students who have the tendency to avoid statistics have a higher tendency to experience failure in the subject.

## Methodology

The purpose of the current study was to identify the extent to which under-graduate teachers were satisfied with the teaching and learning of Educational Research as a course. The students in this class were in-service teachers who had minimum teaching requirement (diploma). A total of 313 under-graduate in-service teachers from one of the private universities in Ghana were sampled for this study. The study was conducted at the time when these teachers were doing Educational Research at level 300 of their sandwich programme. For this reason, they could honestly report to the researchers on how they felt about the teaching of the course.

The researchers employed the simple random sampling method to select the participants. Out of a population of 800, the researchers settled on a sample size of 313 students. To obtain the sample, the instrument was administered to all the level 300 students. After submission, the questionnaires were numbered one up to 800. The researchers wrote numbers from one to 800 and placed them in a bowl. After series of shaking the bowl, 313 of these cut-out papers were hand-picked. The researchers used the numbers picked randomly from the draw to select their corresponding questionnaires. The 313 respondents were used in the research analysis.

The questionnaire consisted of quantitative items only. The questionnaire was broken into three sub-sections as *Perceived teaching of research; perceived relevance of research;* and *perceived statistics anxiety*. Each of the sub-sections had eight items. The researchers designed their own instrument. The *statistics anxiety* construct was made up of positive statements but was later reversed coded so that higher score in the construct would indicate the presence of *statistics anxiety* among respondents. To assure consistency of the quantitative measures, factor analysis of the three constructs were conducted. The Cronbach Alpha of the items for the construct *perceived teaching of research* yielded *0.78*; the *perceived relevance of research* had *0.62*; while the *perceived statistics anxiety* indicated *0.86*. Based on the reliability tests, the researchers could compute the items together to get the required constructs as outlined above.

**Table 1:** Test of reliability of the three constructs

| Constructs | Measuring Items  (5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree) | Mean | Cronbach Alpha |
|---|---|---|---|
| Teaching of research | 1. The class assignments were done individually. | 3.34 | |
| | 2. The final examination in research was paper and pencil test. | 3.01 | |
| | 3. The teacher knew how to teach research. | 4.00 | |
| | 4. Other students understood what was taught in class. | 3.49 | 0.78 |
| | 5. I was confident of conducting my own research after class. | 3.22 | |
| | 6. I understood the basics of research after the class. | 3.57 | |
| | 7. I have conducted a research on my own. | 2.99 | |
| | 8. I will recommend the teacher for other students for research. | 3.76 | |
| Relevance of research | 1. I have been explained in detail the importance of research. | 3.84 | |
| | 2. Research is only useful to scientists (inverted). | 2.70 | |
| | 3. Research should be introduced at the basic school level. | 3.52 | 0.62 |
| | 4. Research is a natural thing that we do on daily basis. | 3.93 | |
| | 5. Research courses are always taught well. | 3.50 | |
| | 6. Research is important to decision-taking. | 4.03 | |
| | 7. My students have undertaken a research project before. | 3.13 | |
| | 8. We can solve local and national issues with research | 4.01 | |
| Statistics anxiety | 1. I have taken a statistics class before. | 3.72 | |
| | 2. I always enjoy learning statistics. | 3.77 | |
| | 3. I do not have any fears for learning statistics. | 3.60 | |
| | 4. Statistics should be mandatory for all university students. | 3.60 | 0.86 |
| | 5. The teaching of statistics is not a problem at all. | 3.47 | |
| | 6. I am looking forward to taking another statistical class. | 3.52 | |
| | 7. Statistics is important to all students. | 4.13 | |

After running the frequencies for the three constructs (teaching of research, relevance of research, and statistics anxiety), the mean and standard deviations were: teaching of research (3.41[0.82]), relevance of research (3.58[0.66]), and statistics anxiety (3.70[0.97]), respectively. The overall averages and standard deviations for the three constructs were close with a range of 0.29 for the mean and 0.31 for the standard deviation. The findings imply that the perception of teachers on these constructs were similar. However, the standard deviation of the statistics anxiety was the highest indicating that respondents did not have similar rating as compared to the other two constructs.

