



## Ancient Chinese Chariots

**A** The Shang Dynasty or Yin Dynasty, according to traditional historiography, ruled in the Yellow River valley in the second millennium. Archaeological work at the Ruins of Yin (near modern-day Anyang), which has been identified as the last Shang capital, uncovered eleven major Yin royal tombs and the foundations of palaces and ritual sites, containing weapons of war and remains from both animal and human sacrifices.

**B** The Tomb of Fu Hao is an archaeological site at Yinxu, the ruins of the ancient Shang Dynasty capital Yin, within the modern city of Anyang in Henan Province, China. Discovered in 1976, it was identified as the final resting place of the queen and military general Fu Hao. The artifacts unearthed within the grave included jade objects, bone objects, bronze objects etc. These grave goods are confirmed by the oracle texts, which constitute almost all of the first hand written record we possess of the Shang Dynasty. Below the corpse was a small pit holding the remains of six sacrificial dogs and along the edge lay the skeletons of human slaves, evidence of human sacrifice.

**C** The Terracotta Army was discovered on 29 March 1974 to the east of Xi'an in Shaanxi. The terracotta soldiers were accidentally discovered when a group of local farmers was digging a well during a drought around 1.6 km (1 mile) east of the Qin Emperors tomb around at Mount Li (Lishan), a region riddled with underground springs and watercourses. Experts currently place the entire number of soldiers at 8,000 – with 130 chariots (130 cm long), 530 horses and 150 cavalry horses helping to ward off any dangers in the afterlife. In contrast, the burial of Tutankhamun yielded six complete but dismantled chariots of unparalleled richness and sophistication. Each was designed for two people (90 cm long) and had its axle sawn through to enable it to be brought along the narrow corridor into the tomb.

**D** Excavation of ancient Chinese chariots has confirmed the descriptions of them in the earliest texts. Wheels were constructed from a variety of woods: elm provided the hub, rose-wood the spokes and oak the felloes. The hub was drilled through to form an empty space into which the tapering axle was fitted, the whole being covered with leather to retain lubricating oil. Though the number of spokes varied, a wheel by the fourth century BC usually had eighteen to thirty-two of them. Records show how elaborate was the testing of each completed wheel: flotation and weighing were regarded as the best measures of balance, but even the empty spaces in the assembly were checked with millet grains. One outstanding constructional asset of the ancient Chinese wheel was dishing. Dishing refers to the dishlike shape of an advanced wooden wheel, which looks rather like a flat cone. On occasion they chose to strengthen a dished wheel with a pair of struts running from rim to rim on each of the hub. As these extra supports were inserted separately into the felloes, they would have added even greater strength to the wheel. Leather wrapped up the edge of the wheel aimed to retain bronze.

**E** Within a millennium, however, Chinese chariot-makers had developed a vehicle with shafts, the precursor of the true carriage or cart. This design did not make its appearance



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in Europe until the end of the Roman Empire. Because the shafts curved upwards, and the harness pressed against a horse's shoulders, not his neck, the shaft chariot was incredibly efficient. The halberd was also part of chariot standard weaponry. This halberd usually measured well over 3 metres in length, which meant that a chariot warrior wielding it sideways could strike down the charioteer in a passing chariot. The speed of chariot which was tested on the sand was quite fast. At speed these passes were very dangerous for the crews of both chariots.

F The advantages offered by the new chariots were not entirely missed. They could see how there were literally the warring states, whose conflicts lasted down the Qin unification of China. Qin Shi Huang was buried in the most opulent tomb complex ever constructed in China, a sprawling, city-size collection of underground caverns containing everything the emperor would need for the afterlife. Even a collection of terracotta armies called Terra-Cotta Warriors was buried in it. The ancient Chinese, along with many cultures including ancient Egyptians, believed that items and even people buried with a person could be taken with him to the afterlife

### Questions 1-4

Do the following statements agree with the information given in Reading Passage 1? In boxes 1-4 on you answer sheet, write

TRUE	if the statement is true
FALSE	if the statement is false
NOT GIVEN	if the information is not given in the passage

1. when discovered, the written records of the grave goods proved to be accurate.
2. Human skeletons in Anyang tomb were identified ad soldiers who were killed in the war.
3. The Terracotta Army was discovered by people lived nearby by chance.
4. The size of the King Tutankhamen's tomb is bigger than that of in Qin Emperors' tomb.

### Questions 5-10

Complete the notes below.

