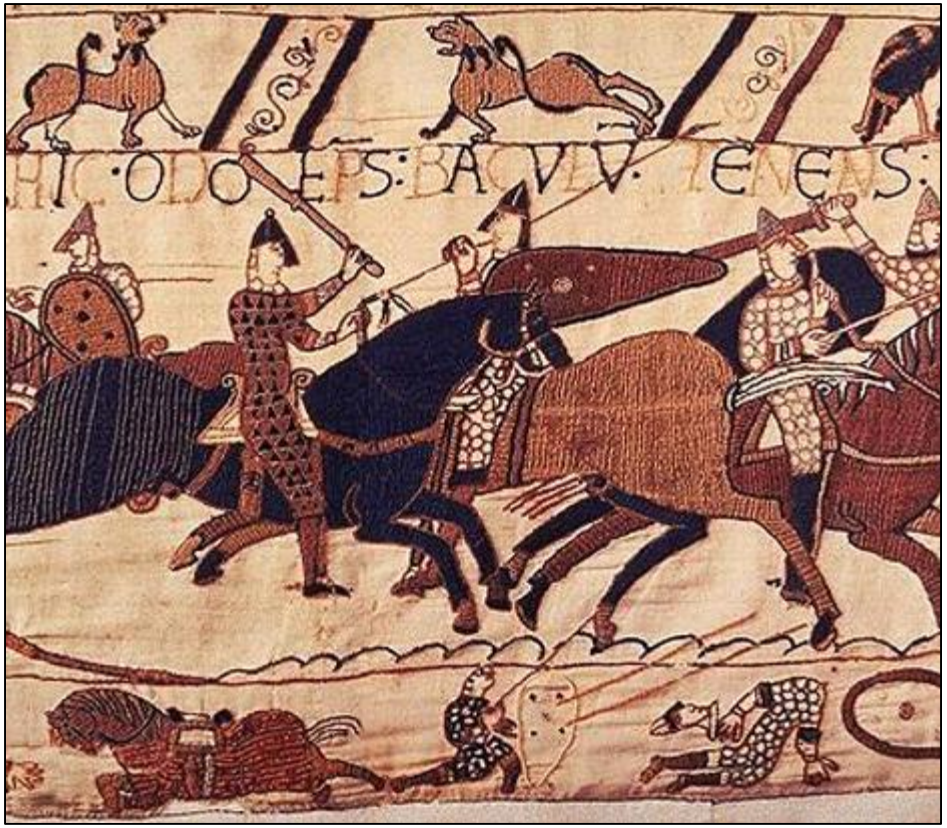
History and Physics

A collaborative lesson based on the Bayeux Tapestry



Key Points

- Overall aim
- Choice of topic
- Planning the lesson
- Delivering the lesson
- Evaluation