The researchers, as part of exploring the demographic background of respondents, investigated their gender distribution. The analysis indicated that 237 were males (75.7%) while 76 were females (24.3%). The data seem to indicate that the number of males in this private university was approximately three times the size of the female counterpart.

**Table 2**: Gender Distribution of Respondents

| Gender | Frequency | Percentages |
|---|---|---|
| Male | 237 | 75.7 |
| Female | 76 | 24.3 |
| **Total** | **313** | **100** |

(*Field data, 2018*)

Age was another important factor the researchers explored. From the data, under-graduate university students' age was categorized into three. These were 20-26, 27-29, and 30 and above. As indicated below, the 20-26 group had 97 respondents (31%), 27-29 had 126 (40.3%) whereas the last group recorded 90 respondents (28.7%). With a mean age of 28.2 and standard deviation of 4.1, it was clear that majority of the respondents did not fall within the traditional age bracket (21-24 years). Again, it was more likely to have some outliers in the age distribution.

**Table 3**: Age Distribution of the Respondents

| Age | Frequency | Percentages |
|---|---|---|
| 20-26 | 97 | 31.0 |
| 27-29 | 126 | 40.3 |
| 30 and Above | 90 | 28.7 |
| **Total** | **313** | **100** |

(*Field data, 2018*)

**Results and Discussion**

*RQ1:* **Is there any difference in the three constructs (***teaching of research***, ***relevance of research*** and ***statistics anxiety***) based on ***gender***?**

The researchers determined whether there was any difference in the responses of the teachers in the three constructs based on their gender. In other words, did gender have any impact on how they rated the various constructs? To answer this question, independent samples t-test statistical procedure was run for the three constructs. After the procedure, the means and standard deviations were as follows: *Mean*=28.17, *SD* = 6.430 against *Mean* =24.63, *SD*=6.314 (teaching of research); *Mean*=29.32, *SD*=5.220, against *Mean*=26.75, *SD*=5.047 (relevance of research); and *Mean*=17.56, *SD*=7.327 versus *Mean*=20.92, *SD*=8.764 (statistics anxiety) for males and females teachers respectively. Interestingly, there were significant differences between males and females in terms of how they perceived the *teaching of research*, the *relevance of research* and *statistics anxiety*. This finding seems to indicate that male teachers are more likely to have advanced knowledge in research. Again, they were more likely to view research as a relevant subject of study. Finally, male teachers are more likely to have lower statistics anxiety than their female counterparts. This result is confirmed in Förster and Maur (2015) who found significant anxiety in two out of three dimensions in statistics anxiety among females. This finding is also supported in Chew and Dillon (2014), who found that the more interested a student was in a subject, the less anxious they were about it; which may likely lead to a better performance in the subject. From the finding, there appears to be a need for statistics lecturers who motivate and inspire learners to develop a deeper interest in educational research methods as a way of overcoming their fears and pessimism of the course.

**Table 4**: Test of group differences based on gender

| Constructs | *df* | *t* | *p-value* |
|---|---|---|---|
| Teaching of research | 295 | 4.107 | .000 |
| Relevance of research | 298 | 3.700 | .000 |
| Statistics anxiety | 297 | -3.257 | .001 |

(*Field data, 2018*)

*RQ2*: **Is there any difference in the three constructs (***teaching of research, relevance of research*** and ***knowledge statistics***) based on ***age***?**

Across ages of the university students, the researchers wanted to find whether there was any difference as they responded to the three constructs. Since age had three categories (21-26, 27-29, & 30 and above), the one-way ANOVA was used to run the statistical procedure. Again, the Bonferroni test was used as a post-hoc in order to locate where the differences existed within the ages. At the end of the test, the analysis indicated that there was no difference in terms of age on *teaching of research* and *relevance of research*. However, there was a significant difference in the *statistics anxiety* construct. The post hoc test indicated that significant differences existed between ages 21-26 and 30 years and above. The results seem to suggest that university students within the ages of 21-26 had lower statistics anxiety level compared to their course mates who were 30 years or above. This result also conforms to that of Baloğlu et al. (2011) who found a positive relationship between older students above 27 and higher statistics anxiety.

