Using historical evidence: The semantic profiles of Ancient History in senior secondary school

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ABSTRACT

This paper presents findings from the Australian Research Council funded 'Disciplinarity, Knowledge and Schooling' project (DISKS) which investigates knowledge-building practices in Australian secondary schools and gave rise to the ground-breaking notions of 'semantic waves' (Maton, 2013) and 'power pedagogy' (Martin, 2013). In this paper, we investigate student writing in senior secondary school Ancient History. We focus on how students use evidence in their responses to different types of exam questions. Our research question focuses on the extent to which key features of responses to short answer questions appear in extended responses and vice versa. This focus arose through findings that teachers in our study tended to view short answer questions as a 'mini' version of extended responses and prepared students accordingly. The similarities and differences are important to identify as extended responses make a significant contribution to the overall exam grade.

To better understand the use of evidence in responses to different types of exam questions, the study draws on the dimension of Semantics in Legitimation Code Theory (Maton, 2013). We use the newly developed wording and clausing tools (Doran & Maton, 2018, forthcoming) to analyse the relative strength of context dependence in responses to Year 12 exam questions. Context dependence is particularly relevant to how students use evidence, as it involves relating the concrete particulars of specific historical artefacts, events, and the behaviours of historical figures to more abstract concepts in the discipline of history that are not bound to one historical setting. Our analysis tracks relative shifts in context dependence in student texts to generate semantic profiles of their exam responses.

Findings show that although teachers may use the writing of short answer questions as preparation towards the high-stakes extended writing tasks, short answer responses are not 'minature' versions of extended responses. We argue that the differences are teachable and propose the use of model texts to make these features visible to students. Beyond the timeframe of secondary school education, learning to use evidence, particularly for the development of arguments, may provide a robust foundation for tertiary level writing tasks where students need to control degrees of context dependence.

Introduction

Learning history is widely seen to involve the development of advanced historical thinking. Students learn 'how knowledge has been constructed and what it means' (Levesque, 2008, p. 27). This encompasses the ability to understand significance, interpret and use evidence, identify continuity and change, analyse cause and effect, take different perspectives, and understand ethical and moral dimensions of history (Allender, Clark, & Parkes, 2019; Seixas, 2017). There is strong agreement that in order to learn how to think historically, students must also develop skills in analysis and the ability to express their thoughts through argumentation. As Barton and Levstik (2004) explain, "analysis is the activity most often promoted, defended and justified by historians and other educators" (p. 70). The emphasis on historical thinking is visible in current syllabus documents of many countries, including the UK (Department for Education, 2014), the US (National Governors Association Center for Best Practices and the Council of Chief State School Officers, 2019), and Australia (NSW Education Standards Authority, 2017a).

The importance placed on gradually learning history as skills is evident in the genres that students produce in history across their schooling years. One fundamental shift that students face is from writing about history as *story* to writing history as *argument.* For students, this means a change from crafting temporally to rhetorically organised texts (Christie & Derewianka, 2008; Coffin, 1997, 2006). For example, in early secondary schooling, students often write *historical accounts* in which events are presented in a temporal sequence, but causal links are also established between them (Christie & Derewianka, 2008; Coffin, 2006). By mid-secondary schooling, however, students write more explanations, including genres like *factorial* and *consequential explanations*, which explain complex cause and complex effect respectively. Such texts are no longer chronologically organised around events. Linguistic analysis shows that they contain more abstraction, nominalisation, and causation expressed within the clause as a noun or a verb (Christie & Derewianka, 2008, Coffin, 2006; Eggins, Martin, & Wignell, 1987).

In the senior secondary years, student writing in history is very strongly oriented towards writing rhetorically organised argument texts such as *expositions* and *discussions*. Such texts are typically organised around a claim, commonly referred to as a *thesis statement*. Claims are then substantiated by several *arguments* providing the grounds for the claim (see Martin & Rose, 2007 for more detail on the generic structures of argument texts). Among other linguistic developments, such as the ability to manage abstraction, increased lexical density (Christie & Derewianka, 2008) and grammatical metaphor (Martin, 2002), this shift into argument requires students to be able to draw on facts and evidence to write convincing arguments. Such arguments need to be 'substantiated, empirically detailed, well-researched and balanced' (Coffin, 2006, p. 9). However, the ability to manage evidenced argument in a contested knowledge space is complex, and many

students face challenges developing both the historical analysis and the language skills necessary to do so (Matruglio, 2018; Barton & Levstik, 2004; Lee & Ashby, 2000; Veijola & Mikkonen, 2016).

While it is well understood that in argumentative genres students must substantiate abstract historical arguments with empirical evidence, what is less understood is precisely *how* students do this. This study explores the means through which students link abstract ideas with empirical evidence in written arguments by drawing upon a theoretical concept known as *semantic gravity* (Maton, 2014). Semantic gravity describes the degree of context-dependence of meaning. It can vary on a continuum from stronger to weaker. Where something has *stronger* semantic gravity (SG+), it is said to have more dependence on a particular context for its meaning. For example, writing about *the details of the arrowhead found in Ötzi, the Iceman* (SG+) has relatively strong semantic gravity as it discusses a specific artifact (*the arrowhead*) in a specific setting (*found in Ötzi, the Iceman*). By contrast, writing about *the process of natural mummification* (SG−) has weaker semantic gravity as it is not bound to one artefact or setting, but rather it is discussed in general terms. In relation to our data, we are particularly interested in where and how students create relative shifts in context dependence as they interpret and say something about the concrete particulars of historical evidence. We visualise this through what is known as a *semantic profile* (Maton, 2013), which plots the relative strength of semantic gravity as it changes through students' texts.

Teaching students to control varying degrees of context dependence is not only relevant to their studies of Ancient History or history generally (Oteíza, 2020). Empirical studies of student writing and other educational texts have shown that relative shifts between stronger and weaker semantic gravity, known as *semantic waves* (Maton, 2013), are a regular pattern in successful knowledge-building across subjects, including in physics (Conana, et al. 2021), chemistry (Blackie, 2014) and English literature (Christie, 2016). In the following sections, we will introduce more detailed analytical tools for examining semantic gravity in student writing and using them to map semantic profiles.

Methods

The research reported on in this paper is from a project called Disciplinary, Knowledge and Schooling (DISKS). This project is approved by the University of Sydney ethics committee and by SERAP, the public schools research approvals body in the Australian state of New South Wales (NSW). It was funded by the Australian Research Council (Grant Number DP0988123). The DISKS project was led by Professor Peter Freebody, Professor Karl Maton, and Professor James Martin. It was concerned with knowledge-building practices in secondary school classrooms (Martin & Maton, 2013; Freebody, 2013). The project involved three stages: the first stage focused on the collection of classroom video data and interviews with teachers; the second stage involved the analysis of teaching practices and texts produced by students; and the third stage involved an intervention where researchers worked with classroom teachers to enact and document new teaching and learning practices. This paper reports on part of stage two. It examines the use of evidence in student responses to different types of exam questions in Year 12 Ancient History. (See Matruglio (2013) for the analysis of temporality in Ancient History; Matruglio (2020) for further analysis of mode; Macnaught, Maton, Martin, and Matruglio (2013) for writing in secondary school Biology; and theory central to analysis in Maton (2013, 2014), Martin (2013), Martin and Matruglio (2020)).