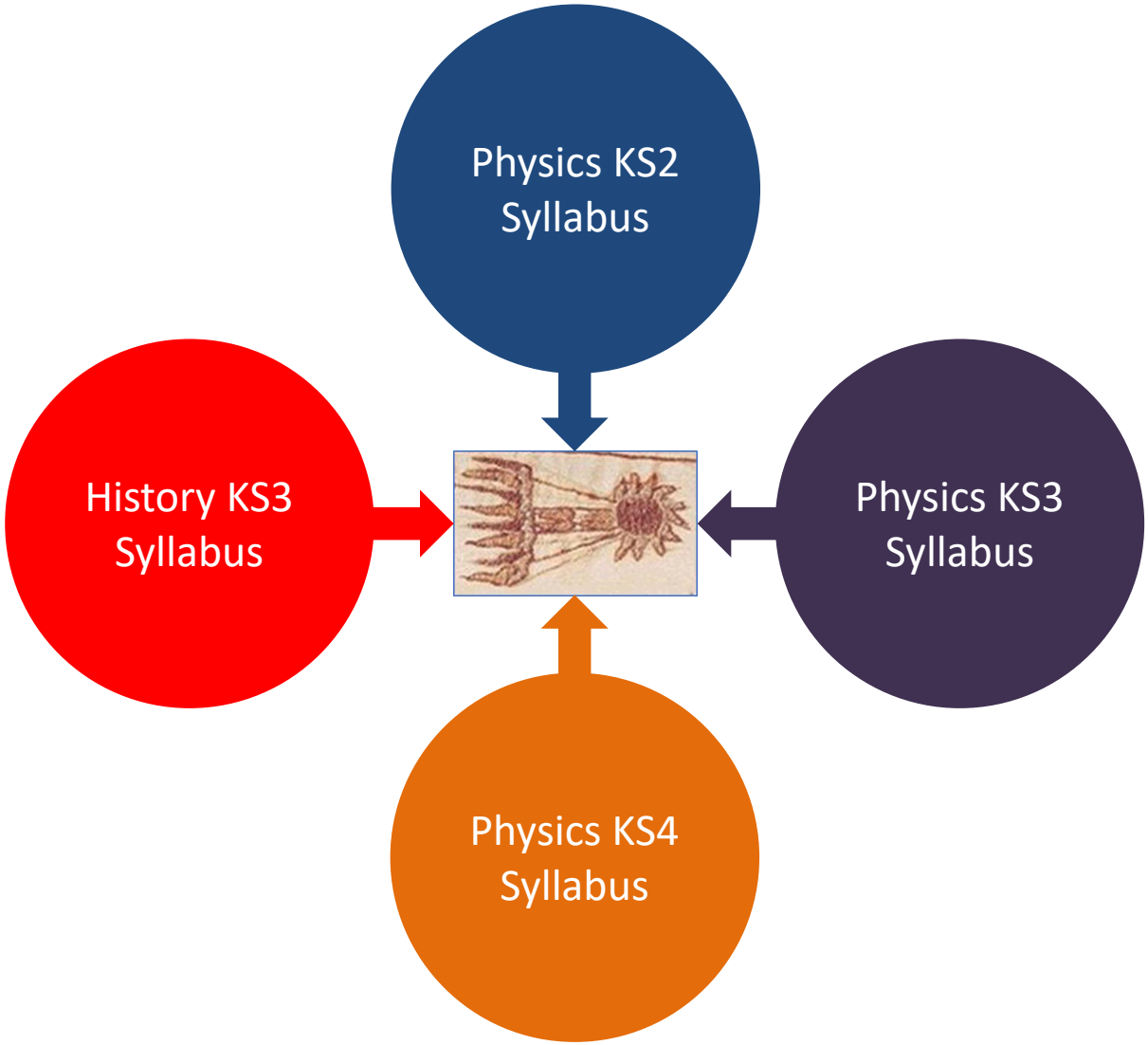
Overall aim

- To investigate the relationship between science and history by looking at:
  - How they can both contribute to understanding a past event or process.
  - What are the differences and similarities in the ways of knowing that science and history can support?
  - Whether combining insights from different subjects can help to enhance student engagement with a topic.

- To explore the suggested Collaborative Teaching Phase activities for **Depth Study 7: Inter-disciplinary Practice**:
  - *b. Choose one of your subjects and co-plan a lesson together from one of your existing schemes of work.*
  - *c. Complete either task a or b and then deliver this lesson together.*
  - *d. Plan a cross-disciplinary lesson that addresses a question from the viewpoint of two disciplinary areas.*

- To identify the practical considerations and challenges surrounding the planning and delivery of collaborative lessons.

Choice of topic



Choice of topic

The underlying principle was to identify a topic where aspects of the National Curriculum Key Stage 3 History and Physics syllabuses overlapped:

History

The national curriculum for history aims to ensure that all pupils… understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance.

Pupils should be taught about… the development of Church, state and society in Medieval Britain 1066-1509… This could include… the Norman Conquest

Physics

The national curriculum for science aims to ensure that all pupils… develop understanding of the nature, processes and methods of science

Pupils should be taught about… non-contact forces: gravity forces acting at a distance on Earth and in space… gravity forces between Earth and Moon, and between Earth and Sun (qualitative only)

Choice of topic

From a Physics perspective, the topic of the depiction of Halley's Comet in the Bayeux Tapestry also offered opportunities to link in with the Key Stage 2 and Key Stage 4 syllabuses:

Key Stage 2

Pupils should be taught to… describe the movement of the Earth, and other planets, relative to the Sun in the solar system

Pupils should be taught to… explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

Key Stage 4

Students should be taught so that they develop understanding and first-hand experience of… the ways in which scientific methods and theories develop over time

Students should be taught about… forces and fields: electrostatic, magnetic, gravity… the main features of the solar system

Practical considerations

In terms of scheduling and organising the lesson, there were a number of points to address:

- Fitting in with the KS3 History scheme of work
- Maintaining continuity from the previous lesson
- Identifying a suitable point in our timetables
- How to share delivery of the lesson
- Challenges posed by a class that was unfamiliar to one teacher
- The suitability of the classroom for planned activities
- ICT resources

Lesson plan

We identified a scheduled Year 7 lesson about the Norman Conquest of England on 25th September 2019 as particularly suitable and after discussion with my subject mentor I moved an observation to accommodate it.