**Table 5**: Test of group differences based on age

| Constructs | *df* | *f* | *p-value* |
|---|---|---|---|
| Teaching of research | (2, 294) | 1.128 | .325 |
| Relevance of research | (2, 297) | .713 | .491 |
| Statistics anxiety | (2, 296) | 6.128 | .002 |

(*Field data, 2018*)

*RQ3*: **Is there any difference in the three constructs (***teaching of research, relevance of research*** and ***knowledge statistics***) based on ***years of teaching/experience***?**

The research participants were all teachers with diploma as their highest level of education. As a result, the researchers wanted to know whether the number of years student-teachers have taught had any impact on their perception across the three constructs. The number of years' variable was grouped into zero to two years, three years, and four years and above. The one way ANOVA statistical procedure indicated that there was no significant difference in the perception of the teachers on the three main constructs based on their years of teaching. The finding seems to imply that the number of years the participants taught did not change their views and opinions on research as a course of study. This result finds support in a recent study by Gresham (2018) which suggests that all in-service teachers, irrespective of their teaching experience, exhibit mathematics anxiety.

**Table 6**: Test of group differences based on years of teaching

| Constructs | *df* | *f* | *p-value* |
|---|---|---|---|
| Teaching of research | (2, 294) | .186 | .831 |
| Relevance of research | (2, 297) | .205 | .815 |
| Statistics anxiety | (2, 296) | .918 | .401 |

(*Field data, 2018*)

**RQ4: Is there a relationship between *age* and the three constructs?**

The assumption of the researchers was that there should have been a relationship between "the more people grow older", "the more their understanding". For this reason, the researchers run the Pearson product-moment correlation of age of the teachers against all the three constructs. Contrary to the assumption of the researchers, only the *teaching of research* dimension indicated a positive coefficient (.034). However, there was no significant relationship between *age* and the *teaching of research*. The other two constructs (*relevance of research* and *statistics anxiety*) had a negative relationship with age (-.013 and -.159). As displayed in Table 7, there was a significant negative correlation between age and teachers' statistics anxiety. This finding seemed to imply that the older the respondents, the less knowledge they had in statistics ($r = -0.159$, $p = 0.006$). This finding could be explained in several ways. One may relate this finding to that of *RQ2* which found that the older a teacher, the more anxious they could be in statistics (Baloğlu et al., 2011). Furthermore, from *RQ1,* it was revealed that the more anxious a student was in statistics, the lower their performance in statistics. Therefore, it can be concluded that older teachers may exhibit less knowledge in statistics as a result of their persistent anxiety of statistics, and not necessarily because they are 30 years or above.

**Table 7**: Relationship between age and the three constructs

| Constructs | (r) | p-value |
|---|---|---|
| Age/teaching of research | .034 | .560 |
| Age/relevance of research | -.013 | .817 |
| Age/statistics anxiety | -.159** | .006 |

(*Field data, 2018*)  Correlation is significant at the 0.01 level (2-tailed)

