

Unit 23: Extended Research in Public Services

Unit code:	T/600/6102
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to develop the skills needed to design and independently carry out an in-depth research project into a topic of personal interest from any area within the public services.

● Unit introduction

This unit will develop learner skills, knowledge and understanding so they can undertake a major research project. Throughout this unit learners will develop and enhance their research and investigative skills, maintaining close communication with the unit assessor whilst independently carrying out their research investigation. It is intended for this unit to build on well-established research skills developed during the first year of study.

This unit provides the experience and opportunity for in-depth research and data analysis which will enhance skills gained from studying at this level. Learners will develop an appreciation of the wide variety of research strategies and techniques available and how to solve problems in a logical way.

Learners will develop the ability to take responsibility for their own learning by independently identifying a research problem to be solved. Determining the solution to their research problem could have a number of benefits. For example, helping to improve educational practice or helping the learner develop useful skills from pursuing their project. Whatever the rationale for developing their research proposal, it is extremely important that the research topic is of personal interest to the learner. The research problem may arise from the real-world setting or be generated from theoretical concepts. Whichever route the learner chooses to take it is paramount that in order to propose a valid research problem the learner possesses, or acquires, an in-depth knowledge about their topic of personal interest.

By conducting a literature review the learner will be able to explore and examine previous methodologies employed to solve particular scientific problems. A literature review can provide a wealth of information concerning selection of subjects, methodology and equipment, research design, statistical analyses, research implications and recommendations for future study within the area of interest. By conducting a review of the literature into an area of personal interest, learners will become familiar with research conducted by other people and will be able to see how this can relate to, and support, the formulation of their own research hypotheses. Learners will then design their research proposal and conduct an original investigation to test their research hypotheses.

This unit is also designed to provide learners with an appreciation of the importance of data analysis for scientific research. Learners will apply appropriate statistical tests in order to carefully analyse research evidence and data collected, providing a clear and accurate account of their project. Learning outcome 4 will culminate in the learner producing their research project in standard format.

Learners could use and apply knowledge and skills gained from studying this unit to effectively bridge the gap between further education/school and progression to further study on an undergraduate degree or professional qualification in the public services or related areas.

● **Learning outcomes**

On completion of this unit a learner should:

- 1 Be able to design a research project
- 2 Be able to implement and interpret the research results
- 3 Be able to review the results of the research project
- 4 Be able to present the research project.

Unit content

1 Be able to design a research project

Research proposal: area of study (rationale for selection); statement of the problem; background to the problem; review of associated literature (eg locate, read and index literature from primary sources, secondary sources, consider usefulness/relevance of literature); critique of literature; project aim; research hypotheses (null hypotheses, alternative hypotheses); justification of the study; research method; scope and limitations; implications (eg resources)

Research design: systematic; original; ethical considerations in public service research (regarding confidentiality); type of research eg qualitative, quantitative; subject characteristics; subject safety considerations; sample size; methodology; resources; statistical analyses; validity; reliability; control of variables

2 Be able to implement and interpret the research results

Implement: eg according to research design and research method, to test research hypotheses, considering test validity, reliability, considering health and safety of subjects

Data collection techniques: type eg qualitative, quantitative; selection of appropriate tools for data collection; systematic recording; appropriate units; methodological problems (eg bias, variables and control of variables, validity, reliability)

Present data: eg use of tables, use of graphs

Data interpretation: selection of appropriate methods of analysis; selection of relevant statistical test (eg t-test, Pearson's Product Moment Correlation Coefficient (r), Analysis of Variance, Intraclass Correlation Coefficient); level of significance

3 Be able to review the results of the research project

Project results: success of the project with reference to aim and hypotheses; validity of results; reliability of results; discussion of outcome(s) in terms of literature review; conclusion(s)

Future consideration: significance of research project; application of research results; implications; limitations of the project; improvements; recommendations for further research

4 Be able to present the research project

Scientific format: title page; contents page (list of tables, list of figures); acknowledgements; abstract; introduction; review of literature; methodology; hypotheses (null hypotheses, alternative hypotheses); results (statistical analysis of data); discussion; conclusion; references (Harvard referencing system); appendices

