2019 Extended Investigation written examination report

General comments

In 2019 students presented written reports on a wide range of topics, and engaged in investigations that used a broad range of research methods. The study drew on student interests to generate unique investigations. The professionalism and detail with which reports were presented highlights the skill of students and teachers in this study.

Given the individual nature of student reports, and the particular demands of specific research methods, there is a range of ways in which students can demonstrate skills and knowledge. The illustrations in this report represent some, but not all, of the ways that students demonstrated knowledge and skill at a given level in relation to the assessment criteria. Students' approach to the task should not be based solely on the examples provided in this document, or on choices made in other investigations or research reporting. Choices regarding method, report structure, participants, literature and findings are all individual to each student's investigation.

Students were generally clear in their understanding of method and methodology. Students were selective in their method choices and a number of them understood the connection between data collection approaches and broader methodological considerations. A number of students identified their investigations as case studies when it was evident that they were not, or were not explicitly structured as such. In many instances the understanding of this approach was problematic or incorrect. Case studies as an established research method take many forms; however, it is important that students are guided in understanding the implications of this approach for their investigation. A case study is a methodological decision made at the start of an investigation, not as part of the writing up of a final research project. It informs not only participant selection but also the forms of data collected and the scope of an investigation. These are all choices that need to be made in the context of a case study approach and which students need to understand.

There was good consideration given to the representation of data within written reports. While this would benefit from greater focus during the academic year, there was clear evidence of student understanding of the variety of approaches available to them in selecting the most appropriate format for data. There was a variety of graphical representations employed and students were generally targeted in their use of data.

The identification of key trends and the structure of the findings section is an area for further work. Students should be encouraged to set out key findings in a logical sequence and to highlight the key findings for the reader. Students who did so, and who were able to make connections between different pieces of data within their investigation where appropriate, were more likely to achieve higher scores in this area.

A number of students used appendices to include raw data, further information or copies of data collection tools. Students are reminded that appendices are only for information that is not essential to the investigation, but useful to understanding its construction or findings. Raw data does not need to be included and it is at the student's discretion whether data collection tools need

to be present. It is expected that there is a full account of data collection in the method section of the report and the inclusion of, for example, surveys, in appendices does little to support this discussion if it is comprehensive in the body of the report. Similarly, if analysis tables have been used these are more effectively placed in the body of the document, to allow the reader to understand their structure alongside the explanation of their use.

The most significant issues were connected principally to Criterion 5: clarity and effectiveness of writing and Criterion 6: observance of report writing conventions. A number of reports did not adhere to the conventions of a written report. Some students omitted sections of the written report or amalgamated them. For example, a number of reports did not contain an abstract or introduction. Although no single report structure is mandated in this study it is expected that students are aware of the conventions of report writing, and the need to sequence their reports logically and coherently. In rare cases, adjusting the structure makes sense given the focus of a student's investigation; however this is not true of most reports.

Students should be encouraged to consider how the structure of a report can contribute to the coherence of an investigation and to the way the argument and response to the question develops across the report. It is essential that students follow academic conventions in the structure of their report and use sequencing structures such as subheadings, section headings, introductions and conclusions, to support the flow of ideas. Students who did not include sections such as an abstract or introduction or use sequencing structures such as subheadings risked compromising the clarity of the report and the reader's ability to understand their purpose or argument.

Students need to be conscious of the effect of repetition of phrases, individual words, or whole sections of text. There is very rarely a need to duplicate sections across multiple chapters of a report, for example by including the same information in the introduction and literature review. The use of summary and linkage of ideas is expected to lead the reader through the investigation; extensive repetition is not recommended.

There were issues with referencing and the correct attribution of sources. No one referencing system is preferred in this study and students may use a range of established referencing systems. The application of these was not always effective and there were clear instances where academic attribution had not been made. Reference lists that did not contain all the sources referred to in the body of the report, or that listed references not in the body of the report, affected student performance against Criterion 6. Reference lists are an important element of the final written report and need to be a complete reflection of the citations within the report. This aspect of the report not only supports students to ground their own work in an existing body of knowledge but also identifies where they have relied on the work of another author to make their case.

Several other aspects of student work require teacher and student attention:

- Glossaries that identify terms out of context rather than in the body of writing and in the context of the term's use. Students need to consider the most appropriate means of introducing key definitions within their report.