Context

In the Australian state of New South Wales, the study of history in secondary school is mandatory up until Year 10. For the final two years, history becomes an elective. At this level, it is differentiated into three separate subjects: *Modern History*, *Ancient History* and *History Extension* (see NSW Education Standards Authority, 2017a, 2017b, n.d.). In this paper, we focus on teaching and learning of Ancient History in the final year (Year 12). In Australia, Year 12 is the final year of

students' secondary school education in which they strive to obtain the Higher School Certificate (HSC). Students' results in their HSC subjects consist of a calculation involving two marks: a school assessment mark aggregated from a series of school-designed assessment tasks throughout their final year, and the mark they receive in an end-of course, external examination. Each of these marks contributes 50% of the final mark. The school-based assessment marks are moderated by performance in the centralised examination to ensure parity across schools. Percentage weightings for the school-designed assessment tasks, including weightings for each topic, are specified in the syllabus documents. The students' marks in all their subjects are then aggregated, subjected to further scaling processes, and a final overall ranking is generated – upon which competitive places in tertiary education are allocated.

The Ancient History syllabus for the HSC specifies the outcomes to be achieved by students. Several of these syllabus outcomes specify the use of evidence in the construction of warranted argument, such as: '*analyses and interprets different types of sources for evidence to support an account or argument*' (outcome 12-6); and '*presents reasoned conclusions, using relevant evidence from a range of sources*' (outcome 12-8) (NSW Education Standards Authority, 2017a, p. 11). As this wording indicates, in the high-stakes exams, students need to skilfully use multiple sources of evidence to construct their arguments.

Participants

The data drawn on for this paper come from one of the six schools involved in the wider research project. The school is a large, comprehensive high school (Years 7-12) in metropolitan Sydney, serving a low-socio-economic community. The school's population is culturally and linguistically diverse with approximately 90 percent of its 900 students coming from a language background other than English. The participating class consisted of 25 students and was taught by a very experienced teacher of history. Her motivation for participating in the research was to help her students improve their writing for external examinations. As the main research assistant, Matruglio was responsible for liaising with the teacher throughout the project, collecting data and attending school visits and class observations. As an additional research assistant, Macnaught conducted the data analysis, liaising with Doran about the newly developed analytical tools.

Data

Data encompassing the wider DISKS project included interviews, classroom observations and student texts. For this paper, we draw on an interview with one participating teacher conducted at the end of the project. Our interest lies in what she says about the different types of exam questions and what she says she does to prepare students for their final exams. We then relate these reflections to findings from the discourse analysis of student writing.

Data involving student writing focuses on classroom preparation for their final assessment task. This assessment task constitutes a three-hour exam and requires students to write answers to a mix of 'short answer' and 'extended response' questions. (See Appendix 1 for example exam questions for extended responses from the 2019 Ancient History HSC exam). The extended responses are worth up to 25 marks each and comprise roughly 50% of the exam. There is thus considerable importance placed on excelling in extended responses in order to obtain a high overall exam grade.

The data pertaining to student writing comprised of their written responses during practice or 'mock' exams. This refers to an in-class practice exam where students experience exam conditions and practice managing their writing time. In our data set, the teacher used her extensive experience as an HSC examiner, HSC senior marker, and standards-setter for over 15 years, as well as her access to the exam questions of previous years to write her own practice exam questions (see Table 1, p. 80). These questions closely follow the questions given to students in the final HSC examinations of prior years (see Appendix 1).

Table 1

Practice Exam Questions

Exam question type	Examples
Short answer	*How are human remains preserved?*
	Describe the method used in constructing the terracotta soldiers.
Extended response	*Assess Chin as a successful ruler of China.*
	What did the discovery of the Terracotta Warriors reveal about the First Emperor of China?

In total, 74 texts were collected from 19 students with several students absent during the mock exam. These texts constituted a mix of both short answer and extended responses – depending on what students completed. As previously outlined, the purpose of collecting students' responses to these different types of exam questions was to identify similarities and differences in key features for the purpose of informing future classroom teaching. In this paper, we show analysis from one sample of student writing for each of the two different types of exam questions. These samples were chosen as they illustrate what most students in the data set were currently doing, as well as common areas for possible improvement. Further student writing samples appear as Appendices.

Data collection

The interview between the main research assistant and the teacher was audio recorded and transcribed for later analysis (see the Data Analysis section). It was semi-structured and followed an interview protocol which sought primarily to probe the teacher's experience as a teacher of her subject, her prior experiences teaching literacy in her subject, and her reasons for participation in the project, including benefits and challenges.

Following ethics protocols, the student texts were collected by the classroom teacher. She collected them after administering the mock exams during regular class time. The teacher then provided individual and whole classroom feedback. She also shared the student texts with the wider research team for analysis.

Data analysis

Our analysis of context dependence (as introduced earlier) draws on analytical tools for fine-grained analysis of English discourse. Specifically, this study uses a newly developed *generic translation device* by Doran and Maton (2018, forthcoming)[1] that explores how a particular kind of semantic gravity is realized within English discourse.[2] This generic translation device provides a set of 'rules of thumb' for how an LCT concept is realized within an object of study and thus how what is conceptualised can be seen in data. In the case of this study, we 'translate' or operationalise how semantic gravity is realised in student texts that constitute responses to mock exam questions in Year 12 Ancient History. Translation devices (see Maton & Chen 2016; Maton & Doran, 2017a, 2017b) that have recently been developed for other data include those for body movement in ballet (Lambrinos, 2020), doctoral thesis writing (Wilmot, 2020), writing and critiquing blog posts in teacher education (Macnaught, in press) and scientific images (Yu, Maton, & Doran, 2023).

More specifically, the focus of the generic translation device by Doran and Maton (forthcoming) is *epistemic–semantic gravity*. This concept explores the context-dependence of meanings involving formal definitions and empirical descriptions, rather than *axiological-semantic gravity*, which concerns "affective, aesthetic, ethical, political and moral stances" (Maton 2014, p. 153). Doran and Maton are developing several tools, which explore how context-dependence for these kinds of meanings appear in English discourse at the levels of wording, word-grouping, clausing and sequencing. Here we focus on wording and clausing.