Choose ONE WORD from the passage for each answer. Write your answers in boxes 5-10 on your answer sheet

5. The hub is made wood from the tree of.....



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6. The room through the hub was to put tempering axle in which is wrapped up by leather aiming to retain.....
7. The number of spokes varied from.....to .....
8. The shape of wheel resembles a.....
9. Two was used to strengthen the wheel.....
10. Leather wrapped up the edge of the wheel aimed to remain.....

### Questions 11-13

Answer the questions below.

Choose **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each answer.

11. What body part of horse was released the pressure from to the shoulder
12. what kind road surface did the researchers measure the speed of the chariot ?
13. What part of his afterlife palace was the Emperor Qin Shi Huang buried?

## SECTION 2

### Saving the British Bitterns

A Breeding bitterns became extinct in the UK by 1886 but, following re-colonisation early last century, numbers rose to a peak of about 70 booming (singing) males in the 1950s, falling to fewer than 20 by the 1990s. In the late 1980s it was clear that the bittern was in trouble, but there was little information on which to base recovery actions.

B Bitterns have cryptic plumage and a shy nature, usually remaining hidden within the cover of reedbed vegetation. Our first challenge was to develop standard methods to monitor their numbers. The boom of the male bittern is its most distinctive feature during the breeding season, and we developed a method to count them using the sound patterns unique to each individual. This not only allows us to be much more certain of the number of booming males in the UK, but also enables us to estimate local survival of males from one year to the next

C Our first direct understanding of the habitat needs of breeding bitterns came from comparisons of reedbedsites that had lost their booming birds with those that retained them. This research showed that bitterns had been retained in reedbeds where the natural process of succession, or drying out, had been slowed through management. Based on this



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work, broad recommendations on how to manage and rehabilitate reedbeds for bitterns were made, and funding was provided through the EU LIFE Fund to manage 13 sites within the core breeding range. This project, though led by the RSPB, involved many other organisations.

**D** To refine these recommendations and provide fine-scale, quantitative habitat prescriptions on the bitterns' preferred feeding habitat, we radio-tracked male bitterns on the RSPB's Minsmere and Leighton Moss reserves. This showed clear preferences for feeding in the wetter reedbed margins, particularly within the reedbed next to larger open pools. The average home range sizes of the male bitterns we followed (about 20 hectares) provided a good indication of the area of reedbed needed when managing or creating habitat for this species. Female bitterns undertake all the incubation and care of the young, so it was important to understand their needs as well. Over the course of our research, we located 87 bittern nests and found that female bitterns preferred to nest in areas of continuous vegetation, well into the reedbed, but where water was still present during the driest part of the breeding season.

**E** The success of the habitat prescriptions developed from this research has been spectacular. For instance, at Minsmere, booming bittern numbers gradually increased from one to 10 following reedbed lowering, a management technique designed to halt the drying out process. After a low point of 11 booming males in 1997, bittern numbers in Britain responded to all the habitat management work and started to increase for the first time since the 1950s.

**F** The final phase of research involved understanding the diet, survival and dispersal of bittern chicks. To do this we fitted small radio tags to young bittern chicks in the nest, to determine their fate through to fledging and beyond. Many chicks did not survive to fledging and starvation was found to be the most likely reason for their demise. The fish prey fed to chicks was dominated by those species penetrating into the reed edge. So, an important element of recent studies (including a PhD with the University of Hull) has been the development of recommendations on habitat and water conditions to promote healthy native fish populations

**G** Once independent, radio-tagged young bitterns were found to seek out new sites during their first winter; a proportion of these would remain on new sites to breed if the conditions were suitable. A second EU LIFE funded project aims to provide these suitable sites in new areas. A network of 19 sites developed through this partnership project will secure a more sustainable UK bittern population with successful breeding outside of the core area, less vulnerable to chance events and sea level rise.

**H** By 2004, the number of booming male bitterns in the UK had increased to 55, with almost all of the increase being on those sites undertaking management based on advice derived from our research. Although science has been at the core of the bittern story, success has only been achieved through the trust, hard work and dedication of all the managers, owners and wardens of sites that have implemented, in some cases very drastic, management to secure the future of this wetland species in the UK. The constructed bunds and five major sluices now control the water level over 82 ha, with a further 50 ha coming under control in the winter of 2005/06. Reed establishment has principally used natural regeneration or planted seedlings to provide small core areas that will in time expand to create a bigger reed area. To date nearly 275,000 seedlings have been planted and reed



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cover is extensive. Over 3 km of new ditches have been formed, 3.7 km of existing ditch have been re-profiled and 2.2 km of old meander (former estuarine features) has been cleaned out.

