PART III

Reading 4 "The Digital Divide"

The Challenge of Technology and Equity

P1 **Information technology** is influencing the way many of us live and work today. We use the Internet to look and apply for jobs, shop, conduct research, make airline reservations, and explore areas of interest. We use e-mail and the Internet to communicate instantaneously with friends and business associates around the world. Computers are commonplace in homes and the workplace.

P2 ➔ Although the number of Internet users is growing exponentially each year, most of the world's population does not have access to computers or the Internet. Only 6 percent of the population in developing countries are connected to telephones. Although more than 94 percent of U.S. households have a telephone, only 56 percent have personal computers at home and 50 percent have Internet access. The lack of what most of us would consider a basic communications necessity—the telephone—does not occur just in developing nations. On some Native American reservations only 60 percent of the residents have a telephone. The move to wireless connections may eliminate the need for telephone lines, but it does not remove the barrier to equipment costs.

P3 ➔ Who has Internet access? The **digital divide** between the populations who have access to the Internet and information technology tools and those who don't is based on income, race, education, household type, and geographic location, but the gap between groups is narrowing. Eighty-five percent of households with an income over $75,000 have Internet access, compared with less than 20 percent of the households with incomes under $15,000. Over 80 percent of college graduates use the Internet as compared with 40 percent of high school completers and 13 percent of high school dropouts. Seventy-two percent of households with two parents have Internet access; 40 percent of female, single-parent households do. Differences are also found among households and families from different racial and ethnic groups. Fifty-five percent of white households, 31 percent of black households, 32 percent of Latino households, 68 percent of Asian or Pacific Islander households, and 39 percent of American Indian, Eskimo, or Aleut households have access to the Internet. The number of Internet users who are children under nine years old and persons over fifty has more than tripled since 1997. Households in inner cities are less likely to have computers and Internet access than those in urban and rural areas, but the differences are no more than 6 percent.

P4 ➔ Another problem that exacerbates these disparities is that African-Americans, Latinos, and Native Americans hold few of the jobs in information technology. Women hold about 20 percent of these jobs and are receiving fewer than 30 percent of the bachelor's degrees in computer and information science. The result is that women and members of the most oppressed ethnic groups are not eligible for the jobs with the highest salaries at graduation. Baccalaureate

candidates with degrees in computer science were offered the highest salaries of all new college graduates.

P5 Do similar disparities exist in schools? [A] Ninety-eight percent of all schools in the country are wired with at least one Internet connection. [B] The number of classrooms with Internet connections differs by the income level of students. Using the percentage of students who are eligible for free lunches at a school to determine income level, we see that a higher percentage of the schools with more affluent students have wired classrooms than those with high concentrations of low-income students. [C]

P6 ➔ Access to computers and the Internet will be important in reducing disparities between groups. [D] It will require greater equality across diverse groups whose members develop knowledge and skills in computer and information technologies. The field today is overrepresented by white males. If computers and the Internet are to be used to promote equality, they will have to become accessible to schools that cannot currently afford the equipment which needs to be updated regularly every three years or so. However, access alone is not enough. Students will have to be interacting with the technology in authentic settings. As technology becomes a tool for learning in almost all courses taken by students, it will be seen as a means to an end rather than an end in itself. If it is used in culturally relevant ways, all students can benefit from its power.

40. Why does the author mention "the telephone" in paragraph 2?

Ⓐ To demonstrate that even technology like the telephone is not available to all
Ⓑ To argue that basic telephone service is a first step to using the Internet
Ⓒ To contrast the absence of telephone usage with that of Internet usage
Ⓓ To describe the development of communications from telephone to Internet

Paragraph 2 is marked with an arrow [➔].

41. Which of the sentences below best expresses the information in the highlighted statement in the passage? The other choices change the meaning or leave out important information.

Ⓐ Most of the people in the world use the Internet now because the number of computers has been increasing every year.
Ⓑ The number of people who use computers and the Internet is increasing every year, but most people in the world still do not have connections.
Ⓒ The number of computers that can make the Internet available to most of the people in the world is not increasing fast enough.
Ⓓ The Internet is available to most of the people in the world, even though they don't have their own computer terminals.

42. The word residents in the passage is closest in meaning to

Ⓐ homes
Ⓑ towns
Ⓒ people
Ⓓ locations

43. The word eliminate in the passage is closest in meaning to

Ⓐ accept
Ⓑ dispute
Ⓒ define
Ⓓ remove

44. Based on information in paragraph 3, which of the following best explains the term "digital divide?"

Ⓐ The number of Internet users in developing nations
Ⓑ The disparity in the opportunity to use the Internet
Ⓒ Differences in socioeconomic levels among Internet users
Ⓓ Segments of the population with Internet access

Paragraph 3 is marked with an arrow [➔].