The wording tool identifies how changes in epistemic–semantic gravity (ESG) are created from one word to other words; some kinds of wording change context-dependence more than others, and some not at all. The clausing tool identifies how changes in ESG are created when words are brought together into clauses; it explores how different combinations change the context-dependence of the constituent meanings in different ways. This change in ESG is called *epistemological gravitation* (EG). Like types of 'wording', some kinds of 'clausing' change context-dependence more than others, and some not at all. During our analysis phase, these tools allowed us to categorise each word or clause into different strengths of semantic gravity. We then plotted these different strengths, as they unfolded through 'text time', into what are called 'semantic profiles' (Maton, 2013). From this, we were able to identify recurrent changes in semantic gravity throughout the student texts.

The wording tool for ESG

The first analytical tool we used for analysis focused specifically on the semantic gravity of words in student writing. This tool is shown in Table 2. The wording tool is useful for research questions about the use of evidence in our data set, because it can illuminate the range of historical concepts that students are expected to relate to each other, as well as relationships between those concepts and specific details about people, things, events, and settings, etc.

Table 2

The Wording Tool for ESG (Doran & Maton, 2018; forthcoming)

ESG	Type	Subtype	Examples in our data
ESG –	symbolic	*conceptual*	Legalism Qin dynasty
		material	Terracotta warriors Emperor Qin
	manifest	*intangible*	characteristics cruel
ESG+		*tangible*	soldiers criminals

Note. Concepts translated for use with our specific data set

At a broad level, the wording tool distinguishes between *symbolic* wordings, which show weaker semantic gravity (less context-dependence, ESG–) and *manifest* wordings that show stronger semantic gravity (more context-dependence, ESG +) (Doran & Maton, 2018, forthcoming), as shown in Table 2. Symbolic wordings are those that have relatively stable meanings by being part of a broader intellectual field. That is, they do not shift their meaning due to a particular situation as they have very definite technical meanings in a particular field. For example, in our history student responses, the term *Legalism* maintains a very specific meaning in the fields of history and politics, referring to a particular type of political organisation. Similarly, the term *Qin dynasty* (spelt in some of our examples as *Chin dynasty*) refers to the first Imperial dynasty of China in the third century BC. These terms maintain stability in meaning across

contexts in that they do not shift their meanings depending on the situation they are used in. In this sense they exhibit weaker semantic gravity (less context-dependence). In contrast, manifest wordings are those which have relatively more flexible meanings thanks to being common-sense and less rigidly defined. Such words include *characteristics,* and *criminals,* etc. As a language choice, manifest words are less likely to have precise boundaries and definitions associated with them, and therefore exhibit relatively stronger semantic gravity (stronger context-dependence) as their meaning is more bound to a particular setting.

The wording tool further differentiates each of symbolic and manifest wording into two subtypes. These subtypes depend upon whether the word refers to something that is physical or in some sense sense-able (stronger ESG) or whether it is something that is non-physical and more intangible. For example, we can distinguish between the *symbolic-material* wording *Emperor Qin*, describing the physical person (stronger ESG), and the *symbolic-conceptual* wording *Qin dynasty* describing the period and system of government (weaker ESG). Similarly, for manifests, we can distinguish between the *manifest-tangible* wordings of *people, soldiers* and *criminals* that refer to physical things (stronger ESG) and the *manifest-intangible* wordings of *characteristics* and *powerful* (weaker ESG) that refer to more intangible ideas.

A clausing tool for EG

The second analytical tool we used for analysis focused specifically on the semantic gravity shown through clauses. This tool is shown in Table 3. The clausing tool is useful for our research question about the use of evidence, as it focuses on how time is conceptualised in clauses - a key component of historical discourse (Coffin, 2006; Matruglio, Maton, & Martin, 2013).

Table 3
The Clausing Tool for EG (Doran & Maton, 2018)

EG	Type	Subtype	Examples in our data
EG –	atemporal	*transcendent*	Naturally mummified bacteria <u>occur</u> by accident.
		potential	Human remains <u>can be</u> either preserved by natural or artificial processes of mummification.
	temporal	*elsewhen*	He <u>was</u> a brutal and cruel king.
EG+		*current*	Historians <u>are trying</u> to determine the facts.

Note. Concepts translated for use with our specific data set

As outlined, the clausing tool identifies changes in epistemological gravitation (EG). In the analysis of one clause compared to another, stronger epistemological-gravitation (EG+) means that there is more strengthening of epistemic-semantic gravity, whereas weaker gravitation (EG−) means there is less strengthening of semantic gravity (with the weakest EG being no change in semantic gravity at all).

Like for the wording tool, there are two broad types of clausing: those that indicate that the meanings are tied to some particular time, known as temporal clausing (stronger gravitation), and those that are not tied to any particular time, known as atemporal clausing (weaker gravitation).

An example of *temporal* clausing (EG+) with the underlined verb indicating the time is:

He <u>was</u> a firm believer in Legalism.

In this example, the passage specifically ties the Emperor's belief to a time in the past (through the past tense *was*). In contrast, the following example does not indicate any particular time, but positions a broader habitual meaning, and so is not tied to any particular time period:

The warriors <u>signify</u> the unification of the seven warring barbaric states.

Like the wording tool, both temporal and atemporal clausing have two subtypes. For temporals, current clausing (stronger EG) indicates the meanings are occurring at the current time, such as in:

Historians <u>are trying</u> to determine the facts. [temporal-current]

Whereas *elsewhen* clausing (weaker EG) indicates the meanings occur at a different time, generally either the past or the future:

He <u>was</u> a brutal and cruel king. [temporal-elsewhen]

For atemporal clausing, we can distinguish between those that indicate some sort of modality in terms of possibility, obligation, necessity etc. known as *potential* clausing (stronger EG):

Human remains <u>can be</u> either preserved by natural or artificial processes of mummification. [atemporal-potential]

And those that indicate some sort of habitual or generalised time, known as *transcendent* clausing (weaker EG):

Naturally mummified bacteria occur by accident. [atemporal-transcendent]

Overall, these two analytical tools enable close analysis of English discourse in student texts and the means to consistently pinpoint changes in context dependence. This generates rich findings for interpreting how possible changes may be significant in relation to the way that students write about historical evidence.

Findings and discussion

This section begins by identifying how findings from interview data lead to refinement of the main research question and selection of data. Examples of each response type are then presented, followed by data analysis. By using the wording and clausing tools, we track relative shifts in context dependence to generate what is known as a *semantic profile* for each of the responses. The findings about the relative strength of ESG and EG are used to highlight similarities and crucial differences between our sample of short and extended exam responses. The implications of these findings for teaching practices are then discussed in the subsequent section.

Motivation for text analysis

As previously outlined, one of the teachers in our study is an experienced HSC examiner for history in NSW, and head of the history department in her school. In an interview at the end of the project, she reported that a common approach to preparing students for writing essays in exams is to teach the writing of short answer questions first. Such teaching centres on supporting students to write one paragraph and then using this as a building block towards more extended writing. As she reflects: *"I found starting with a paragraph and then going to an extended response and then the essay really helped [the students]…If we [had] jumped in and gone straight to an essay, I think*

that would have been very difficult for them." Her rationale for this teaching approach is expressed as follows:

> Kids just say, 'I can't write an essay. I can't write an essay.' When really, you say, 'Can you do this mathematical equation?' 'Yes.' 'Well, it's the same thing. You just follow the steps and you'll come up with your conclusion'. And I used to actually teach, it used to be I+B=C. Introduction plus body equals conclusion. And I said, 'if you think about it mathematically, it's just a format, it's just, you know, it's just something that you just go through.'