I Bitterns now regularly winter on the site some indication that they are staying longer into the spring. No breeding has yet occurred but a booming male was present in the spring of 2004. A range of wildfowl breed, as well as a good number of reedbed passerines including reed bunting, reed, sedge and grasshopper warblers. Numbers of wintering shoveler have increased so that the site now holds a UK important wintering population. Malltraeth Reserve now forms part of the UK network of key sites for water vole (a UK priority species) and 12 monitoring transects has been established. Otter and brown-hare occur on the site as does the rare plant. Pillwort.

### Questions 14-20

The reading passage has seven paragraphs, A-H

Choose the correct heading for paragraphs A-H from the list below. Write the correct number, i-viii, in boxes 14-20 on your answer sheet.

### List of Headings

- i. research findings into habitats and decisions made
- ii. fluctuation in bittern number
- iii. protect the young bittern
- iv. international cooperation works
- v. Began in calculation of the number
- vi. importance of food
- vii. Research has been successful.
- viii. research into the reedbed



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- ix. reserve established holding bittern in winter

**Example: Paragraph E vii**

**14. Paragraph A**

**15. Paragraph B**

**16. Paragraph C**

**17. Paragraph D**

**18. Paragraph F**

**19. Paragraph G**

**20. Paragraph H**

**Questions 21-26**

**Answer the questions below.**

**Choose NO MORE THAN THREE WORDS AND/OR A NUMBER from the passage for each answer.**

- 21. When did the bird of bitten reach its peak of number?**
- 22. What does the author describe the bittern's character?**
- 23. What is the main cause for the chick bittern's death?**
- 24. What is the main food for chick bittern?**
- 25. What system does it secure the stability for bittern's population?**
- 26. Besides bittern and rare vegetation, what mammal does the plan benefit?**

**Questions 27**

**Choose the correct letter, A, B, C or D.**

**Write your answers in boxes 27 on your answer sheet.**



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27. What is the main purpose of this passage?

- A Main characteristic of a bird called bittern.
- B Cooperation can protect an endangered species.
- C The difficulty of access information of bittern's habitat and diet.
- D To save wetland and reedbed in UK.

### SECTION 3

#### E-training

A E-learning is the unifying term to describe the fields of online learning, web-based training, and technology-delivered instruction, which can be a great benefit to corporate e-learning. IBM, for instance, claims that the institution of its e-training program, Basic Blue, whose purpose is to train new managers, saved the company in the range of \$200 million in 1999. Cutting the travel expenses required to bring employees and instructors to a central classroom accounts for the lion's share of the savings. With an online course, employees can learn from any Internet-connected PC, anywhere in the world. Ernst and Young reduced training costs by 35 percent while improving consistency and scalability.

B In addition to generally positive economic benefits, other advantages such as convenience, standardized delivery, self-paced learning, and variety of available content, have made e-learning a high priority for many corporations. E-learning is widely believed to offer flexible "any time, any place" learning. The claim for "any place" is valid in principle and is a great development. Many people can engage with rich learning materials that simply were not possible in a paper or broadcast distance learning era. For teaching specific information and skills, e-training holds great promise. It can be especially effective at helping employees prepare for IT certification programs. E-learning also seems to effectively address topics such as sexual harassment education,<sup>5</sup> safety training and management training – all areas where a clear set of objectives can be identified. Ultimately, training experts recommend a "blended" approach that combines both online and in-person training as the instruction requires. E-learning is not an end-all solution. But if it helps decrease costs and windowless classrooms filled with snoring students, it definitely has its advantages.

C Much of the discussion about implementing e-learning has focused on the technology, but as Driscoll and others have reminded us, e-learning is not just about the technology, but also many human factors. As any capable manager knows, teaching employees new skills is critical to a smoothly run business. Having said that, however, the traditional route of classroom instruction runs the risk of being expensive, slow and, often times, ineffective. Perhaps the classroom's greatest disadvantage is the fact that it takes employees out of their jobs. Every minute an employee is sitting in a classroom training session is a minute they're not out on the floor working. It now looks as if there is a way to circumvent these traditional training drawbacks. E-training promises more effective



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teaching techniques by integrating audio, video, animation, text and interactive materials with the intent of teaching each student at his or her own pace. In addition to higher performance results, there are other immediate benefits to students such as increased time on task, higher levels of motivation, and reduced test anxiety for many learners. A California State University Northridge study reported that e-learners performed 20 percent better than traditional learners. Nelson reported a significant difference between the mean grades of 406 university students earned in traditional and distance education classes, where the distance learners outperformed the traditional learners.