- The use of convenience sampling as a participant recruitment strategy. While this is an established strategy it was a weaker approach for many investigations and in some cases showed that the student had not fully understood the demands of their question. Convenience sampling has a time and place within research and is relevant for some investigations; however it should not be used simply because a student has ready access to a given population, most often students at their school, if these are not the most appropriate or representative participants for their investigation.

- Systematic literature reviews that do not provide a clear method outline and are predominantly descriptive. Literature review as an established academic method requires critical analysis and synthesis of existing research. It is not an easy approach to take in many research fields.

Given the breadth and depth of existing research, students should be prepared for extensive reading and critical thought. This includes aspects such as the search terms used, the date range and location of research, and the framework to be used in analysing the material. Students who undertook a literature review and only dealt with a very small number of articles, or did not make clear the choices they had made in selecting articles, or did not establish a level of analysis but rather presented summary, had difficulty scoring highly against Criteria 3 and 4. Students are expected to do more than to read and summarise existing literature. A level of synthesis and analysis is required.

- Research questions that either lack significance or contain clear bias. The research question is the heart of each investigation and, therefore, the written report. Spending considerable time structuring the question and considering its implications not only at the start of the academic year but as an investigation progresses, is vital. Prior to the submission of the written report students should review and revise the wording of their question to ensure it most accurately reflects their work and is free from bias.

- Reports that indicate there is little or no existing research in an academic field. This raises questions regarding a student's understanding of the research area. A lack of existing research, in most cases, is more likely the product of ineffective literature searching and a limited understanding of the research area, than a genuine lack of academic literature.

- Reports premised on questions that were either too broad in scope or contained multiple variables or parts. These questions often resulted in an investigation that was not manageable in the timeframe of a year. Ultimately the choice of research question is up to each student, although a teacher acts as a critical friend in guiding their decisions. A research question that is clearly defined, contained and scoped, and that focuses on one core issue or problem, provides greater clarity, coherence and depth to an investigation. Without this clarity and depth students had difficulty presenting a detailed account of the core ideas in their research area or coming to clear findings. This affected their performance against a range of criteria.

- Reports submitted well over the stipulated word limit. It is important to be clear that a report in excess of 4000 words does not equate to an improved result. Writing a 4000 word report is an exercise in clarity and refining. It is not an easy feat and requires several stages of editing, proofreading and condensing. This, however, is part of the learning in this study. All reports that exceed the word limit will be reviewed by the Chief Assessor as non-compliant with the task specifications, and may be subject to a score adjustment.

Specific information

Each written report is assessed individually against the criteria. Comments below regarding achievement levels are for illustrative purposes only and do not cover all aspects of student work that may contribute to achievement.

High–Very High

Students who scored highly premised their work on a well scoped and clearly defined question that was then explored in detail. The question sat at the heart of these investigations and it was clear that students had this in mind when making decisions about the structure of their report and the content to be included. These students demonstrated strong engagement with authoritative academic literature through critical analysis and synthesis of this material and were able to situate their own work in the context of the literature, identifying gaps and areas of agreement from a range of countries and periods. These students were also sometimes able to present a

chronological account of developing thought in their area, identifying longstanding historic research and connecting this with more contemporary thought.

Students who achieved high scores consistently connected their analysis to literature in every section of the report. They engaged with an extensive range of existing research and consistently supported their own position with this, including in discussion of their method and analysis of results.

Methodologically, high-scoring reports were well thought out and students had sought to collect data in the most appropriate form for the purposes of the study. Choices made in the investigation were deliberate and reflected on critically, with the implications of a research approach explored in the context of the investigation. The suitability of a method and the ways in which different data collection tools, participants, or ethical considerations came to bear on the investigation were clearly and confidently set out. As a result, these reports were able to present relevant, thoughtful, and carefully selected data to explore their research questions. They effectively represented data in order to highlight key trends, which were further set out in detail in writing.

The synthesis of data and findings was clear within these reports and students had evidently considered the most effective means of grouping data sets and results to develop trends and themes. The implications of these findings, and their limitations, were explored with consistent links to existing research. Students were able to come to a clear finding using their own data, make a connection to existing thought in their research field, and explore the possible interpretations and implications of this.