These reflections highlight the desire to gradually build the confidence of students through guidance about text structure. The analogy to tackling maths highlights the perception that there are formulaic ways of successfully putting parts together to create extended written responses in exams. These reflections also indicate that short answer questions may be viewed as 'mini' extended responses. One possible underlying assumption here is that if students gain confidence and mastery with short answers, then they are well positioned to take on the extended writing tasks. This focus on parts and the overall length of texts seemed to arise because the teacher reported that many students find the longer responses daunting. Therefore, a central concern for her was supporting students to write 'more' with less focus on how the texts may have distinctive properties. This finding lead to the refinement of our main research question about the use of evidence to focus more specifically on the extent to which responses to short answer exam questions may replicate key features of the extended responses and vice versa.

Short and extended exam responses

One common type of short answer exam question centres on the explanation of processes. These types of questions typically start with a *how* prompt, such as, *How are human remains preserved*? An excerpt from a student response that is indicative of our data sample appears below. Based on her extensive experience as an examiner, the classroom teacher judged that this response would be awarded a grade in a higher range for the final examination.

> Excerpt from Student 1 – short answer response
>
> Human remains can either be preserved by natural or artificial process of mummification. For a body to decompose, bacteria must be present in order for the decaying process to occur. Certain conditions may disallow bacteria to use a human body as host and as a result, a preserved human remain is left.
>
> Naturally mummified bacteria occur by accident and are dependent on the conditions of the environment of which the body lies. An example is the iceman who was frozen in ice, those frozen are not suitable for bacteria to flourish and as a result the body was preserved.
>
> Artificial mummification, or embalming was for such reasons like religion and an example are the ancient eqyptian mummies where the body was preserved with chemicals for the "after life" and religious sacrificial purposes.

In contrast, one common type of extended response in Ancient History exams is less concerned with explaining process and focuses more on relating historical artefacts to historical figures. This is evident in prompts, such as, *What did the discovery of the terracotta warriors reveal about the rule of the First Emperor of China?* An excerpt from a student response that is indicative of our data sample appears below. Based on her extensive experience as an examiner, the classroom teacher judged that this response would be awarded a mid-ranging grade for the final examination.

Excerpt from student 21 – extended response

The terracotta warriors indicate that the First Emperor was powerful. He had a lot of soldiers who helped him to unify China. Before the rule of the first Emperor, there were many independent states in China. These independent states began to war amongst themselves to widen their territories. It ended when China was unified under a single empire, Chin Dynasty…

However the Terracotta warriors revealed about the characteristics of the Emperor. He was a brutal and cruel king. He forced people to make the Terracotta warriors and build one of the most famous wall in the world, Great Wall of China. Besides that, he also executed more than 400 scholars because he did not want anyone to be superior than him. Furthermore, he was a firm believer in Legalism. He punished the criminals harshly since legalism believed people were born as evil.

## *Using evidence in responses to 'short' exam questions*

The analysis of epistemic semantic gravity shows that such short answer questions require students to relate physical substances and processes to non-physical substances. For instance, *naturally mummified bacteria* and the example of *iceman* are related to the concept of *conditions of the environment*; similarly, *ancient Egyptian mummies* are related to the concepts of *religion* and *the afterlife*. In other words, students bring in physical evidence, such as identifiable artefacts and or wording that describes what has happened to them, and then use these physical descriptions as a stepping-stone towards making a generalisation about recurrent processes or cultural practices.

Analysis with the wording tool pinpoints where and how physical to non-physical relationships are made in student writing. They predominately involve an initial focus on symbolic material wording (e.g., *process of mummification*) and then shifts to other types of wording with stronger context dependence, such as *body, bacteria and ice*, or weaker context dependence, such as, *religious sacrificial purposes.*

To visualise how semantic gravity changes, Figure 1 (p. 86) tracks these relative shifts in a *semantic profile* (Maton, 2013). This semantic profile plots the relative strength of semantic gravity on the vertical axis (by convention with weaker semantic gravity toward the top of the profile and stronger toward the bottom) against the linear unfolding of the text (known as 'text time') on the horizontal axis, from the beginning of any particular text excerpt on the left to the end of the text excerpt on the right. The semantic profile in Figure 1 corresponds to the third paragraph of student 1's text.

Figure 1

The Profile of Epistemic Semantic Gravity in the Wording of the Response to a Short Answer Question
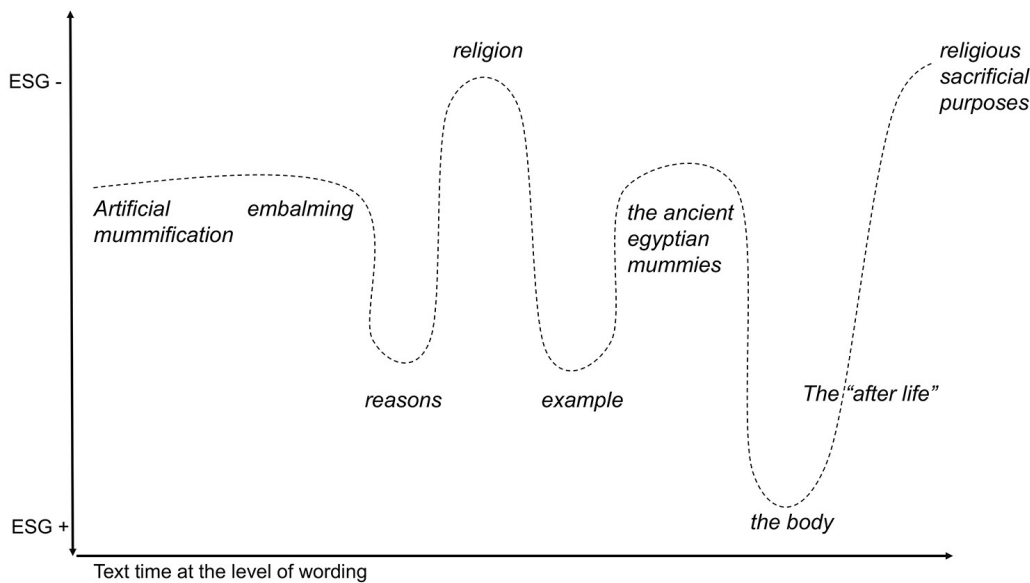
This paragraph starts with relatively weak context dependence with the symbolic material wording of *artificial mummification* and *embalming.* These meanings are about physical things. They are stable and specific in the field of history but can be related to many different historical settings and artefacts. Context dependence is then strengthened with manifest intangible wording (*reasons, religion, example*). Here the student is introducing more specific but non-physical, intangible ideas. Then a shift to a general a type of artefact (*the ancient Egyptian mummies*) involves a weakening of context dependence through a return to symbolic material wording. This is followed by a strengthening of context dependence as the student writes about more concrete particulars related to a specific artefact, such as *the body* and *chemicals.* These examples of manifest tangible wording draw attention to physical evidence. Finally, a weakening of context dependence is used to relate the evidence to non-physical ideas: firstly, through manifest intangible wording (*the "after life");* and secondly through symbolic conceptual wording (*religious sacrificial purposes*). These shifts in the degree of context dependence at level of wording highlight the importance of using physical evidence to say something beyond the physical, such as linking a fragment of evidence to a cultural or religious practice. Such physical to non-physical relationships between entities provide insight into what interpreting history involves for this common type of exam question.