**RQ5: Is there a relationship between *years of teaching* and the three constructs?**

Experience is an important factor that educators use to indicate who qualifies to be given portfolios within their profession. The researchers wanted to find out whether there was a relationship between the experience of teachers as demonstrated through the numbers of years these teachers have been teaching as against the *teaching of research*, *relevance of research* and statistics anxiety. Once again, the Pearson product-moment correlation statistical procedure was used. The analysis indicated that all three constructs had a negative relationship with *years of teaching*. The relationships were so weak to the extent that two of them (*teaching of research* and *relevance of research* had less than 0.1 coefficient (-.017 and -.021). Among the three constructs, only the statistics anxiety dimension had a significant negative correlation with *years of teaching* ($r = -.188$, $p =.001$). The implication of the finding is that the longer teachers stayed in the teaching profession, the less knowledge they had in statistics. As found in our subsequent analysis, there is a positive relationship between older teachers and the longer teaching experience. Since the most experienced teachers are likely to suffer from statistics anxiety, Gresham (2018) advocates in-service continuous professional development programmes as a measure to mitigate mathematics anxiety among older, experienced teachers.

**Table 8**: Relationship between years of teaching and the three constructs

| Constructs | (r) | p-value |
|---|---|---|
| Years of teaching/teaching of research | -.017 | .775 |
| Years of teaching/relevance of research | -.021 | .721 |
| Years of teaching/statistics anxiety | .188*** | .001 |

(*Field data, 2018*). Correlation is significant at the 0.001 level (2-tailed)

**RQ6: Is there a relationship between *age* and *years of teaching* of respondents?**

It might be obvious to find that, generally speaking, older people in the teaching profession are more likely to be have taught for a longer time than the younger ones in the profession. Though this was obvious, the researchers wanted to know whether there was statistical evidence to support the stance. After running the Pearson product-moment correlation between age and years of teaching, the findings indicated that there was a strong significant positive correlation between the two variables ($r = .523$, $p =.000$). The findings implied that the older the respondents, the more experienced they were in the teaching profession.

**Table 9**: Relationship between age and years of teaching

| Construct | (r) | p-value |
|---|---|---|
| Age/years of teaching | .523*** | .000 |

Correlation is significant at the 0.001 level (2-tailed)

**Conclusion**

In conclusion, the current study has revealed two major findings that teachers of Educational Research have to be mindful of when designing and teaching this course. First, female students are more likely to have a somewhat less knowledge in the teaching of research, negative perception of the relevance of research but higher statistics anxiety. Second, age is a factor to consider when teaching the Educational Research course. In spite of the challenges stated above, a significant number of the respondents believe research is relevant to teachers in their personal and professional lives. To obtain a deeper understanding of this phenomenon, it may be needful to

use qualitative research design to identify the underlining reasons why age and gender have serious impact on the learning of Educational Research course among teachers.

**Implications for Practice**
The purpose of the study was to use survey research design to identify the perception of teachers with diploma certificates on the teaching of Educational Research course in the Fall 2017 Sandwich programme. Based on the findings, the implications for practice are discussed as follows:

1. There is the need for Educational Research teachers to design short surveys to collect data on gender and age distribution of the students who enroll in the course. Such a practice will allow the teacher know how to create instructional interventions that will be developmentally appropriate for them.
2. Again, the hiring of teachers, and the teaching of Educational Research course should be reviewed at the various institutions of higher learning to make sure competent teachers with the requisite terminal degrees in Educational Research teach the course. Such practice is more likely to reduce the anxiety levels of students who are not inclined in statistics.
3. The teaching of Educational Research should be incorporated into the mainstream of our educational system at all levels. Since research is a life skill that students will need in their personal and professional lives, it is important that the course is introduced at an early age in order to improve upon students' analytical and reasoning skills.

**References**

Aguado, N. A. (2009). Teaching Research Methods: Learning by Doing. *Journal of Public Affairs Education*, *15*(2), 251–260. https://doi.org/10.1080/15236803.2009.12001557

Alemanne, N. D. (2018). Teaching Research Methods in LIS, 16.