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 produce a valid research proposal for a public service based research project, with tutor support [IE1, IE2, IE3, CT1, CT2, CT3, CT4, CT5, CT6, SM3]	M1 produce a valid research proposal for a public service based research project, with limited tutor support	D1 independently produce a valid research proposal for a public service based research project
P2 describe the research design for a public service based research project [IE1, IE2, IE3, CT1, CT2, CT3, CT4, CT5, CT6, SM3]	M2 explain the research design for a public service based research project	D2 justify the research design for a public service based research project
P3 implement the research project, describing data collection techniques [IE1, IE2, IE3]	M3 implement the research project, explaining data collection techniques	
P4 present and interpret collected data, applying statistical techniques to describe the research results [IE4, IE6]	M4 present and interpret collected data, explaining the research results	D3 present and interpret collected data, analysing the research results.
P5 review the project results, explaining areas for future consideration [IE4, IE6, RL5, EP4]	M5 analyse the project results, justifying areas for future consideration.	
P6 present the research project, following standard scientific format. [IE4, IE6, RL5]		

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
------------	--	---	--

Essential guidance for tutors

Delivery

For learners to meet the grading criteria for this unit they must design, plan and implement an original in-depth research investigation into an area of personal interest. The area to be investigated can arise from any topic within public services. Assessment evidence for this unit will be in the form of a written research project, adopting standard report writing.

The delivery of this unit can be integrated with other units across the BTEC Level 3 Nationals in Public Services specification. The unit should be delivered in the second year of the programme. Learners will need to develop research skills and techniques from their underpinning knowledge of research and investigation arising from the first year of study. This unit allows learners to integrate and apply knowledge from many other units across the specification. It is important that the research topic is of personal interest to the learner and that the learner possesses or acquires an in-depth knowledge and understanding of the topic and related areas.

Although a major part of the delivery focuses on learners practically conducting their research project, the unit must be supported by theoretical input from the tutor. Learners must understand concepts related to the research proposal and design as well as research skills, techniques and methodologies before they can consider, explore and produce a valid research proposal. At the research proposal stage, the tutor may, if necessary, provide support to help shape the proposal and provide direction to the learner to ensure an original and valid research proposal is presented. Tutors should note that if support is provided, this will affect the learner's final grade.

The research proposal will require learners to adopt an in-depth and investigative approach and will include a statement of the research focus and background factors related to it. Tutors should direct learners to consider the following at this stage: Why is the proposed project worthwhile, who would the results be useful to? What is the research focus? What does the literature say? What are the hypotheses? What would the project contribute to the field of public services? If support from the tutor is required at the research proposal stage it must be provided in order to ensure the proposal and design are valid. Once the area to be investigated has been established by the learner and agreed with the tutor, the learner may commence their full research proposal. The proposal should include a review and critique of the associated literature, the aim of the project, research hypotheses and consideration of any implications for the project. The learner will then be able to independently move onto their research design. The research design will include ethical considerations for their project as well as the type of research to be conducted, methodology and statistical analyses. Learners must give due consideration to availability and access to resources for their project as well as project validity, reliability and control of variables.

Following production of a valid research proposal and design, learners can move on to the independent implementation of their research project and interpretation of research results. Learners should be introduced to quantitative and qualitative data collection techniques and application of techniques to their research methodology. Learners need to be aware of, and use, appropriate methods of analysis for their project, including application of statistical test(s). It would be beneficial for tutors to use appropriate computing facilities with suitable software (spreadsheets, Statistical Package for the Social Sciences – SPSS) to aid delivery of the statistical analyses component of the unit. However, statistical analyses to determine degree of difference in data results, such as t-tests, and analyses to determine degree of correlation, such as Pearson's (r), can be successfully computed by hand. Learners need to be aware of the level of significance used to interpret data results.

Following independent implementation of their project and interpretation of data results, learners then need to review the results in terms of meeting the original aim and hypotheses. The review should include the validity and reliability of results and how the outcomes and conclusions link back to the literature review and critique. By applying their in-depth knowledge and understanding of the research topic, learners will need to explain areas for future consideration including limitations of their project and recommendations for further research.