To prepare a lesson plan, we liaised by email and via short meetings in the staff room at break and lunch times.

The lesson plan was written up using the Canterbury Christ Church University planning template.

Lesson plan

LESSON PLANNING FORM 2019-20 (Please use for formally observed lessons. This form can be bullet pointed)	Canterbury Christ Church University

Student Teacher's Name:	Thomas Kitchen Claire Searle	Date:	25/09/2019	Class:	7S

Contextual information for lesson (Student Teacher to complete prior to observation)
Copy and paste this section onto the 'Record of a Lesson Observation' form

a. Focus of this specific lesson and its place in the learning sequence including planned impact on pupil progress: individual / groups / whole class (this detail is only to inform during a lesson observation):

This lesson is an experiment in collaborative teaching using the depiction of Halley's Comet in the Bayeux Tapestry as a linking point between history and science. It forms part of a sequence of lessons about the Norman Conquest of England, following on directly from a previous lesson in which students prepared and began to deliver presentations in support of the three main contenders for the throne (Harald Hardrada, Harold Godwinson and William of Normandy). The planned impact of the lesson on pupil progress is to:

- Consolidate knowledge of the context of the struggle for the English throne from the previous lesson
- Recap which qualities made an effective ruler in the Middle Ages
- Link to students' KS2 knowledge of the solar system and gravity
- Introduce ideas about gravity as an attractive force between objects (KS3) in space and its role in causing circular orbits (KS4)
- Encourage students to recognise how attitudes towards and perceptions of natural phenomena have changed between 1066 and today
- Encourage students to consider how perceptions of the significance Halley's Comet's appearance in 1066 provide evidence of how historical narratives are constructed and how the events of 1066 were viewed

b. How does this lesson provide evidence that supports progress against the current targets of the Student Teacher:

Specific Focus on Pupil Progress: *How does it address any issues identified with pupil progress? Are there any misconceptions you need to address?*	**See above**
Lesson Purpose & Resourcing: *What do you want them to know or be able to do by the end of the lesson (what is new learning?)* *What resources are required?*	• **Identify specified features in a facsimile artefact** • **Make an informed voting decision and record electronically** • **See above (a)** **Resources: Facsimile Bayeux tapestry; ipads for voting**
Inclusive Practice: *What are your strategies for inclusive teaching?* *How are you planning to include all pupils?* *Are there any pupils that you specifically need to plan to support or extend? How will you do this?*	
Assessment Strategies to be used: *What formative strategies will enable you to assess progress? Are you planning for summative assessment? What examples of higher order questions can you plan for?*	Students will be selected randomly to critique the presentations, identifying strengths and weaknesses and suggesting potential improvements. Students will use a Mentimeter survey to vote on the different candidates for the English throne. They will then provide a short (25 character) reason for their choice, which will be displayed as a word-cloud. Students will then be selected at random to explain their choices. When searching for scenes/items in the Bayeux Tapestry, students will take photos of the relevant section and airdrop them to the teacher as they find them.
	During discussion of comets, their orbits and gravity, whole class questions will be used to gauge existing student knowledge, with students raising their hands to indicate familiarity. Students who raise their hands will be selected at random to share their specific knowledge with the class. For the final activity, pairs of students will be selected at random to feed back their ideas to the class (the number of pairs asked will depend on the time available).
Behaviour Management Strategies to be used and Health & Safety Implications: *How can you plan for good behaviour for learning? What strategies will you use? What support will you use? What (if any) H&S implications are there to be considered?*	The use of 1/7 scale (10m) facsimiles of the Bayeux Tapestry will require these to be laid out on the floor of the classroom. Students will be advised of the trip hazard this represents. By having two facsimiles, most students should be able to view one without needing to leave their seat. Students will be advised clearly of the appropriate behaviour and acceptable level of noise for each activity: • Presentations – listening in silence or presenting • Looking for items on the Bayeux Tapestry – working in groups and conversing quietly • Looking at modern ideas about comets – listening in silence or asking/answering questions when chosen • Discussing perceptions of Halley's Comet in 1066 – working in pairs and conversing quietly Infractions will be addressed via teacher interventions.