Baloğlu, M., Deniz, M. E., & Kesici, Ş. (2011). A descriptive study of individual and cross-cultural differences in statistics anxiety. *Learning and Individual Differences*, *21*(4), 387–391. https://doi.org/10.1016/j.lindif.2011.03.003

Bourne, V. J. (2018). Exploring Statistics Anxiety: Contrasting Mathematical, Academic Performance and Trait Psychological Predictors. *Psychology Teaching Review*, *24*(1), 35–43.

Boyle, E. A., MacArthur, E. W., Connolly, T. M., Hainey, T., Manea, M., Kärki, A., & van Rosmalen, P. (2014). A narrative literature review of games, animations and simulations to teach research methods and statistics. *Computers & Education*, *74*, 1–14. https://doi.org/10.1016/j.compedu.2014.01.004

Canning, J., & Gallagher‑Brett, A. (2010). Building a bridge to pedagogic research: teaching social science research methods to humanities practitioners. *Journal of Applied Research in Higher Education*, *2*(2), 4–9. https://doi.org/10.1108/17581184201000009

Chew, K. H. P., & Dillon, D. B. (2014). Statistics Anxiety and the Big Five Personality Factors. *Procedia - Social and Behavioral Sciences*, *112*, 1177–1186. https://doi.org/10.1016/j.sbspro.2014.01.1282

Chu, H. (2015). Research methods in library and information science: A content analysis. *Library & Information Science Research*, *37*(1), 36–41. https://doi.org/10.1016/j.lisr.2014.09.003

Ciarocco, N. J., Lewandowski, G. W., & Van Volkom, M. (2013). The Impact of a Multifaceted Approach to Teaching Research Methods on Students' Attitudes. *Teaching of Psychology*, *40*(1), 20–25. https://doi.org/10.1177/0098628312465859

Condron, D. J., Becker, J. H., & Bzhetaj, L. (2018). Sources of Students' Anxiety in a Multidisciplinary Social Statistics Course. *Teaching Sociology*, 0092055X18780501.

Crowe, J., Ceresola, R., & Silva, T. (2014). Enhancing student learning of research methods through the use of undergraduate teaching assistants. *Assessment & Evaluation in Higher Education*, *39*(6), 759–775.

Dinauer, L. (2018). 9. Beating anxiety and building community: best practices for teaching doctoral research methods and statistics online. *Advancing Doctoral Leadership Education Through Technology*, 137.

Dowker, A., Sarkar, A., & Looi, C. Y. (2016). Mathematics anxiety: what have we learned in 60 years? *Frontiers in Psychology*, *7*, 508.

Faber, G., Drexler, H., Stappert, M. A., & Eichhorn, B. J. (2018). Measuring Education Science Students 'Statistics Anxiety.

Förster, M., & Maur, A. (2015). Statistics anxiety and selfconcept of beginning students in the social sciences–a matter of gender and socio-cultural background. *Zeitschrift Für Hochschulentwicklung (ZfHE)*, *10*(4), 67–90.

Gray, C., Turner, R., Sutton, C., Petersen, C., Stevens, S., Swain, J., … Thackeray, D. (2015). Research methods teaching in vocational environments: developing critical engagement with knowledge? *Journal of Vocational Education & Training*, *67*(3), 274–293. https://doi.org/10.1080/13636820.2015.1050443

Gresham, G. (2018). Preservice to Inservice: Does Mathematics Anxiety Change With Teaching Experience? *Journal of Teacher Education*, *69*(1), 90–107. https://doi.org/10.1177/0022487117702580

Hartnett, J. L. (2013). Stats on the Cheap: Using Free and Inexpensive Internet Resources to Enhance the Teaching of Statistics and Research Methods. *Teaching of Psychology*, *40*(1), 52–55. https://doi.org/10.1177/0098628312465865

Hoffman, E. S. (2013). Beyond The Flipped Classroom: Redesigning A Research Methods Course For e3 Instruction. *Contemporary Issues in Education Research (CIER)*, *7*(1), 51. https://doi.org/10.19030/cier.v7i1.8312

Howard, C., & Brady, M. (2015). Teaching social research methods after the critical turn: challenges and benefits of a constructivist pedagogy. *International Journal of Social Research Methodology*, *18*(5), 511–525. https://doi.org/10.1080/13645579.2015.1062625

Huang, L. (2018). A Mixed Method Investigation of Social Science Graduate Students' Statistics Anxiety Conditions Before and After the Introductory Statistics Course. *International Journal of Higher Education*, *7*(3), 156.