The writing style and fluency of reports that scored highly was excellent. There was evidence of extensive drafting, editing and refining so that the final report was a polished piece reflecting the time and energy students had put in over the year. There may have been some minor slips in referencing or expression, but these did not detract from the overall quality of the reports and did not occur regularly. Some students had adjusted the report writing structure to better suit their needs; this was clearly deliberate and designed to improve the coherence of the reports.

Medium

Reports that scored in the middle range presented a clear investigation tied to a mostly clear and well defined research question. These reports were, however, characterised by a greater level of generality and some missed opportunities for depth and critical engagement. Nonetheless, they developed connections between ideas and explored most key concepts in some depth. Engagement with academic literature was evident; however, the range of sources was more limited and/or not as consistently present across the report. A number of reports scoring at this level defined key terms through reference to dictionaries or general websites such as Wikipedia, rather than academic research that situated definitions of key terms in the body of existing academic knowledge. They showed a general understanding of the research area and tended to summarise, rather than critically discuss, ideas. They may also have engaged predominantly with historic research rather than including more contemporary research as well. Literature was often dealt with individually rather than through synthesis.

While the methodological choices within these investigations were largely logical there was a greater level of summary and description rather than critical analysis and discussion of implications. Some reports read as procedural descriptions, so the implications of the student's choices, and their overarching rationale in light of the research question, were not as clearly defined. Students should be encouraged to strike a balance between explanation and justification and critical analysis. In some cases, these investigations also needed greater clarity regarding decisions in terms of data collection tool and participants. Convenience sampling, for example, was

often identified as a recruitment method at this level without clear or strong justification for this choice.

In the discussion of findings reports that scored at this level began to synthesise data, but in some cases needed to do so to a far greater extent, so that data was dealt with more systematically and thematically, rather than question by question. In other cases there was the need to more clearly identify key trends, rather than listing large sections of statistics or interview excerpts with limited discussion. Students would benefit from more consistent structures to support them to bring together multiple data sets or questions in order to identify a clear trend that can be linked to the research question. This would then further support a more detailed discussion of trends in light of existing literature and allow a more fully developed conclusion to the investigation.

Reports scoring in this range identified some limitations to the research; however this is an area that needs ongoing work. Some students were able to identify general limitations to their method and results, but others did not do this at all.

The majority of these reports were clearly structured and applied the expected academic writing conventions. There were noticeable slips in expression and evidence that closer proofreading and greater accuracy of language was needed. In some cases these issues affected the clarity of meaning. Alongside this, students sometimes missed connections between ideas, so sections of their reports did not clearly link together, requiring the reader to create the links. Finally, a number of reports contained errors in referencing and reference lists, resulting in inconsistent referencing or incorrect lists.

Low–Very Low

Reports at this level revealed difficulty in critically engaging with the investigation. These reports were generally descriptive, may have had brief or missing sections, and indicated significant issues in the conduct of the investigation. An attempt to explain aspects of the investigations was evident, but there were sustained errors in expression, structure, and understanding. Where there was engagement with academic literature this was extremely brief, reliant on sources that were either outdated or not authoritative, or focused on one or two pieces of research only. Use of websites, media sources, blogs, and other less authoritative sources was more evident and referencing issues were extensive.

Often reports scoring at this level made only a brief presentation of a method, or did not include sufficient information to fully explain the data collection process. These sections were wholly descriptive and did not contain reference to research regarding established academic methods. At the lowest scoring end of this band, students did not specify a clear method. Similarly, the discussion of data and findings in these reports was brief, may have included sections of raw unanalysed data, or was confused and not relevant to the central research question. The findings and conclusion to the investigation often lacked coherence, depth, or connection to the central research question.

In some cases it was evident that students had not allowed enough time to complete the report and this had compromised their work. It is important that students spend considerable time analysing and sorting data in order to understand their results and present a logical conclusion to the investigation. Time needs to be allowed for consideration of the most appropriate forms of data representation, the key pieces of data to be used to illustrate findings, and the most important findings of the investigation itself. These are aspects that take revision and testing. The need to create clear timelines for the analysis of data and completion of the findings, analysis, and discussion sections of the investigation is therefore something teachers and students should be aware of as the submission date nears.