Further analysis with the clausing tool shows that writing about physical evidence also requires students to relate a specific example of evidence to processes that happen throughout history. From the perspective of epistemic gravitation this can be achieved when evidence is positioned temporally as part of a specific completed event (EG+), but it is also related to a type of potential or recurrent event (EG-). This kind of change is illustrated in Figure 2 (p. 87), using the previous excerpt of student writing. The student first states that *Human remains <u>can be</u> either preserved by natural or artificial processes of mummification.* This is an example of *atemporal: potential* clausing. He then uses *temporal: elsewhen* clausing to link this potential event to an example of a specific past event: *An example is iceman who <u>was frozen</u> in ice*. Such shifts in context dependence are important to short answer questions because it means students are not bound to discussing one artefact (like the Iceman) in one answer. Instead, the physical evidence they select is used to establish a connection, or 'match' between their example of historical evidence and something that has or could have happened to other artefacts in other settings.

Figure 2

The Semantic Range of Epistemological-Gravitation in a Response to a Short Answer Question
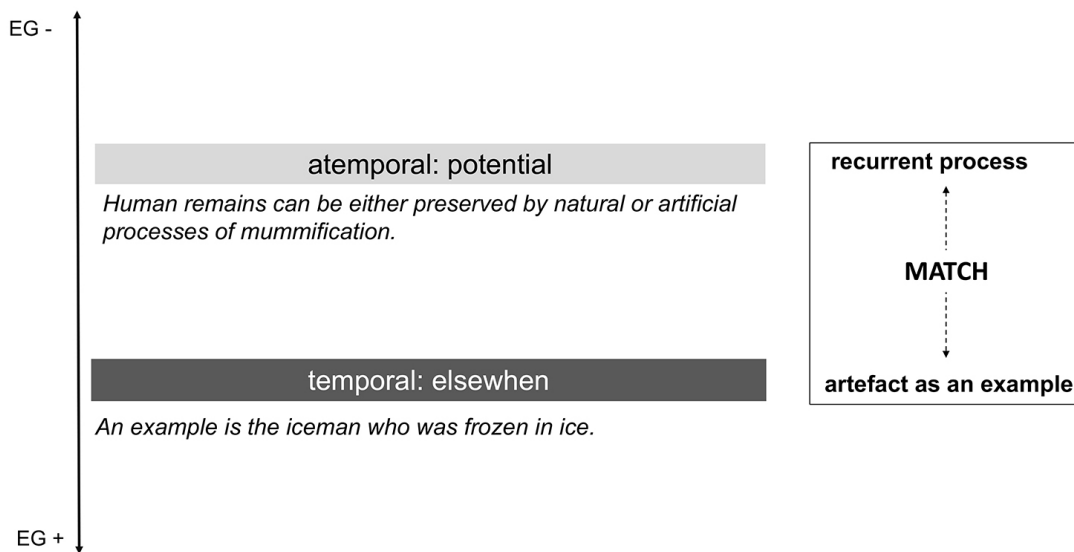
Overall, the analysis of short answer questions highlights specific ways in which students interpret evidence. A description of physical evidence alone is insufficient. Students are required to explain physical to non-physical relationships as a way of interpreting the entities that they identify and describe. This includes connections to recurrent processes and more abstract historical concepts. While physical to non-physical relationships between entities are also important to interpreting history in the extended responses, the following section identifies how additional means of interpreting evidence are crucial.

Using evidence in responses to extended exam questions

Like the responses to short answers, in extended responses, students create relationships between physical to non-physical entities. This again involves managing the relative strengthening or weakening of epistemic semantic gravity at the level of wording. However, a significant difference is that, in extended responses, such relative shifts serve the purpose of evaluating past events and figures rather than just identifying and explaining processes. For example, Figure 3 (p. 88) shows shifts in the degree of context dependence in the second paragraph of student 21's text.

Here, the student relates historical evidence to the historical figure of Emperor Qin. Specifically, his behaviour is evaluated: *However the Terracotta warriors revealed about the characteristics of the Emperor. He was a brutal and cruel king.* With these wording choices, the student connects symbolic material wording (*the Terracotta warriors*) to manifest intangible wording (*the characteristics of the Emperor, brutal, cruel*). Such wording choices create a relationship between physical and non-physical entities, and, more specifically, enables students to use evidence for interpreting the qualities and actions of a historical figure. In our data set, this way of interpreting history was well used by students.

Figure 3

The Profile of Epistemic Semantic Gravity in the Wording of an Extended Response Question (Paragraph 2 of Student 21's Response)
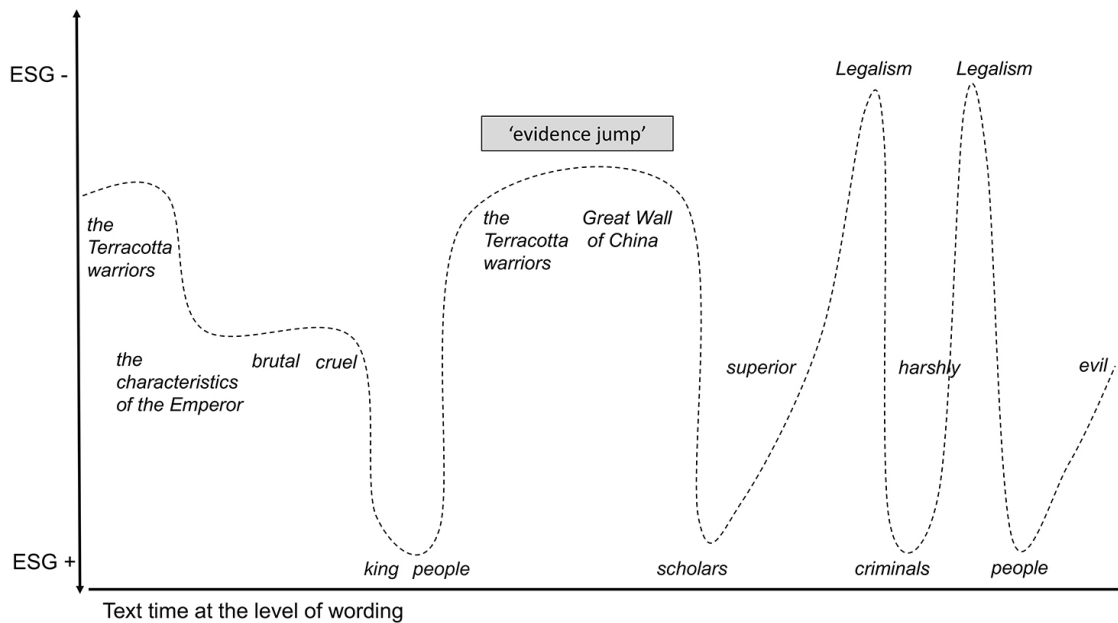