Johnston, L. (2006). Software and Method: Reflections on Teaching and Using QSR NVivo in Doctoral Research. *International Journal of Social Research Methodology*, *9*(5), 379–391. https://doi.org/10.1080/13645570600659433

Lavasani, M. G., Weisani, M., & Shariati, F. (2014). The Role of Achievement Goals, Academic Motivation in Statistics Anxiety: Testing a Causal Model. *Procedia - Social and Behavioral Sciences*, *114*, 933–938. https://doi.org/10.1016/j.sbspro.2013.12.810

Markle, G. (2017). Factors Influencing Achievement in Undergraduate Social Science Research Methods Courses: A Mixed Methods Analysis. *Teaching Sociology*, *45*(2), 105–115. https://doi.org/10.1177/0092055X16676302

Najmi, A., Raza, S. A., & Qazi, W. (2018). Does statistics anxiety affect students' performance in higher education? The role of students' commitment, self-concept and adaptability. *International Journal of Management in Education*, *12*(2), 95–113.

Onwuegbuzie, A. J., & Daley, C. E. (1999). Perfectionism and statistics anxiety. *Personality and Individual Differences*, *26*(6), 1089–1102. https://doi.org/10.1016/S0191-8869(98)00214-1

Paechter, M., Macher, D., Martskvishvili, K., Wimmer, S., & Papousek, I. (2017). Mathematics Anxiety and Statistics Anxiety. Shared but Also Unshared Components and Antagonistic Contributions to Performance in Statistics. *Frontiers in Psychology*, *8*, 1196.

Rodarte-Luna, B., & Sherry, A. (2008). Sex differences in the relation between statistics anxiety and cognitive/learning strategies. *Contemporary Educational Psychology*, *33*(2), 327–344. https://doi.org/10.1016/j.cedpsych.2007.03.002

Slootmaeckers, K., Kerremans, B., & Adriaensen, J. (2014). Too afraid to learn: Attitudes towards statistics as a barrier to learning statistics and to acquiring quantitative skills. *Politics*, *34*(2), 191–200.

Tonsing, K. N. (2018). Instructor immediacy and statistics anxiety in social work undergraduate students. *Social Work Education*, *37*(2), 223–233.

Ulrich, A. (n.d.). Using Mathematical Research Methods to Solve a Problem in Music Theory Instruction, Specifically, the Teaching of Secondary Dominant Chords, 15.

Vasquez-Colina, M. D., Maslin-Ostrowski, P., & Baba, S. (n.d.). Tapping into Graduate Students' Collaborative Technology Experience in a Research Methods Class: Insights on Teaching Research Methods in a Malaysian and American Setting, 13.

Walsh, J. J., & Ugumba-Agwunobi, G. (2002). Individual differences in statistics anxiety: the roles of perfectionism, procrastination and trait anxiety. *Personality and Individual Differences*, *33*(2), 239–251. https://doi.org/10.1016/S0191-8869(01)00148-9

Zare, H., Rastegar, A., & Hosseini, S. M. D. (2011). The relation among achievement goals and academic achievement in statistics: the mediating role of statistics anxiety and statistics self-efficacy. *Procedia - Social and Behavioral Sciences*, *30*, 1166–1172. https://doi.org/10.1016/j.sbspro.2011.10.227

Zhukov, K. (2012). Teaching strategies and gender in higher education instrumental studios. *International Journal of Music Education*, *30*(1), 32–45. https://doi.org/10.1177/0255761411431392