READING PASSAGE 1

THE IMPORTANCE OF CHILDREN'S PLAY

Brick by brick, six-year-old Alice is building a magical kingdom. Imagining fairy-tale turrets and fire-breathing dragons, wicked witches and gallant heroes, she's creating an enchanting world. Although she isn't aware of it, this fantasy is helping her take her first steps towards her capacity for creativity and so it will have important repercussions in her adult life.

Minutes later, Alice has abandoned the kingdom in favour of playing schools with her younger brother. When she bosses him around as his 'teacher', she's practising how to regulate her emotions through pretence. Later on, when they tire of this and settle down with a board game, she's learning about the need to follow rules and take turns with a partner.

'Play in all its rich variety is one of the highest achievements of the human species,' says Dr David Whitebread from the Faculty of Education at the University of Cambridge, UK. 'It underpins how we develop as intellectual, problem-solving adults and is crucial to our success as a highly adaptable species.'

Recognising the importance of play is not new: over two millennia ago, the Greek philosopher Plato extolled its virtues as a means of developing skills for adult life, and ideas about play-based learning have been developing since the 19th century.

But we live in changing times, and Whitebread is mindful of a worldwide decline in play, pointing out that over half the people in the world now live in cities. 'The opportunities for free play, which I experienced almost every day of my childhood, are becoming increasingly scarce,' he says. Outdoor play is curtailed by perceptions of risk to do with traffic, as well as parents' increased wish to protect their children from being the victims of crime, and by the emphasis on 'earlier is better' which is leading to greater competition in academic learning and schools.

International bodies like the United Nations and the European Union have begun to develop policies concerned with children's right to play, and to consider implications for leisure facilities and educational programmes. But what they often lack is the evidence to base policies on.

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‘The type of play we are interested in is child-initiated, spontaneous and unpredictable - but, as soon as you ask a five-year-old “to play”, then you as the researcher have intervened,’ explains Dr Sara Baker. ‘And we want to know what the long-term impact of play is. It’s a real challenge.’

Dr Jenny Gibson agrees, pointing out that although some of the steps in the puzzle of how and why play is important have been looked at, there is very little data on the impact it has on the child’s later life.

Now, thanks to the university’s new Centre for Research on Play in Education, Development and Learning (PEDAL), Whitebread, Baker, Gibson and a team of researchers hope to provide evidence on the role played by play in how a child develops.

‘A strong possibility is that play supports the early development of children’s self-control,’ explains Baker. ‘This is our ability to develop awareness of our own thinking processes - it influences how effectively we go about undertaking challenging activities.’

In a study carried out by Baker with toddlers and young pre-schoolers, she found that children with greater self-control solved problems more quickly when exploring an unfamiliar set-up requiring scientific reasoning. ‘This sort of evidence makes us think that giving children the chance to play will make them more successful problem-solvers in the long run.’

If playful experiences do facilitate this aspect of development, say the researchers, it could be extremely significant for educational practices, because the ability to self-regulate has been shown to be a key predictor of academic performance.

Gibson adds: ‘Playful behaviour is also an important indicator of healthy social and emotional development. In my previous research, I investigated how observing children at play can give us important clues about their well-being and can even be useful in the diagnosis of neurodevelopmental disorders like autism.’

Whitebread’s recent research has involved developing a play-based approach to supporting children’s writing. ‘Many primary school children find writing difficult, but we showed in a previous study that a playful stimulus was far more effective than an instructional one.’ Children wrote longer and better-structured stories when they first played with dolls representing characters in the story. In the latest study, children first created their story with Lego , with similar results. ‘Many teachers commented that they had always previously had children saying

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they didn't know what to write about. With the Lego building, however, not a single child said this through the whole year of the project.'

Whitebread, who directs PEDAL, trained as a primary school teacher in the early 1970s, when, as he describes, 'the teaching of young children was largely a quiet backwater, untroubled by any serious intellectual debate or controversy.' Now, the landscape is very different, with hotly debated topics such as school starting age.

'Somehow the importance of play has been lost in recent decades. It's regarded as something trivial, or even as something negative that contrasts with "work". Let's not lose sight of its benefits, and the fundamental contributions it makes to human achievements in the arts, sciences and technology. Let's make sure children have a rich diet of play experiences.'

Questions 1-8 Complete the notes below.

Choose ONE WORD ONLY from the passage for each answer.

Write your answers in boxes 1-8 on your answer sheet.