45. Why does the author give details about the percentages of Internet users in paragraph 3?

Ⓐ To prove that there are differences in opportunities among social groups
Ⓑ To argue for more Internet connections at all levels of society
Ⓒ To suggest that improvements in Internet access are beginning to take place
Ⓓ To explain why many people have Internet connections now

Paragraph 3 is marked with an arrow [➔].

46. According to paragraph 3, which of the following households would be least likely to have access to the Internet?

Ⓐ A household with one parent
Ⓑ A black household
Ⓒ A Latino household
Ⓓ A household with both parents

Paragraph 3 is marked with an arrow [➔].

47. According to paragraph 4, why are fewer women and minorities employed in the field of computer technology?

Ⓐ They are not admitted to the degree programs.
Ⓑ They do not possess the educational qualifications.
Ⓒ They do not have an interest in technology.
Ⓓ They prefer training for jobs with higher salaries.

Paragraph 4 is marked with an arrow [➔].

48. The word those in the passage refers to

Ⓐ classrooms
Ⓑ students
Ⓒ schools
Ⓓ concentrations

49. The word concentrations in the passage is closest in meaning to

Ⓐ protections
Ⓑ numbers
Ⓒ confidence
Ⓓ support

50. What can be inferred from paragraph 6 about Internet access?

Ⓐ Better computers need to be designed.
Ⓑ Schools should provide newer computers for students.
Ⓒ The cost of replacing equipment is a problem.
Ⓓ Technology will be more helpful in three years.

Paragraph 6 is marked with an arrow [→].

51. Look at the four squares [■] that show where the following sentence could be inserted in the passage.

Thus, the students who are most unlikely to have access at home also do not have access in their schools, increasing the divide between groups even further.

Where could the sentence best be added?

Click on a square [■] to insert the sentence in the passage.

52. **Directions:** An introduction for a short summary of the passage appears below. Complete the summary by selecting the THREE answer choices that mention the most important points in the passage. Some sentences do not belong in the summary because they express ideas that are not included in the passage or are minor points from the passage. ***This question is worth 2 points.***

The availability of technology is unequal throughout the world.

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Answer Choices

A Currently, only about 10 percent of all the schools in the United States are not wired for Internet access.

B Less affluent schools have fewer Internet connections, and minorities as well as women hold fewer computer science degrees.

C Children and teenagers are the two fastest growing segments of the population gaining access to the Internet.

D Internet access is limited by education, income, geographic location, race, and the age and marital status of the head of household.

E Computer science graduates can earn almost $50,000.

F Access to the Internet is one way to encourage equality among diverse groups

Reading 5 "The Evolution of Birds"

The Origin of Birds

P1 Analysis of birds and of reptilian fossils indicate that birds belong to the group called *therapods*. Several species of dinosaurs closely related to birds had feathers with vanes, and a wider range of species had filamentous feathers. Such findings imply that feathers evolved long before powered flight. Among the possible functions of these early feathers were insulation, camouflage, and courtship display.

Derived Characteristics of Birds

P2 ➔ Many of the characteristics of birds are adaptations that facilitate flight, including weight-saving modifications that make flying more efficient. For example, birds lack a urinary bladder, and the females of most species have only one ovary. Living birds are also toothless, an adaptation that trims the weight of the head.

P3 A bird's most obvious adaptations for flight are its wings and feathers. Feathers are made of the protein B-keratin, which is also found in the scales of other reptiles. The shape and arrangement of the feathers form the wings into airfoils, and they illustrate some of the same principles of aerodynamics as the wings of an airplane. Power for flapping the wings comes from contractions of large pectoral (breast) muscles anchored to a keel on the sternum (breastbone). Some birds, such as eagles and hawks, have wings adapted for soaring on air currents and flap their wings only occasionally; other birds, including hummingbirds, must flap their wings continuously to stay aloft. Among the fastest birds are the appropriately named swifts, which can fly up to 170 km/hr.

P4 A Flight provides numerous benefits. B It enhances hunting and scavenging; many birds consume flying insects, an abundant, highly nutritious food resource. C Flight also provides ready escape from earthbound predators and enables some birds to migrate great distances to exploit different food resources and seasonal breeding areas. D

P5 Flying requires a great expenditure of energy from an active metabolism. Birds are endothermic; they use their own metabolic heat to maintain a high, constant body temperature. Feathers, and in some species layers of fat, provide insulation that enables birds to retain their body heat. The lungs have tiny tubes leading to and from elastic air sacs that improve airflow and oxygen uptake. This efficient respiratory system with a four-chambered heart keep tissues well supplied with oxygen and nutrients, supporting a high rate of metabolism.

P6 Flight also requires both acute vision and fine muscle control. Birds have excellent eyesight. The visual and motor areas of the brain are well developed, and the brain is proportionately larger than those of amphibians and nonbird reptiles. Birds generally display very complex behaviors, particularly during breeding season, when they engage in elaborate courtship rituals.