Reports that received low scores displayed consistent issues with voice and tone, issues in spelling and grammar, and lack of clarity in the flow of ideas. In particular there were issues with the application of academic conventions in these reports, including the use of a consistent referencing system, and with accurate attribution of academic references both in the text and in reference lists. The structure of the reports was frequently problematic, with students either omitting sections or adjusting an existing structure without consideration of its impact on the flow or sequence of ideas for the reader.

Assessment criteria

Criterion 1 – Knowledge and understanding of the research area

The central focus of this criterion is on students' understanding and knowledge of their research field, and their use of relevant terminology. This is demonstrated throughout the report and is principally seen in the introduction and literature review in the earlier stages. Higher-scoring reports demonstrated the student's knowledge through reference to literature within all sections, including when discussing the implications of the findings and justifying the method. There was consistent use of terminology appropriate to the field of study, in a seamless and coherent manner.

Demonstration of extensive knowledge requires students to engage with all key concepts within their question. Students who have questions with multiple parts or a significant number of variables may have greater difficulty demonstrating a depth of understanding, often due to the volume of information they are trying to cover. Students investigating research areas with a significant historical research base will need to use judgment to discern the most important trends in this research, so they can demonstrate an understanding of historical research as well as current thought. To this end it is important to note that contemporality of research is a factor in student knowledge. A student who only references research conducted several decades ago, or from only one period, is expected to justify this choice in light of their investigation. It is otherwise expected that where students are investigating contemporary issues in society they will engage with current research as well as historical knowledge. Similarly, students conducting research about issues specific to a particular location or country are expected to engage with research specific to that place. For example, research regarding Australian society should explore existing studies of Australian society in the same area. International research is of course valuable, and comparisons to other societies can form a useful element of a literature discussion, but this should not be seen as the basis for demonstrating knowledge of the issue in an Australian context.

Higher-scoring reports demonstrated greater critical engagement with the literature and more consistent connections were explicitly stated between the research question, the literature, and subsequent implications in all sections. These reports were also more likely to engage with a wide range of academic texts, present synthesised analysis of key trends in this research, and in some cases situate the study in this context. The more description was used, rather than synthesis, the more difficulty the report had in accessing the upper range of marks against this criterion. Similarly, if a report focused on a very small range of sources, or sources that are not clearly academic in nature, this limited its capacity to demonstrate the student's knowledge and understanding. A clear contrast could be seen between those students who in their literature review dealt with academic material in a thematic manner, grouping articles together and exploring similarities and differences, and those who dealt with individual pieces of literature on a paragraph by paragraph basis, thus lacking synthesis. Higher-scoring reports included a range of literature in each section, whereas lower-scoring reports may only have included literature in the introduction and literature review, or briefly made links in the discussion.

Criterion 2 – Analysis and evaluation of argument and evidence

Students are expected to demonstrate an ability to engage critically with their investigation and with academic literature. This is evident across a report and is particularly expected within the literature review and later analysis and discussion of data. Students who achieved well against this criterion were able to synthesis existing thought effectively and make clear links to their investigation. Again, this was evident across the whole report, rather than limited to individual sections. Students still developing this aspect of their work were more likely to score in the medium range, exhibiting some links and synthesis, mixed with sections of disconnected or descriptive information. Some links to their research question may have been evident; however these may not have been consistently developed or explored in detail. For low-scoring reports, the presence of analysis and evaluation was most limited. These reports were based largely on summary and contained little or no synthesis or analysis.

While critical thinking is an essential component across the whole report, it is most evident in a student's analysis and evaluation skills. This is in part where the focus on critical thinking throughout the course benefits students and their writing. The critical thought evident in identifying and justifying connections between individual research and the students' own investigations is developed throughout the year as they engage in critical thinking activities through Area of Study 3. It is important that as part of this Area of Study students are given opportunities to practise the skills of critical thinking in the context of their own investigations.

Criterion 3 – Response to the research question

Clarity and focus in student research questions was a central component of success against Criterion 3. The cornerstone of each investigation is the central research question and it is expected that students are consistently refining and working to understand the question through their investigation. Careful advice is needed to ensure that the scope and focus of student questions is manageable. Students should consider the fact that their first idea, or the one they initially feel most set on, is not always the best idea and may not be what they eventually research. Keeping an open mind and exploring other possibilities in the early stages is important. There was a large range of research areas and approaches to research across the written reports submitted. Success depended on both the construction of a sound question and the choices a student made in responding to this through their method.