Children's play

Uses of children's play

- Building a 'magical kingdom' may help develop 1.....
- Board games involve 2 ..... and turn-taking

Recent changes affecting children's play

- Populations of 3..... have grown
- Opportunities for free play are limited due to

- fear of 4 .....
- fear of 5 .....
- increased 6 .....in schools

International policies on children's play

- It is difficult to find 7 .....to support new policies
- Research needs to study the impact of play on the rest of the child's8 .....

Do the following statements agree with the information given in Reading Passage 1?

In boxes 9-13 on your answer sheet, write

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

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9 Children with good self-control are known to be likely to do well at school later on.

10 The way a child plays may provide information about possible medical problems.

11 Playing with dolls was found to benefit girls' writing more than boys' writing.

12 Children had problems thinking up ideas when they first created the story with Lego.

13 People nowadays regard children's play as less significant than they did in the past.

THE ECOLOGICAL IMPORTANCE OF BEES

A Sometime in the early Cretaceous period of the Earth's history, hunting wasps of a certain type became bees by adopting a vegetarian diet: they began to rely more and more on the pollen of plants as a source of protein for themselves and their offspring, as an alternative to insects. In so doing, they accidentally transported pollen on their bodies to other plants of the same species, bringing about pollination. The stage was thus set for a succession of ever-closer mutual adaptations of bees and flowering plants. In particular, flowers began to reward bees for their unwitting role in their reproduction by providing richer sources of pollen and another source of nutrition, nectar.

B Today about 15 per cent of our diet consists of crops which are pollinated by bees. The meat and other animal products we consume are ultimately derived from bee- pollinated forage crops, and account for another 15 per cent. It follows that around one third of our food is directly or indirectly dependent on the pollinating services of bees. On a global basis, the annual value of agricultural crops dependent on the pollination services of bees is estimated at £1,000 million (US$1,590 million). Much of this pollination is due to honey bees, and in monetary terms it exceeds the value of the annual honey crop by a factor of fifty.

C But the apparently harmonious relationship between bees and plants conceals a conflict of interests. Although flowers need bees and vice versa, it pays each partner to minimise its costs and maximise its profits. This may sound like an extreme case of attributing human qualities to non-human species, but using the marketplace and the principles of double-entry book keeping as metaphors may give US some insights into what is really going on between bees and flowering plants. In the real world, both flower and bee operate in a competitive

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marketplace. A community of retailers, the flowers, seek to attract more or less discriminating consumers, the bees. Each flower has to juggle the costs and benefits of investing in advertising, by colour and scent, and providing rewards, nectar and pollen, clearly a species which depends on cross-pollination is on a knife-edge: it must provide sufficient nectar to attract the interest of a bee, but not enough to satisfy all of its needs in one visit. A satiated bee would return to its nest rather than visit another flower. The bee, on the other hand, is out to get the maximum amount of pollen and nectar. It must assess the quality and quantity of rewards which are on offer and juggle its energy costs so that it makes a calorific profit on each foraging trip. The apparent harmony between plants and bees is therefore not all that it seems. Instead, it is an equilibrium based on compromises between the competing interests of the protagonists.

D This sounds remarkably like the ideas of the 18th-century economist Adam Smith. In his book, *The Wealth of Nations,* Smith postulated that in human society the competitive interactions of different 'economic units' eventually resulted in a balanced, or 'harmonious' society. One might predict, therefore, that economists would find the relationships between bees and plants of some interest. This is the case in Israel, where economists are collaborating with botanists and entomologists in a long-term study of the pollination biology of the native flora, in an attempt to understand the dynamics of the relationship between communities of bees and plants.

E This sort of study is of more than passing academic interest. It is important that authorities understand the dynamic relationships between plants and their pollinators. This is especially true when, say, devising conservation policies. A good example comes from the forests of tropical South America. Here, as in all rainforests, there is a high diversity of tree species. There may be more than 120 per acre, but in a given acre there may only be one or two individuals of any one species: These trees are pollinated by large, fast-flying bees. There is evidence that certain types of bees learn the distribution of these scattered trees and forage regularly along the same routes. This is called 'trap-lining' and the bees forage for up to 23 km from their nests. The bees are therefore acting as long distance pollinators.

F An issue of current concern in tropical forest conservation is that of trying to estimate the minimum sustainable size of islands' of forest reserve in areas where

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large-scale felling is taking place. There is much discussion on seed dispersal distances. But this is only one half of the equation, so far as the reproduction of trees is concerned. There is another question that must be addressed in order to calculate whether proposed forest reserves are close enough to the nearest large tract of forest: 'what is the flight range of these long-distance foragers?' We need to know much more about bees and their relationships with plants before this question can be answered.