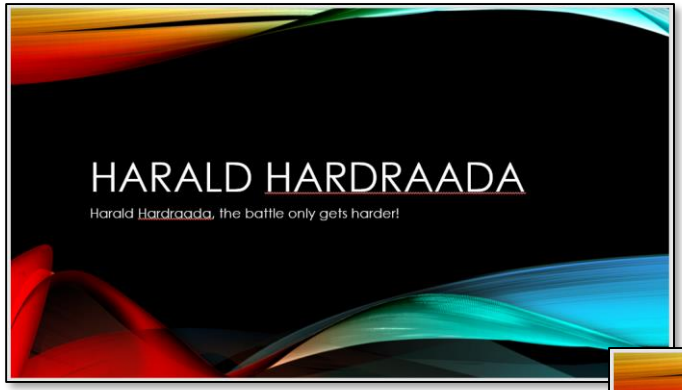
Timings:	Teacher Activity	Student Activity	How does this progress learning?
9:00-9:05	**Teacher greets students, reminds them of the seating plan for the room where necessary and takes the class register once students are seated.**	**Students enter quietly, find their seats according to the seating plan and respond to the register.**	**Students are settled in the correct seating arrangement and a calm, positive learning environment is created.**
9:05-9:15	**Teacher introduces presentations and supports use of PowerPoint to support the speeches.**	**Groups present their presentations for Harold Godwinson and Harald Hardrada. Other students listen and make notes.**	**Subject knowledge is demonstrated by presenting groups and acquired or consolidated by listeners. Presenters demonstrate how they have synthesised ideas to construct their speeches. Listeners evaluate the effectiveness of each speech.**
9:15-9:20	**Teacher chooses students at random to share evaluations of presentations, praising where effective and prompting where there are opportunities for further development.**	**Chosen students share their evaluations of the presentations with the class, commenting on:** • **What went well** • **Even better if**	**Chosen students demonstrate their evaluative skills. Presenting students from previous activity receive feedback on their work. Other students observe peer-assessment.**
9:20-9:25	**Teacher presents Mentimeter survey with two questions:** **1. Who should rule the realm? (Multiple choice)** **2. What quality was most important in your choice of ruler? (Free typed)**	**Students use iPads to navigate to www.menti.com to complete survey.**	**Students evaluate the presentations they have seen to make a decision about which candidate to vote for. They reflect on their decision-making process to identify the most important reason for their choice.**
9:25-9:30	**Teacher reveals results of Mentimeter voting and word cloud, and asks selected students to explain their word cloud submissions.**	**Chosen students explain their choice of word cloud submission.**	**Chosen students justify and explain their decisions.**
9:30-9:40	**Teacher displays slide with instructions and instructs students re. activity and circulates to assist students and respond to student questions.**	**Students unroll two facsimiles of Bayeux Tapestry and look for specified items. When they find them they use their iPads to photograph them and airdrop the pictures to the teacher. There is an extension question to calculate the length of the facsimile from the length of the real Bayeux Tapestry and the scale of the facsimile.**	**Students are introduced to the Bayeux Tapestry as a historical source, some of the key events and figures of 1066, and Halley's Comet. The extension question requires students to apply maths skills and appreciate the size of the real Bayeux Tapestry.**
9:40-9:50	**Teacher questions students about their existing knowledge of comets, the structure of the solar system and gravity. Teacher demonstrates online simulations of Halley's Comet orbit and general sun-planet model.**	**Students respond to teacher questions re. existing knowledge to make deductions about information presented.**	**Students consolidate existing knowledge from KS3 and encounter new concepts; they are encouraged to connect this knowledge.**
9:50-10:00	**Teacher displays short quotes from 11th-century sources. Following student discussion, teacher picks pairs to share their ideas with class.**	**Students discuss quotes in pairs and chosen pairs share their ideas with the class.**	**Students examine the language used in the quotes and analyse them to identify common trends. Students consider the differences between how natural phenomena are perceived now and how they have been perceived in the past, building their appreciation of how scientific methods and theories have developed.**