Learners must understand, and follow, correct conventions for report writing and produce their completed research project adopting standard format.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Tutor overview of unit and handout.
Tutor introduction to research methods and techniques – including learner activity covering Harvard referencing system.
Lecture and case studies – ethical guidelines for research in public services including confidentiality.
Designing research hypotheses – learner activity.
Developing the research proposal – group work and individual tutorials, includes learner-initiated research of the literature.
Writing the literature review and critique – group discussion of literature review exemplar and critique.
Lecture – how to write a critique – exemplar and learner activity.
Overview of the research design; learner activity focusing on format for capturing subject characteristics and essential features of the methodology.
Presenting the research proposal and design – learner verbal presentations to the group, includes time allocated for questions and tutor support if required.
Assignment 1: The Research Proposal (P1, P2, M1, M2, D1, D2)
Introduction to validity, reliability and control of variables – learner activity to account for these in their research design – give feedback to the group and group discussion.
Designing informed research materials and questionnaires – learner activity.
Introduction to statistical analysis – t-tests – learner activity.
Introduction to statistical analysis – Pearson's (r) and ICC – learner activity.
Introduction to statistical analysis – ANOVA – computer-based learner activity using statistical package.
Data collection techniques – group work and individual tutorials, includes learner research study.
Developing and confirming the research proposal and design – includes individual tutorials.
Data collection – includes time allocated for learners to present the data collected.
Statistical analysis and interpretation of results – against original aims and hypothesis.
Reviewing project results and future considerations – group work and individual tutorials.
Preparing the research project – includes computer time to prepare presentation of the project following scientific format.
Assignment 2: The Research Project (P3, P4, P5, P6, M3, M4, M5, D3)
Unit and assignment review.

Assessment

The assessment of this unit is through the production of a written research project, following a standard format.

To meet P1, learners need to produce a valid research proposal. Tutors may provide support at this stage to ensure overall project design is sound. For P2, learners need to plan and describe the research design for their independent research project. A suitable assessment method for P1 and P2 would be for learners to verbally present their research proposal and design to their peers, supported by a written copy. By completing a presentation, the tutor and other members of the group will be able to raise questions relating to the research proposal and/or design, which may further help to shape the intended project. Tutors should complete a witness statement to support this assessment activity.

M1 links to P1, where learners must produce a valid research proposal with limited support from the tutor. To meet M2, which builds on P2, learners need to explain the research design for their project.

Following successful completion of their research proposal and design, learners need to independently implement their investigation, including data collection and interpretation for P3. M3 requires learners to implement their research project, explaining their data collection techniques. Learners must demonstrate sound data collection techniques and interpret data through application of statistical analysis for P4. Assessment evidence for the implementation and interpretation of research results will be through the production of their completed research project, which will require learners to report on their methodology, hypothesis and statistical analysis of data. M4 builds on P4 and requires learners to present and interpret data, explaining their research results. To meet D3, learners must present and interpret collected data, providing an analysis of their research results.

To meet P5, learners must review the project results, fully explaining areas for future consideration. Learners need to consider the overall significance of their project, the application and implications of results, together with the project limitations and suggested improvements. Learners also need to explain their recommendations for further research.

The unit assessment for a pass grade culminates in learners producing their research project following standard scientific format for their report writing for P6.

To meet M5, which builds on P5, learners need to provide an analysis of their project results, justifying areas for future consideration.

D1 requires learners to adopt a completely independent approach to the production of their valid research proposal. To meet D2, learners need to justify the research design for their project.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, M1, M2, D1, D2	The Research Proposal	Produce your research proposal and design and present to the group.	Presentation and written report.
P3, P4, P5, P6, M3, M4, M5, D3	The Research Project	Implement research project, interpreting and reviewing your results.	Written research investigation, using standard conventions for report writing.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Public Services sector suite. This unit has particular links with the following unit titles in the Public Service suite:

Level 1	Level 2	Level 3
Public Service Project	Research in Public Services	Government, Policies and the Public Services
		Current and Media Affairs in Public Services
		Public Service Data Interpretation
		Enhancing Public Services Delivery Through the Use of ICT

Essential resources

Access to library facilities with internet access is essential for delivery of this unit. Learners must have access to a wide range of information sources, including relevant texts, journals, newspapers, CD ROMs and DVDs.

Access to a suitable statistical software package such as the Statistical Package for the Social Sciences (SPSS) would be useful.

Through their research proposal and design, learners will need to ensure that sufficient resources are in place to support their intended project.