G Bees, then, are vital to our survival. Furthermore, much of the visual impact of human environments derives from vegetation, and most vegetation is dependent on bees for pollination. Thus, as pollinators of crops and natural vegetation, bees occupy key positions in the web of relationships which sustain the living architecture of our planet.

Questions 1-5

Reading Passage has seven paragraphs, **A-G**

Choose the correct heading for paragraphs **A, *B, D, E*** *and* ***F*** *from the list of headings below.*

Write the correct number, ***i-viii,*** *in boxes* ***1-5*** *on your answer sheet.*

List of Headings

i Parallels between bee and human activities

ii An evolutionary turning point

iii A lack of total co-operation

iv The preservation of individual plant species

v The commercial value of bees

vi The structure of flowering plants

vii The pursuit of self-interest

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viii The need for further research

14 Paragraph A

15 Paragraph B

Paragraph C **vii**

16 Paragraph D

17. Paragraph E

18. Paragraph F

Questions 19-25

Complete the sentences below.

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

Write your answers in boxes on your answer sheet.

19. Hunting wasps used to feed on other _____, rather than on vegetation.

20. Flowering plants started to reward bees with rich pollen and an additional food in the form of _____

21. Approximately _____ of human food production relies on the activity of bees.

22. If the process of _____ is to take place effectively, bees need to travel from one flower to another before going back to the nest.

23. Bees need to balance the **1** _____ of each trip against the calorific rewards they obtain.

24. There can be over 120 different _____ in. an acre of rainforest.

25. The bees that pollinate large forests regularly practise an activity known as _____

Question 26

Choose the correct letter , A, B, C or D. Write the correct letter in box 26 on your answer sheet. **Which is the best title for Reading Passage** ?

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A The Ecological Importance of Bees

B The Evolutionary History of Bees

C The Social Behaviour of Bees

D The Geographical Distribution of Bees

GLOBAL WARMING IN NEW ZEALAND 2

A.New Zealand is expected to warm by about 3°C over the next century. The northern polar regions will be more than 6°C warmer, while the large continents – also the largest centres of population – will be 4°C or warmer. In contrast, the Southern Ocean, which surrounds New Zealand, may warm by only 2°C. The sea will act as an air conditioner and in this aspect, New Zealand's location is comparatively fortunate.

B.Any predictions are complicated by the variability of New Zealand's climate. The annual temperature can fluctuate as much as 1°C above or below the long-term average. The early summer of 2006-7, for instance, was notably cool, thanks in part to the iceberg that drifted up the east coast. A few months later, warm water from the Tasman Sea helped make May 2007 unusually hot. These variables will continue unaffected so that, although the general pattern will be for rising temperatures, the warming trend may not be uniform.

C.The Ocean to the south of New Zealand will have one important effect. As the world warms, the great bank of west winds that circle Antarctica will become stronger. This has already been observed, and its impact on New Zealand is likely to be profound, stronger, more frequent west winds will bring increased, sometimes catastrophic rainfall to the west coast of the country and create drier conditions in some eastern regions that are already drought-prone. At the same time, the general warming will spread south.

D.Furthermore, in the drier regions, the average moisture deficit – that is, the difference between the amount of water in soils available to plants and the amount plants need for optimum growth – will increase. Soils could go into moisture deficit earlier in the growing season and the deficits could last longer into autumn that at present. What we think of today as a medium-severity drought could be an almost annual occurrence by the end of the century. One direct consequence of warmer – and shorter – winters will be a reduction in snow

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cover. The permanent snow line in the mountains will rise, while snow cover below this will be shorter-lived. The amount of snow that falls may actually increase, however, even in some northern centres, owing to the intensification of precipitation, Ski-field base station may eventually have to be moved upwards to be within reach of the new snow line but there could still be plenty of the white stuff up there.

E.There will also be a marked impact on New Zealand's glaciers. Over the last 100 years, the glaciers have been reduced by 35%, although since 1978 increase snowfall has offset the effect of warming. The latest studies conducted by the National Institute for Water and Atmospheric. Research (NIWA), however, suggest that by the end of the century, warming over the Southern Alps could be significantly greater than over the rest of the country.