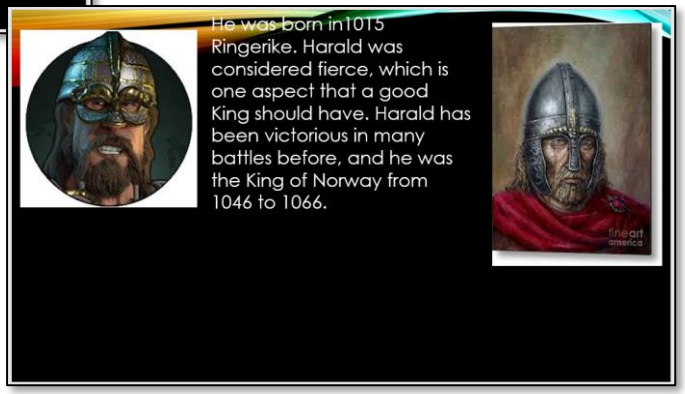
Please Note: *There is a separate* ***Lesson Evaluation Form 2019-20*** *to evaluate pupil progress following the lesson delivery*

Lesson plan

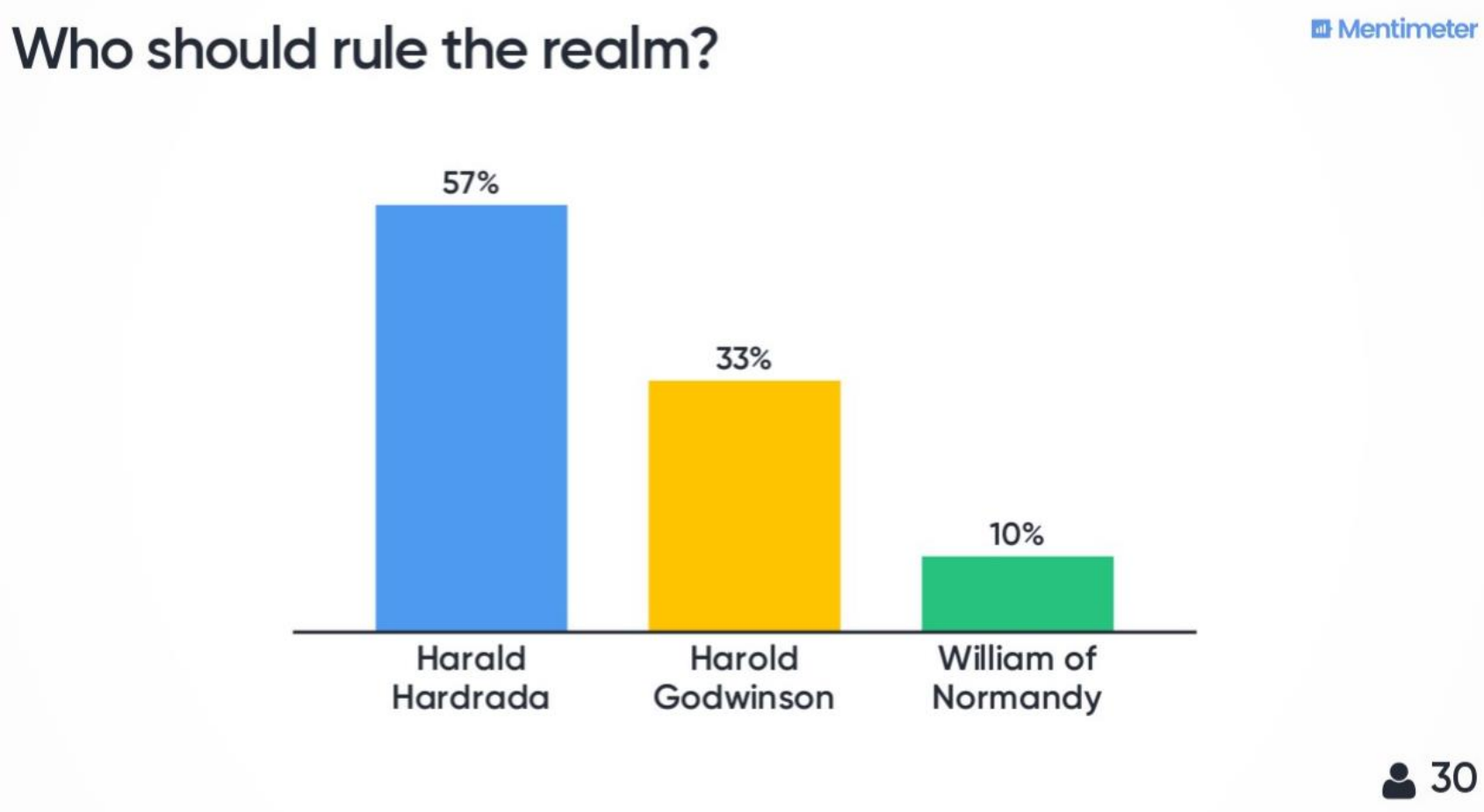
Timing	Activity	Delivered By
9:00-9:05	Students enter room, are greeted by the teacher and sit according to the seating plan.	CS
9:05-9:15	Students show presentations prepared in previous lesson.	CS
9:15-9:20	Students share evaluations of presentations with class.	CS
9:20-9:25	Students access and complete Mentimeter survey.	TK
9:25-9:30	Teacher reveals results of survey and students explain word cloud submissions.	TK
9:30-9:40	Students search for items on 1/7th scale facsimiles of the Bayeux Tapestry. Students take pictures of the items and airdrop to teacher once found.	TK
9:40-9:50	Teacher explores subject of comets via PowerPoint presentation and online simulations starting from Halley's Comet.	TK
9:50-10:00	Students consider 11th-century quotes about Halley's Comet and compare these with current scientific approaches.	CS/TK