Less common, however, were examples where students connected specific events and characteristics to a collection or set of values. An example appears at the end of student 21's paragraph: *Furthermore, he was a firm believer in* <u>*Legalism*</u>*. He punished the criminals harshly since* <u>*legalism*</u> *believed people were born as evil.* Here, the quality of *harshly* (manifest intangible wording) and the event of punishing criminals are related to the ideology of *Legalism.* As an instance of symbolic conceptual wording, *legalism* has a relatively stable meaning in the field of history and could be related to the specific behaviours of many historical figures. Student 21 has, therefore, used a wide semantic range: more context dependent examples of evidence are connected to conceptual terms with much weaker context dependence, as represented in the right-hand side of the semantic profile in Figure 3.

This connection of evidence to an ideology raises the issue of how and where students bring 'fragments' of evidence (NSW Education Standards Authority, 2017a) and evaluation together as they construct an argument. A further look at Student 21's use of evidence shows that he opens with an evaluative claim: *The terracotta warriors indicate that the First Emperor was powerful.* Here, the manifest intangible wording (*powerful*) contributes to an explicit evaluation. In this opening position, *powerful* then pertains to more than one example of evidence that follows: *powerful* is relevant to Chin having *a lot of soldiers*, unifying *many independent states*, and building *the most famous wall in the world*, etc. Similarly, other instances of manifest intangible wording, such as *brutal* and *cruel,* can be related to multiple examples of evidence, as represented in Figure 4 (p. 89). Therefore, even though the question was about the terracotta warriors, it is deemed acceptable and not 'off topic' for student 21 to create an 'evidence jump' to other artefacts, such as the Great Wall of China. In other words, fragments of evidence can be brought together through qualities that are related to a historical figure (e.g., *powerful, brutal*) and by being related to a broader set of portable values, such as *Legalism.*

Figure 4

Manifest Intangible Wording to Connect Fragments of Evidence
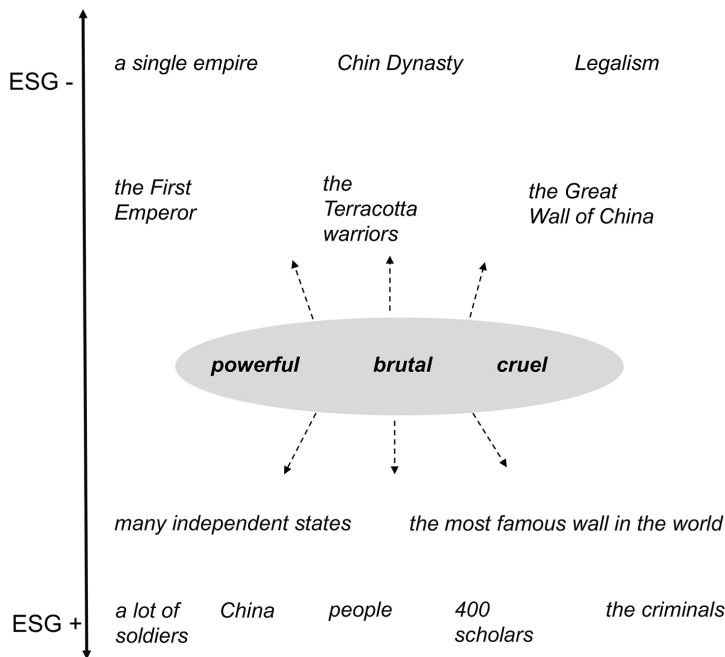
Further analysis with the clausing tool also shows that developing an argument in an extended response requires evaluative statements about the significance of physical evidence. For this purpose, some students changed the strength of EG to connect claims about the broad significance of evidence (EG-) to concrete particulars of past events (EG+). For example, student 21 starts with: *The terracotta warriors underline that the First Emperor was powerful* (clause type of *atemporal: transcendent*); and then elaborates with specific examples, such as, *He had a lot of soldiers who helped him to unify China* (clause type of *temporal: elsewhen*). These changes in epistemological-gravitation are illustrated in Figure 5 with additional examples from the data set for each clause type.

Figure 5

The Semantic Epistemological-Gravitation in Extended Responses
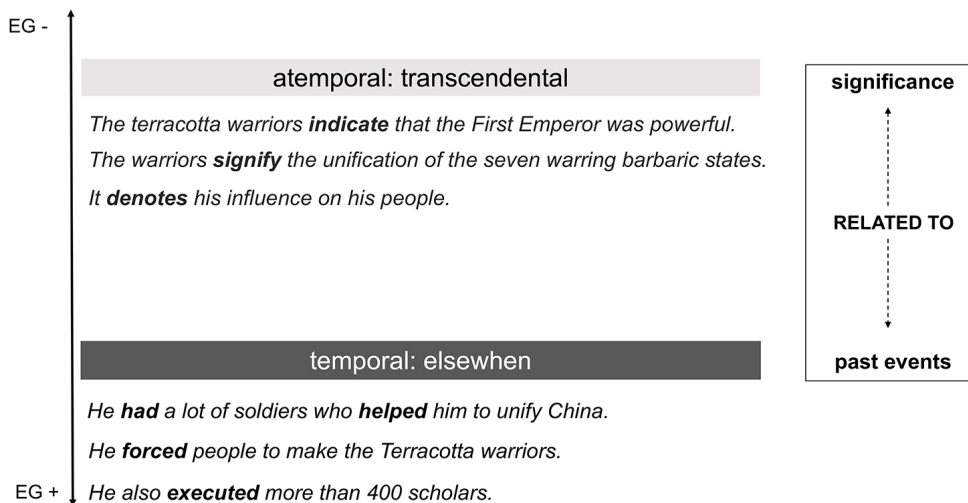
This analysis shows that, in extended responses, the ability to manage evidence with atemporality is critical to establishing significance. By changing the degree of context dependence, students transcend the concrete particulars of one historical artefact, event, or behaviour, and make an evaluative claim about why the evidence is so important. In the case of questions asking students to assess historical figures, such as Emperor Qin, weaker EG enables students to introduce an overall evaluative stance about the Emperor's reign (e.g., *The terracotta warriors indicate that the First Emperor was powerful),* and then use the concrete particulars of evidence to elaborate and provide insight into an underpinning ideology, such as Legalism.