On the other hand, nobody said E-training technology would be cheap. E-training service providers, on the average, charge from \$10,000 to \$60,000 to develop one hour of online instruction. This price varies depending on the complexity of the training topic and the media used. HTML pages are a little cheaper to develop while streaming-video (presentations or flash animations cost more. Course content is just the starting place for cost. A complete e-learning solution also includes the technology platform (the computers, applications and network connections that are used to deliver the courses). This technology platform, known as a learning management system (LMS), can either be installed onsite or outsourced. Add to that cost the necessary investments in network bandwidth to deliver multimedia courses, and you're left holding one heck of a bill. For the LMS infrastructure and a dozen or so online courses, costs can top \$500,000 in the first year. These kinds of costs mean that custom e-training is, for the time being, an option only for large organizations. For those companies that have a large enough staff, the e-training concept pays for itself. Aware of this fact, large companies are investing heavily in online training. Today, over half of the 400-plus courses that Rockwell Collins offers are delivered instantly to its clients in an e-learning format, a change that has reduced its annual (training costs by 40%. Many other success stories exist.

E-learning isn't expected to replace the classroom entirely. For one thing, bandwidth limitations are still an issue in presenting multimedia over the Internet. Furthermore, e-training isn't suited to every mode of instruction or topic. For instance, it's rather ineffective imparting cultural values or building teams. If your company has a unique corporate culture it would be difficult to convey that to first time employees through a computer monitor. Group training sessions are more ideal for these purposes. In addition, there is a perceived loss of research time because of the work involved in developing and teaching online classes. Professor Wallin estimated that it required between 500 and 1,000 person-hours, that is, Wallin-hours, to keep the course at the appropriate level of currency and usefulness. (Distance learning instructors often need technical skills, no matter how advanced the courseware system.) That amounts to between a quarter and half of a person-year. Finally, teaching materials require computer literacy and access to equipment. Any e-Learning system involves basic equipment and a minimum level of computer knowledge in order to perform the tasks required by the system. A student that does not possess these skills, or have access to these tools, cannot succeed in an e-Learning program.

While few people debate the obvious advantages of e-learning, systematic research is needed to confirm that learners are actually acquiring and using the skills that are being taught online, and that e-learning is the best way to achieve the outcomes in a corporate environment. Nowadays, a go-between style of the Blended learning, which refers to a mixing of different learning environments, is gaining popularity. It combines traditional face-to-face classroom methods with more modern computer-mediated activities. According to its proponents, the strategy creates a more integrated approach for both



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instructors and learners. Formerly, technology-based materials played a supporting role to face-to-face instruction. Through a blended learning approach, technology will be more important

### **Questions 28-33**

The reading passage has seven paragraphs, A-F

Choose the correct heading for paragraphs A-F from the list below. Write the correct number, i-xi in boxes 28-33 on your answer sheet.

#### **List of Headings**

- i overview of the benefits for the application of E-training
- ii IBM's successful choice of training
- iii Future direction and a new style of teaching
- iv learners' achievement and advanced teaching materials
- v limitations when E-training compares with traditional class
- vi multimedia over the Internet can be a solution
- vii technology can be a huge financial burden
- viii the distance learners outperformed the traditional university learners in worldwide
- ix other advantages besides economic consideration
- x Training offered to help people learn using computers

**28. Paragraph A**

**29. Paragraph B**



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**30. Paragraph C**

**31. Paragraph D**

**32. Paragraph E**

**33. Paragraph F**

**Questions 34-37**

The reading Passage has seven paragraphs A-F.

Which paragraph contains the following information?

Write the correct letter A-F, in boxes 35-37 on your answer sheet.

**34. Projected Basic Blue in IBM achieved a great success.**

**35. E-learning wins as a priority for many corporations as its flexibility.**

**36. The combination of the traditional and e-training environments may prevail.**

**37. Example of a fast electronic delivery for a company's products to its customers.**

**Questions 38-40**

Choose Three correct letters, among A-E

Write your answers in boxes 38-40 on your answer sheet.

**A Technical facilities are hardly obtained.**

**B Presenting multimedia over the Internet is restricted due to the bandwidth limit.**

**C It is ineffective imparting a unique corporate value to fresh employees.**

**D Employees need block a long time leaving their position attending training.**

**E More preparation time is needed to keep the course at the suitable level.**