There was heavy reliance on surveys as a central research method and while there was critical reflection on the suitability of this approach for an investigation, there were instances where students should have considered other method choices to more effectively respond to their question. Students were required to explain their research approach and give a clear account of their data collection choices. However, there was a clear difference between those reports that presented purely descriptive accounts and those that offered critical justification of choices. There needs to be a coherent connection made between the research question and the method choices within the investigation, and evidence of critical thinking about the limitations, bias and opportunities presented through the approach a student has adopted.

Criterion 4 – Synthesis of findings and evaluation of the investigation

The findings and discussion of data in the latter half of written reports provides students an opportunity to reflect on their investigation and reach a response to their question. Criterion 4 specifically requires students to synthesis their data and come to a conclusion about the question

that is grounded in relevant data. There is also an expectation that students evaluate their investigation and explore the opportunities it presented and limitations they encountered. As with much research a student's investigation need not have a 'neat' ending. There may be areas that require further investigation or that did not finish as planned, and it is perfectly valid for students to reflect on this and its implications for their investigation.

A student's ability to analyse data is a determinant of success against this criterion. Students need to make conscious decisions about what data is the most relevant, and the most effective way to display this to the reader. It is essential that students identify clear trends and do not simply descriptively list statistics or quotes. Teachers can support students in the data analysis process by exploring different avenues for understanding and representing the data, and in particular the most appropriate trends to emphasise in light of their research questions. Lower-scoring reports did not present a logically structured or clearly analysed set of data, or included irrelevant material.

Reports that scored highly explored the implications of their findings in light of existing academic literature and their possible meaning within the investigation. They further demonstrated the student's ability to reflect on the limitations of their work and outline alternative approaches, or the implications of such limitations on the final response to their question.

Criterion 5 – Clarity and effectiveness of writing

Criterion 5 requires students to develop a logical sequence of ideas and adjust their language for a non-specialist audience. Both aspects are an essential component in communicating their investigation effectively. Given that students have been focused on their investigation over the course of a year, and it is expected they have put in considerable time and effort to their written report, the standard of writing and expression is expected to be high. It is a basic requirement that student work is free from errors in spelling, grammar, punctuation or other expression, although an occasional slip may occur. It is expected that students have developed a logical sequence of ideas and that the development of their argument is coherent across the different sections of their report.

High-scoring reports showed the ability to adjust the use of language for a non-specialist reader while retaining complexity and sophistication in the writing. Language adjustment does not have to inhibit the expression and vocabulary of a sophisticated report.

Some students used acronyms to support the adjustment of language for a non-specialist audience, or to reduce their word count. Although some acronyms are useful, particularly when they are established or recognisable, the overuse of this technique can lead to confusion and a lack of clarity. It should not be the main strategy employed to adjust language. Instead, students should be encouraged to use a range of approaches including examples, analogies, definitions, explanations in context, and synonyms. It is the combination of a variety of techniques that most effectively communicates unfamiliar ideas to an educated non-specialist reader.

Criterion 6 – Observance of report writing conventions, including citations and bibliographic referencing of sources

The final criterion focuses on the use of structural conventions for writing a research report and includes not only the structure of the report itself but also the use of referencing systems and academic attribution. As has previously been stated, there is no one structure or referencing system expected in this study. Students should focus on presenting a logical, coherent and fluent report that steps the reader through their investigation. They are expected to engage with the style and format of a research report including the use of subheadings and sequencing structures that guide the reader through each section. This includes headings at multiple levels, chapter

introductions and conclusions, and consistent referencing systems. Most reports demonstrated a solid grasp of these skills.

A considerable number of students did not demonstrate a clear understanding of the role an abstract plays in the structure of a written report. There was some use of long abstracts containing information that was irrelevant for this section of the report. Students are encouraged to see the abstract as performing the role of a 'blurb', providing an overview of the investigation and the key ideas to be communicated in the subsequent sections. Students should not present significant literature or data, or explore ideas in detail, in this section of the report.

The key aspect of the structure of a report is how well it is suited to the investigation in question. A knowledge of different writing structures and report styles is an important aspect of this study; however, students should use this information to make an informed choice about their use of structure, rather than necessarily adopting the choices of others.