Summary of differences between student responses to short and extended exam questions

From the perspective of epistemic semantic gravity in wording, the semantic profiles in Figures 1 and 3 have illustrated that both types of exam questions require a wide range of context dependence in order to create relationships between physical and non-physical entities. In responses to short answer questions, the relative shifts in ESG are deployed to explain why certain types of artefacts are in their current state. However, in extended responses, the relative shifts in ESG include qualities and values being assigned to one or more historical artefacts or figures. Such evaluation is a crucial strategy that students deploy to link fragments of evidence.

From the perspective of clausing, the semantic profiles in Figures 1 and 3 have also revealed that both types of exam questions require stronger epistemological-gravitation in order to position historical artefacts or figures in relation to completed actions or events. Similarly, the texts both make use of weaker epistemological-gravitation, though for different reasons. In short answer questions, weaker EG is used to explain recurrent processes that have not only happened to specific artefacts but could happen to other artefacts in other settings. In contrast, a change to weaker EG in the extended responses focuses on using atemporality to make evaluative claims about significance. These similarities and differences are summarised in Table 4.

Table 4

Similarities and Differences between Student Responses to Exam Question Types

Translation tools	Short answer exam questions about process	Extended response exam questions about historical figures
Wording (ESG)	Using physical artefacts and historical figures to say something about the non-physical	
	Describing why artefacts are in their current state and their past use in cultural practices	Assigning qualities and values to people and things
Clausing (EG)	Positioning artefacts or figures in relation to historical actions or events	
	Explaining recurrent processes or cultural practices that can happen to other artefacts in other settings	Making evaluative claims about the significance of evidence

The summary of differences in context dependence has illuminated different requirements for interpreting evidence. However, as our text analysis indicates, and past research has also highlighted, these requirements may not be fully understood by students. For example, in one Finnish secondary school context, researchers identified that students predominantly understood history 'as a collection of facts' (Veijola & Mikkonen, 2016, p. 11). Similarly, a study of student writing in a Swedish secondary school found that some students did not see 'the need to explain events or processes of change' as history was understood more as 'the factual unfolding events'

(Nersäter, 2018, p. 86). These wider findings about how students understand what is required of them highlight the need to explicitly discuss assessment expectations with students. They also point to the opportunity for systematically teaching specific requirements.

In the context of our study, analysis has identified two important areas of writing development that are not yet consistently visible in students' extended responses. These are: organising evaluation within paragraphs; and creating an accumulation of values in a concluding paragraph. In addition to the analysis presented so far, these areas of development arise from further findings that some students patched together fragments of evidence but struggled to consistently develop and elaborate on their claims (see an example in Appendix 2), others did not restate any claims in their conclusions (see student 3 and student 15's texts in Appendix 3), or, if a conclusion was present, some students tended to only briefly sum up their position (see multiple examples in Appendix 3). Few students used their concluding paragraph to re-state alternate sides of an argument, and make an overall evaluative claim based on the evidence that they had previously introduced. However, we argue that these are teachable features of constructing arguments in Ancient History.

Pedagogic insights

In this section we use 'hybrid texts' to model teachable features of extended responses. By 'hybrid', we mean excerpts of student writing from our data set that have been woven together into one response. The purpose of doing so is to show combinations of wording and clausing choices that are critical to specific ways of interpreting evidence. We do not specify classroom metalanguage that teachers could use to explain and annotate these features (as adapting theoretical terms for teaching purposes can be highly context specific and is, in of itself, an object of study for possible future research), but rather focus on example texts that could be used in teaching.

One teachable feature of the extended responses is introducing and then elaborating on one evaluative claim at a time. Drawing on the concept of gravitation, one possibility for teaching is to model starting and finishing a paragraph with atemporal clausing. Such organisation would enable students to introduce and restate a claim about significance, and, in between, support this claim with evidence. Examples of atemporal clausing are annotated in bold font in Table 5: ***The terracotta warriors indicate that the First Emperor was a powerful leader…Thus, the warriors represent the unification of China and Qin's extraordinary influence as a leader.*** Here, weaker EG is used to state and then restate the significance of evidence. In between these clauses is substantial elaboration of the claims through strengthening gravitation which, in this case, involves concrete particulars about past events related to the unification of China.

Table 5
Organising Evaluation within a Paragraph

Argumentation	Hybrid text example 1	Clausing	Wording
evaluative claim about significance	***The <u>terracotta warriors</u> indicate that the First Emperor was a <u>powerful </u>leader.*** *He had a lot of soldiers who helped him to unify China. Before the rule*	**atemporal**	<u>symbolic</u> <u>material</u>
elaboration with evidence	*of the first Emperor, there were seven warring barbaric states in China. These independent states fought to widen their own territory. Years of vicious fighting ended when the Emperor's mighty army conquered the states and formed a single empire.*	temporal	<u>manifest</u> <u>intangible</u> <u>symbolic</u> <u>material</u>
evaluative claim about significance	***Thus, <u>the warriors</u> represent <u>the unification of China</u> and Qin's <u>extraordinary </u>influence as a leader.***	**atemporal**	<u>symbolic</u> <u>conceptual</u> <u>manifest</u> <u>intangible</u>

From the perspective of wording, this type of 'atemporal sandwich' across a paragraph is more than just reinforcement of a claim through the repetition. As illustrated in Table 5 (p. 91), interpreting the significance of evidence involves connecting symbolic material wording about artefacts with manifest intangible wording about qualities, such as in the opening claim of: *The terracotta warriors [symbolic material] indicate that the First Emperor [symbolic material] was a powerful [manifest intangible] leader.* Similar wording choices appear in the restatement of the claim: *Thus, the warriors* [symbolic material] *represent the unification of China* [symbolic conceptual] *and Qin's* [symbolic material] *extraordinary* [manifest intangible] *influence as a leader*. In such a restatement, the use of symbolic conceptual wording, such as *the unification of China,* is particularly important for relating fragments of evidence to a type of historical change (e.g., *unification*). These wording and clausing choices are critical for using historical evidence in a way that is not bound to one setting or set of events.

A second teachable feature of extended responses involves bringing together evaluation in a concluding paragraph. One approach is to highlight the function of a concluding paragraph as not only restating a position, but also bringing together an accumulation of values that have been previously introduced. An example of a concluding paragraph with both these functions appears in hybrid text 2 in Table 6 (p. 93).