P7 How did flight evolve in the therapods? In one scenario, feathers may have enabled the small, running dinosaurs chasing prey or escaping predators to gain extra lift as they jumped up into the air. Or, small dinosaurs could have gained traction as they ran up hills by flapping their feathered forelimbs—a behavior seen in birds today. In a third scenario, some dinosaurs could have climbed trees and glided, aided by feathers. Whether birds took to the air from the ground up or from the trees down, an essential question being studied by scientists ranging from paleontologists to engineers is how their efficient flight stroke evolved.

P8 ➔ By 150 million years ago, feathered therapods had evolved into birds. *Archaeopteryx*, which was discovered in a German limestone quarry in 1861, remains the earliest known bird. It had feathered wings but retained ancestral

characteristics such as teeth, clawed digits in its wings, and a long tail. *Archaeopteryx* flew well at high speeds, but unlike a present-day bird, it could not take off from a standing position. Fossils of later birds from the Cretaceous show a gradual loss of certain ancestral dinosaur features, such as teeth and clawed forelimbs, as well as the acquisition of innovations found in extant birds, including a short tail covered by a fan of feathers.

Glossary
Cretaceous: a time period, 144–65 million years ago

53. Which of the sentences below best expresses the information in the highlighted statement in the passage? The other choices change the meaning or leave out important information.

Ⓐ Results of investigations indicate that birds probably flew before they had feathers.
Ⓑ Analysis suggests that birds did not fly immediately after they had developed feathers.
Ⓒ The time frame for the evolution of feathers is not clear from the studies cited.
Ⓓ According to researchers, birds developed feathers in order to achieve flight.

54. The word modifications in the passage is closest in meaning to

Ⓐ made different
Ⓑ made better
Ⓒ made smaller
Ⓓ made modern

55. According to paragraph 2, how did birds adapt to achieve efficient flight?

Ⓐ They developed new, lighter organs.
Ⓑ Their muscles became smaller over time.
Ⓒ Most of their weight was distributed in their heads.
Ⓓ Heavy teeth disappeared during evolution.

Paragraph 2 is marked with an arrow [➔].

56. In paragraph 3, the author explains the term "keratin" by

Ⓐ identifying it in feathers and scales
Ⓑ comparing it to airfoils
Ⓒ providing a definition in the text
Ⓓ describing the way that it looks

Paragraph 3 is marked with an arrow [➔].

57. According to paragraph 3, which of the following is true about the wings of birds?

Ⓐ All birds flap their wings constantly by using breast muscles.
Ⓑ Eagles and hawks have wings that propel them at 170 km/hr.
Ⓒ The airfoils of birds function like the wings on airplanes.
Ⓓ Wings are attached to airfoils in the bird's skeletal structure.

Paragraph 3 is marked with an arrow [➔].

58. The word their in the passage refers to

Ⓐ feathers
Ⓑ species
Ⓒ layers
Ⓓ birds

59. The word elaborate in the passage is *opposite* in meaning to

Ⓐ simple
Ⓑ quiet
Ⓒ sad
Ⓓ short

60. The word essential in the passage is closest in meaning to

Ⓐ very clear
Ⓑ very important
Ⓒ very difficult
Ⓓ very new

61. According to the passage, how did therapods develop flight?

Ⓐ Engineers believe that they flapped their wings to gain lift.
Ⓑ Scientists have proposed several different possibilities for flight.
Ⓒ Paleontologists think that they glided down from high trees.
Ⓓ Researchers confirm that flight began with running and jumping.

62. According to paragraph 8, what can be inferred about *Archaeopteryx*?

Ⓐ A feathered fantail was prominent.
Ⓑ Lift off was achieved by running or gliding.
Ⓒ Teeth had been replaced by a beak.
Ⓓ The habitat extended throughout Europe.

Paragraph 8 is marked with an arrow [➔].

63. All of the following are mentioned as adaptations to the bird's anatomy to accommodate flight EXCEPT

    Ⓐ the arrangement of feathers
    Ⓑ a high metabolic rate
    Ⓒ very sharp eyes
    Ⓓ small legs and feet

64. Look at the four squares [■] that show where the following sentence could be inserted in the passage.

    Furthermore, migration allows birds to avoid climates that are too hot or too cold during certain seasons.

    Where could the sentence best be added?

    Click on a square [■] to insert the sentence in the passage.

65. **Directions:** An introduction for a short summary of the passage appears below. Complete the summary by selecting the THREE answer choices that mention the most important points in the passage. Some sentences do not belong in the summary because they express ideas that are not included in the passage or are minor points from the passage. ***This question is worth 2 points.***

    Birds evolved 150 million years ago.

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Answer Choices

Ⓐ Birds and reptiles are most probably related.

Ⓑ Feathers are among the most unusual evolutionary changes.

Ⓒ Many structural adaptations were required for birds to fly.

Ⓓ Therapods are relatively small, meat-eating dinosaurs.

Ⓔ There are a number of advantages for creatures that fly.

Ⓕ Migration patterns are typical of many species of birds.