Student presentations





Mentimeter Survey



Mentimeter Survey

What quality was most important in your choice of ruler?

Mentimeter

30

Bayeux Tapestry facsimiles

The Bayeux Tapestry

Open out the two replicas of the Bayeux Tapestry (handling them carefully) and see if you can find:

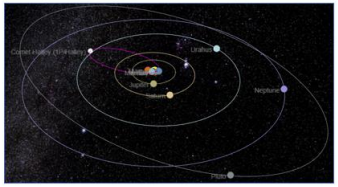
- Harold swearing an oath to William
- Harold's coronation
- Bishop Odo of Bayeux brandishing a *baculum*
- 

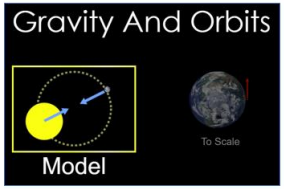
When you find an item, nominate one person in your group to take a picture of it on their iPad and airdrop it to MACBOOK-023

Extension: If the real Bayeux Tapestry is 68.3m long, how long is this replica?

Halley's Comet

What do we know about comets today?





Halley's Comet

In the twentieth and twenty-first centuries, investigations of comets with powerful telescopes and space probes has revealed that they are made up of:

- A solid **nucleus** of rock, dust, ice and frozen gases
- A **coma** (atmosphere) of dust and gas
- **Tails** of gas and dust emitted when parts of the comet are heated when it passes close to the sun

ESA/ATG medialab image

In 2014, the European Space Agency's *Philae* space probe landed on the comet 67P/Churyumov–Gerasimenko. Future missions are planned to bring samples of cometary materials back to earth for study.

Comparing approaches

Halley's Comet

What did people think at the time?

'[Harold], the comet, terror of kings, which burned soon after your elevation, foretold your doom.'

William of Poitiers, *Gesta Guillelmi Ducis Normannorum et Regis Anglorum*, a Norman cleric writing c.1071-77.

'A star known as a comet appeared in the north-west and remained visible for almost 15 days. Learned astrologers who investigate the secrets of natural science declared that this portended the transfer of a kingdom.'

Orderic Vitalis, *Historia Ecclesiastica*, a monk with a Norman father and an English mother writing c.1124.

'All over England there was seen a sign in the skies such as never been seen before. Some said it was the star comet which some call the long-haired star.'

Anglo-Saxon Chronicle versions C and D.