Employer engagement and vocational contexts

This unit gives learners the opportunity to conduct research into any topic within public services. As such, the scope for employer engagement will be vast and the resulting vocational context will vary depending on the area and type of research investigation conducted.

Indicative reading for learners

Textbooks

Coles A and McGrath J – *Your Education Research Project Handbook* (Pearson, 2009) ISBN 9781408221242

Bell J – *Doing Your Research Project: A Guide for First-time Researchers in Social Science, Education and Health* (Open University Press, 2005) ISBN 9780335215041

Clarke GM and Cooke D – *A Basic Course in Statistics* (Hodder Arnold, 2004)
ISBN 9780340814062

Cohen L and Holliday M – *Practical Statistics for Students* (Paul Chapman Publishing, 1996)
ISBN 9781853963292

Coolican H – *Introduction to Research Methods and Statistics in Psychology* (Hodder Arnold, 1996)
ISBN 9780340679371

Heyes S, Hardy M, Humphreys P and Rookes P – *Starting Statistics in Psychology and Education: A Student Handbook* (Oxford University Press, 1993) ISBN 9780297821700

Kane E and O'Reilly De Brun M – *Doing Your Own Research: In the Field and on the Net* (Marion Boyars, 2001)
ISBN 9780714530437

Malim T and Birch A – *Research Methods and Statistics* (Palgrave Macmillan, 1996)
ISBN 9780333644393

Journals

Health Service Journal

Jane's Police Review

Navy News

RAF News

Soldier

Websites

About the EU	www.europa.eu
British Army	www.army.mod.uk
Communities and local government	www.communities.gov.uk
Fire Service	www.fireservice.co.uk
HM Revenue & Customs	www.hmrc.gov.uk
Home Office Police Service Information	www.homeoffice.gov.uk/police
Royal Air Force	www.raf.mod.uk
Royal Navy/Royal Marines	www.royal-navy.mod.uk
UK Government	www.direct.gov.uk
UK Parliament	www.parliament.uk

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	producing a valid research proposal for a public service based research project, with tutor support describing the research design for a public service based research project implementing the research project, describing data collection techniques presenting and interpreting collected data, applying statistical techniques to describe the research results reviewing the project results, explaining areas for future consideration presenting the research project, following standard scientific format
Creative thinkers	producing a valid research proposal for a public service based research project, with tutor support describing the research design for a public service based research project
Reflective learners	reviewing the project results, explaining areas for future consideration presenting the research project, following standard scientific format
Self-managers	producing a valid research proposal for a public service based research project, with tutor support describing the research design for a public service based research project
Effective participators	reviewing the project results, explaining areas for future consideration.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Creative thinkers	providing feedback to others on their research proposal and design answering questions from others on their own research proposal and design
Reflective learners	providing feedback to others on their research proposal and design answering questions from others on their own research proposal and design
Team workers	providing feedback to others on their research proposal and design answering questions from others on their own research proposal and design collecting data for the research project
Self-managers	collecting data for the research project.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	reviewing the literature interpreting data (statistical analysis)
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	systematically recording data
Follow and understand the need for safety and security practices	systematically recording data
Troubleshoot	
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	reviewing the literature producing the research proposal and design
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	researching data collection methods reviewing the literature
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	preparing a questionnaire producing the research proposal and design
Bring together information to suit content and purpose	producing the research proposal and design
Present information in ways that are fit for purpose and audience	producing and presenting the research proposal and design presenting collected data
Evaluate the selection and use of ICT tools and facilities used to present information	interpreting and presenting data
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	presenting the research proposal and design presenting data

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	interpreting data (statistical analysis of results)
Identify the situation or problem and the mathematical methods needed to tackle it	producing the research design
Select and apply a range of skills to find solutions	interpreting data (statistical analysis of results)
Use appropriate checking procedures and evaluate their effectiveness at each stage	interpreting data (statistical analysis of results)
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	interpreting data (statistical analysis of results)
Draw conclusions and provide mathematical justifications	interpreting data (statistical analysis of results) presenting data reviewing project results
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	presenting the research proposal and design providing feedback to others on their research proposal and design
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	reviewing the literature producing the research proposal and design
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	presenting a written research project adopting standard scientific format.