F.Sea levels around New Zealand have risen by 25cm since the middle of the 9th century and by 7 cm since 1990. Predictions for the coming years cover a wide range, however, partly because of unknown rises resulting from the melting of the ice in the Arctic, Greenland and Antarctica. In addition, sea level at any given time is affected by many different factors, one of which is called storm surge. When a Coincides with a high tide along low lying coastal areas, this bulge raises the tide higher than normal, creating. Surge not unlike a slow-motion tsunami. Not only does a rise in sea level increase the potential for his sort damage, but it also has less immediate impacts. The one potentially grave outcome is that groundwater systems may become contaminated with saltwater, spoiling them for the irrigation of farmland, which in turn could diminish crop harvests. Similarly, over time, estuaries may be enlarged by erosion as tidal influences reach further upstream, altering the contours of whole shorelines and initiating further unforeseen consequences.

G. The impacts these changes will have on New Zealand are difficult to generalize. Human systems are better able to adapt to change than natural ecosystems because humans can see a problem coming and plan a response. Farmers and horticulturalists have made considerable advances, replacing crops they grow to better suit the new conditions. However, plant breeders will need to show considerable ingenuity if they can overcome the acute water shortages that are forecast.

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H. For natural ecosystems the rate of change is crucial. If it is low, the plants and animals and fish will be able to 'keep up'; if it is high, only the most adaptable species-those that can survive in the widest range of ecological niches-are likely to survive. Species adapted to only a narrow range of conditions or food sources will find adaptation much more difficult. Take tuatara, for instance. Their sex is determined by the temperature at which the eggs are incubated in warm (currently above 22 °C) condition become predominately male – and now males already outnumber females by nearly two to one in some island refuges. In the mountains, as the permanent snow line moves upwards, the tolerance zones of some alpine plants and animals may simply disappear. It should also be remembered that global warming is just that – a global phenomenon. 'New Zealand's own greenhouse emissions are tiny – around 0.5% of the global total. Even if New Zealanders were to achieve the government's target of carbon neutrality, this would have no discernable impact on global climate change.

I.The changes that global warming is going to bring to New Zealand during the 21st century are going to be significant, but where the country is likely to be most vulnerable is with respect to climate change elsewhere. New Zealand may warm more slowly than most places, but if its major export markets undergo damaging change, the economic impact will be severe.

Questions 27-32

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

Write your answers in boxes 1-6 on your answer sheet.

27. What is the main idea of the first paragraph?

A The air condition in New Zealand will maintain a high quality because of the ocean

B The Southern Ocean will remain at a constant strength

C The continents will warm more than the point

D New Zealand will not warm as much as other countries in the next century because it is surrounded by sea.

28. What does the writer say about New Zealand's variable weather?

A Temperature changes of 1°C will not be seem important in future

B Variable weather will continue, unchanged by global warming

C There was an unusually small amount of variation in 2006-2007

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D ○ Summer temperatures will vary but winter ones will be consistent

29. What is the predicted impact of conditions in the ocean to the south of New Zealand?

A ○ New Zealand will be more affected by floods and droughts

B ○ Antarctica will not be adversely affected by warming.

C ○ The band of west winds will move further to the south.

D ○ The usual west wind will no longer be reliable

30. The writer mentions 'moisture deficit' to show?

A ○ The droughts will be shorter but more severe

B ○ How the growing season will become longer.

C ○ How growing conditions will deteriorate

D ○ That farmers should alter the make-up of soils

31. What are the implications of global warming for New Zealand's

A ○ Skiing may move to lower the altitude in future.

B ○ The ski season will be later in the year than at present.

C ○ The northern ski field will have to move to the south

D ○ Warming may provide more snow for some ski locations

32. The writer refers to NIWA's latest studies in the 3rd paragraph to show

A ○ how a particular place could be affected by warming

B ○ that the warming trend has been intensifying since 1978

C ○ that freezing levels will rise throughout the century

D ○ how the growth of glaciers is likely to cause damage

Questions 33-35

Complete the summary below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

*Write your answers in boxes **7-9** on your answer sheet.*

Rising sea levels

The extent of future sea level rises around New Zealand is uncertain and may be determined in the **33** [ ]. Another variable is sudden rises in sea level caused by bad weather. Higher sea levels can lead to reduced **34** [ ] and result in changes to the shape of **35** [ ].

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A agriculture production

B tropical waters

C tidal waves

D polar regions

E global warming

F coastal land

G high tides

Questions 36-40

Do the following statements agree with the information given in Reading Passage?

*In boxes **36-40** on your answer sheet, write*

YES if the statement is true

NO if the statement is false

NOT GIVEN if the information is not given in the passage

36 The natural world is less responsive to challenges than humans.

37 The agricultural sector is being too conservative and resistant to innovation.

38 The global warming is slow; it will affect different regions in different ways.

39 The tuatara is vulnerable to changes in climate conditions.

40 New Zealand must reduce carbon emission if global warming is to be slowed.

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