Table 6

A Concluding Paragraph to Restate a Position and Bring Together Values

Hybrid text example 2	Manifest intangibles for - evaluation	Manifest intangibles for + evaluation
In conclusion, the discovery of the Terracotta Warriors reveals both <u>negative</u> and <u>positive</u> aspects of Qin's rule. He can be perceived as a <u>successful</u> leader with respect to his role in the unification of China and reforms which led to a more <u>prosperous</u> and <u>advanced</u> society. However, the <u>ruthless</u> and <u>barbaric</u> bloodshed of his own people reveals an underlying <u>obsession</u> for power and control. For Qin, it seems that the price of progress and domination was never too high. **Ultimately, the <u>rigidity</u> and <u>brutality</u> of leadership grounded in Legalism led to the demise of the Qin dynasty**.	<u>negative</u> <u>ruthless</u> <u>barbaric</u> <u>obsession</u> <u>rigidity</u> <u>brutality</u>	<u>positive</u> <u>successful</u> <u>prosperous</u> <u>advanced</u>

In this example, manifest intangible wording is once again key to evaluating the behaviour and events related to a historical figure. It is first used in a generalised claim: *In conclusion, the discovery of the Terracotta Warriors reveals both the <u>negative</u> and <u>positive</u> aspects of Qin's rule.* Then additional qualities specify those positive (*<u>successful, prosperous, advanced</u>*) and negative (*<u>ruthless, barbaric, obsession</u>*) aspects. Finally, the overall position is made clear with further instances of manifest intangible wording which specify qualities about Qin's overall leadership style: *Ultimately, the <u>rigidity</u> and <u>brutality</u> of leadership grounded in Legalism led to the demise of the Qin dynasty*. In this final sentence, the qualities have three important functions: first, they summarise behaviour (previous examples are re-packaged as instances of *rigidity* and *brutality);* second, they are related to a set of portable values (as represented by the ideology of *Legalism*); and third, they are used to interpret a historical outcome, in this case, *the demise of the Qin dynasty.* This kind of evaluation in a concluding paragraph could be taught to students to support them with using evidence for managing contrasting points of view, while also making their own position clear.

Further inquiry

The findings have provided significant insights into fundamental differences between how students use evidence in responding to different types of exam questions. Analysis has shown that short responses are not miniture versions of extended ones. Findings have identified potential areas of writing development pertaining to students in our study, and we have argued that specific requirements for using evidence, such as connecting evidence to recurrent processes, interpreting significance, and relating multiple fragments of evidence to an evaluative claim can be taught explicitly. We have created text examples that could contribute to making such requirements more visible in classroom teaching.

One main limitation of this study is that the samples of student writing are taken from practice exams, rather than their actual final exams. The data set may, therefore, not fully represent all writing choices that students deploy in the 'real' exam, and not necessarily be a sample of their very best writing. A further factor that limits our ability to make generalisations about the required use of evidence in HSC exams for Ancient History is that we have only explored two main types of exam questions. Similar analysis could be conducted with responses to other types of exam questions to better capture the range of ways in which students control context dependence when writing about historical evidence. A further step would be to closely align students' management of relative shifts in context dependence with different assessment grades (A range, C range, etc). Such findings could inform marking rubrics and be used to support students' gradual and cumulative writing development prior to and during their final year of senior school.

More specifically, the identification of 'teachable features' invites further inquiry into the use of evaluative resources when writing extended responses in Ancient History. In this regard, future research could draw on developments in Appraisal theory in Systemic Functional Linguistics, which focuses on the language used for evaluation (e.g., Martin, 2017, 2019), and complementary analysis of axiologies in Legitimation Code Theory, which explore the systems of values that underpin evaluative claims (e.g., Doran, 2020; Tilakaratna & Szenes, 2020). Future research could also examine the extent to which learning how to use historical evidence in the development of arguments may function as a useful foundation for studies at a tertiary level. As Matruglio (2018) has begun to explore, one such area includes students learning how to manipulate language to manage multiple points of view in contested knowledge spaces. Similarly, a better understanding of how to build students' skills in using evidence and facts with more generalised, abstract ideas and theories could usefully prepare them for different types of writing that they are required to do at university level. The abundance of reflective writing tasks, for example, often require undergraduate students to make precise connections between their personal experiences in one specific context and the more generalised concepts within the theoretical frameworks of their disciplines (Macnaught, 2020; Ryan & Ryan, 2013; Szenes, Tilakaratna & Maton, 2015; Szenes & Tilakaratna, 2021). It therefore seems likely that better supporting secondary students with writing in subjects like Ancient History, including learning to use evidence to explain recurrent processes and development arguments, could provide a robust foundation for controlling degrees of context dependence in their future tertiary studies.

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Endnotes

[1] As the tool has yet to be published, changes by Doran and Maton to the names of categories may occur. However, if this does happen, which categories we are referring to will be clear.

[2] This generic translation device is not a model of English discourse, not a model of clauses and not a model of context-dependence. It is a means of describing for a broad phenomenon how a concept may be realized.

Appendices

Appendix 1. Exam questions from the 2019 HSC exam for Ancient History

How useful are the private buildings in Pompeii and Herculaneum in providing evidence about the economy? Support your response using evidence from source A and other sources (short answer - 5 marks).
Assess the values and limitations of sources as evidence about religion in Pompeii and Herculaneum. Support your response using Sources C and D and other relevant sources (extended response -12 marks).

Evaluate the view that Ahmose made the greatest contribution to Egypt in this period (extended response - 25 marks).

Appendix 2. A response to an extended response exam question

Student 20 (more fragmented use of evidence)

…Under the power of the emperor Chin, he had made several change[s] [to the] organisation of land, standardisation, law code. Peasants [were] divided [within] the empire into proviences [sic] to control them by loyal administrators and destroyed ancient literature and historical records to eradicate any past ideas. His high taxes in economic did not make him a popular figure as the heavy tax imposed [was used] towards lavish palaces for himself and his governors.

Appendix 3. Concluding paragraphs to an extended response exam question

Student 3 (entire final paragraph)
In conclusion, all of the knowledge entombed and preserved in the tomb along with the terracotta warriors is an valuable link to Chin's dynasty.

Student 15 (entire final paragraph)

In conclusion, the discovery of the Terracotta warriors revealed a great deal about Emperor Chin's rule.

Student 21 (entire final paragraph)

Despite his achievements to unify China he should still be considered a cruel king.

Student 6 (entire final paragraph)

Therefore, both positive and negative actions of Chin ultimately leads to his infamous notoriety considering him as an unsuccessful ruler of China.

Student 12 (entire final paragraph)

Consequently, Chin must be judged as a successful leader through his various reforms which unified the seven feudal states of China. However, his cruel treatment and lack of empathy for his people severely detract from his achievements. In conclusion, Chin was a successful ruler as if he didn't unify China, it would've been destroyed by the warring states, and through him, the country became strong and prosperous.

Appendix 4. First and final paragraphs in an extended response exam question

Student 8 (first and final paragraphs)

*The discovery of the Terracotta Warriors was representative of the **wealth, power** and the **superior status** the First Emperor of China possessed. The Terracotta Soldiers relate to how his sinister methods lead to a prosperous country…..*

*Ultimately, Chin unified the country, brought economic and administrative reforms and contributed to societal events and religion. The discovery of the Terracotta Soldiers represents his **power, status** and **wealth***.

Acknowledgements