Evaluation

LESSON EVALUATION FORM 2019-20 As a minimum requirement complete this evaluation each time you are formally observed (Please complete the relevant boxes using bullet points)	Canterbury Christ Church University

Student Teacher's Name:	Thomas Kitchen Claire Searle	Date:	25/09/2019	Class:	7S

Are pupils making progress? *Please tick	YES	x	NO	
What is the evidence? Are pupils engaged in, and enthusiastic about their learning? Are pupils willing, and able, to talk about what they are learning? Can pupils communicate about what they need to do to improve? Do pupils have a sense of the bigger picture: not just what they are learning, but why? Is there evidence in pupil work to support your judgement?	**Students engaged well with each element of the lesson:** • **In their presentations, students demonstrated the results of their research into the candidates, including some relevant and accurate historical content.** • **After the initial presentations, chosen students were able and willing to provide detailed evaluations of them.** • **Students were eager to engage in the online voting process.** • **Students were able and willing to justify their choice of ruler after voting, linking it to our work defining what made a good medieval king.** • **Most students engaged eagerly with searching the Bayeux Tapestry, asking unprompted questions to support their search and find out about items/scenes** • **Some students offered relevant suggestions and asked relevant questions during the discussion of comets** • **Chosen pairs of students were willing and able to analyse sets of quotations for common properties and explain and justify their conclusions to the class.** • **Chosen students demonstrated an understanding that people in the past explained unknown phenomena in their own ways and that their approach differs from our modern scientific one.** **This lesson was an exercise in collaborative working between science and history. Links were made to:** • **The wider KS3 science curriculum** • **Real-world experiences such as voting in UK elections** • **Science in the news (Rosetta and future cometary missions)** • **Broad historical methods and principles** **Student questions/comments indicated interest in and engagement with these concepts.**			
Which individuals or groups are making better progress than others? How do you know this? What barriers can you identify that are impacting on progress?	**Some students did not engage as actively in searching the Bayeux Tapestry as others. This was partly due to practical barriers, as the size of the facsimiles and layout of the room meant that not all students could easily see or handle them.**			
Identify <u>one aspect</u> of the lesson that was a significant success for you. Why do you think this was successful?	**The use of facsimile copies of the Bayeux Tapestry seemed to be very successful in engaging students' interest and allowing them to appreciate the scale of the real Bayeux Tapestry. This may be because it offered a tangible artefact for students to handle and an opportunity for controlled movement around the classroom and group working with other students.**			

What interventions will you put in place to promote continued/greater pupil progress in next lesson(s)?	**CS: I will continue referencing the Bayeux tapestry as we move on to discussing the battle itself. A future lesson looks at the reliability of the tapestry as a source. Having been introduced to it through the facsimiles in this lesson will, I believe, increase <u>pupils</u> engagement with those discussions.**
What support do <u>you</u> need to implement any of the above? ***These can be discussion points for weekly meeting(s).**	

Evaluation against aims

To investigate the relationship between science and history by looking at:

- How they can both contribute to understanding a past event or process.

  By comparing current and historic perspectives on Halley's Comet, students were able to identify key aspects of modern scientific method and contrast these with ideas about its nature and significance in 1066.

- What are the differences and similarities in the ways of knowing that science and history can support?

  Students considered how science is concerned with describing and explaining fundamental features of the universe; history deals with specific situations, human perceptions and subjective concepts of significance.

Evaluation against aims

Can combining insights from different subjects help to enhance student engagement with a topic?

- Observation of students supported this idea, as they seemed to be engaged throughout the lesson with the various activities, especially the search for items on the Bayeux Tapestry facsimiles.

- Student responses to questions directed at randomly chosen individuals and pairs showed a high level of engagement with set activities and thoughtful consideration of the issues and questions raised.

- Several days after the lesson, I was approached by a student who had been part of it and who wanted to tell me how interesting and enjoyable they found it.

Practical considerations

What went well:

- Students' knowledge progressed in relation to:
  - The wider KS3 science and history curriculums
  - Real-world experiences such as voting in UK elections
  - Science in the news (Rosetta and future cometary missions)
  - Broad historical methods and principles
- Students engaged well with the ICT-based and tactile aspects of different activities.

Challenges/limitations/areas for future development:

- The alignment with the Year 7 science scheme of work was not particularly close – students will not encounter forces as a topic until later in the year.
- Year 7 students are not able to use the cameras in their iPads, necessitating a change to the format of the Bayeux Tapestry activity.
- Due to the layout of the classroom, some students were not able to participate in the Bayeux Tapestry activity as fully as others.