READING

READING PASSAGE 1

You should spend about 20 minutes on ***Questions 1–13****, which are based on Reading Passage 1 below.*

Early Childhood Education

New Zealand's National Party spokesman on education, Dr Lockwood Smith, recently visited the US and Britain. Here he reports on the findings of his trip and what they could mean for New Zealand's education policy

A

'Education To Be More' was published last August. It was the report of the New Zealand Government's Early Childhood Care and Education Working Group. The report argued for enhanced equity of access and better funding for childcare and early childhood education institutions. Unquestionably, that's a real need; but since parents don't normally send children to pre-schools until the age of three, are we missing out on the most important years of all?

B

A 13-year study of early childhood development at Harvard University has shown that, by the age of three, most children have the potential to understand about 1000 words – most of the language they will use in ordinary conversation for the rest of their lives.

Furthermore, research has shown that while every child is born with a natural curiosity, it can be suppressed dramatically during the second and third years of life. Researchers claim that the human personality is formed during the first two years of life, and during the first three years children learn the basic skills they will use in all their later learning both at home and at school. Once over the age of three, children continue to expand on existing knowledge of the world.

C

It is generally acknowledged that young people from poorer socio-economic backgrounds tend to do less well in our education system. That's observed not just in New Zealand, but also in Australia, Britain and America. In an attempt to overcome that educational under-achievement, a nationwide programme called 'Headstart' was launched in the United States in 1965. A lot of money was poured into it. It took children into pre-school institutions at the age of three and was supposed to help the children of poorer families succeed in school.

Despite substantial funding, results have been disappointing. It is thought that there are two explanations for this. First, the programme began too late. Many children who entered it at the age of three were already behind their peers in language and measurable intelligence. Second, the parents were not involved. At the end of each day, 'Headstart' children returned to the same disadvantaged home environment.

D

As a result of the growing research evidence of the importance of the first three years of a child's life and the disappointing results from 'Headstart', a pilot programme was launched in Missouri in the US that focused on parents as the child's first teachers. The 'Missouri' programme was predicated on research showing that working with the family, rather than bypassing the parents, is the most effective way of helping children get off to the best possible start in life. The four-year pilot study included 380 families who were about to have their first child and who

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represented a cross-section of socio-economic status, age and family configurations. They included single-parent and two-parent families, families in which both parents worked, and families with either the mother or father at home.

The programme involved trained parent-educators visiting the parents' home and working with the parent, or parents, and the child. Information on child development, and guidance on things to look for and expect as the child grows were provided, plus guidance in fostering the child's intellectual, language, social and motor-skill development. Periodic check-ups of the child's educational and sensory development (hearing and vision) were made to detect possible handicaps that interfere with growth and development. Medical problems were referred to professionals.

Parent-educators made personal visits to homes and monthly group meetings were held with other new parents to share experience and discuss topics of interest. Parent resource centres, located in school buildings, offered learning materials for families and facilitators for child care.

E

At the age of three, the children who had been involved in the 'Missouri' programme were evaluated alongside a cross-section of children selected from the same range of socio-economic backgrounds and family situations, and also a random sample of children that age. The results were phenomenal. By the age of three, the children in the programme were significantly more advanced in language development than their peers, had made greater strides in problem solving and other intellectual skills, and were further along in social development. In fact, the average child on the programme was performing at the level of the top 15 to 20 per cent of their peers in such things as auditory comprehension, verbal ability and language ability.

Most important of all, the traditional measures of 'risk', such as parents' age and education, or whether they were a single parent, bore little or no relationship to the measures of achievement and language development. Children in the programme performed equally well regardless of socio-economic disadvantages. Child abuse was virtually eliminated. The one factor that was found to affect the child's development was family stress leading to a poor quality of parent–child interaction. That interaction was not necessarily bad in poorer families.

F

These research findings are exciting. There is growing evidence in New Zealand that children from poorer socio-economic backgrounds are arriving at school less well developed and that our school system tends to perpetuate that disadvantage. The initiative outlined above could break that cycle of disadvantage. The concept of working with parents in their homes, or at their place of work, contrasts quite markedly with the report of the Early Childhood Care and Education Working Group. Their focus is on getting children and mothers access to childcare and institutionalised early childhood education. Education from the age of three to five is undoubtedly vital, but without a similar focus on parent education and on the vital importance of the first three years, some evidence indicates that it will not be enough to overcome educational inequity.

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Questions 1–4

Reading Passage 1 has six sections, **A–F**.

Which paragraph contains the following information?

*Write the correct letter **A–F** in boxes 1–4 on your answer sheet.*

1 details of the range of family types involved in an education programme

2 reasons why a child's early years are so important

3 reasons why an education programme failed

4 a description of the positive outcomes of an education programme

Questions 5–10

Classify the following features as characterising

A *the 'Headstart' programme*
B *the 'Missouri' programme*
C *both the 'Headstart' and the 'Missouri' programmes*
D *neither the 'Headstart' nor the 'Missouri' programme*

*Write the correct letter **A**, **B**, **C** or **D** in boxes 5–10 on your answer sheet.*

5 was administered to a variety of poor and wealthy families

6 continued with follow-up assistance in elementary schools

7 did not succeed in its aim

8 supplied many forms of support and training to parents

9 received insufficient funding

10 was designed to improve pre-schoolers' educational development

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Questions 11–13

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

In boxes 11–13 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*

11 Most 'Missouri' programme three-year-olds scored highly in areas such as listening, speaking, reasoning and interacting with others.

12 'Missouri' programme children of young, uneducated, single parents scored less highly on the tests.

13 The richer families in the 'Missouri' programme had higher stress levels.

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READING PASSAGE 2

*You should spend about 20 minutes on **Questions 14–26**, which are based on Reading Passage 2 on the following pages.*

Questions 14–17

Reading Passage 2 has six paragraphs, **A–F**.

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

*Write the correct number **i–viii** in boxes 14–17 on your answer sheet.*

List of Headings

i	Effects of irrigation on sedimentation
ii	The danger of flooding the Cairo area
iii	Causing pollution in the Mediterranean
iv	Interrupting a natural process
v	The threat to food production
vi	Less valuable sediment than before
vii	Egypt's disappearing coastline
viii	Looking at the long-term impact

Example	Paragraph **A**	*Answer*	**vii**
14	Paragraph **B**		
Example	Paragraph **C**	*Answer*	**vi**
15	Paragraph **D**		
16	Paragraph **E**		
17	Paragraph **F**		

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Disappearing Delta

A The fertile land of the Nile delta is being eroded along Egypt's Mediterranean coast at an astounding rate, in some parts estimated at 100 metres per year. In the past, land scoured away from the coastline by the currents of the Mediterranean Sea used to be replaced by sediment brought down to the delta by the River Nile, but this is no longer happening.

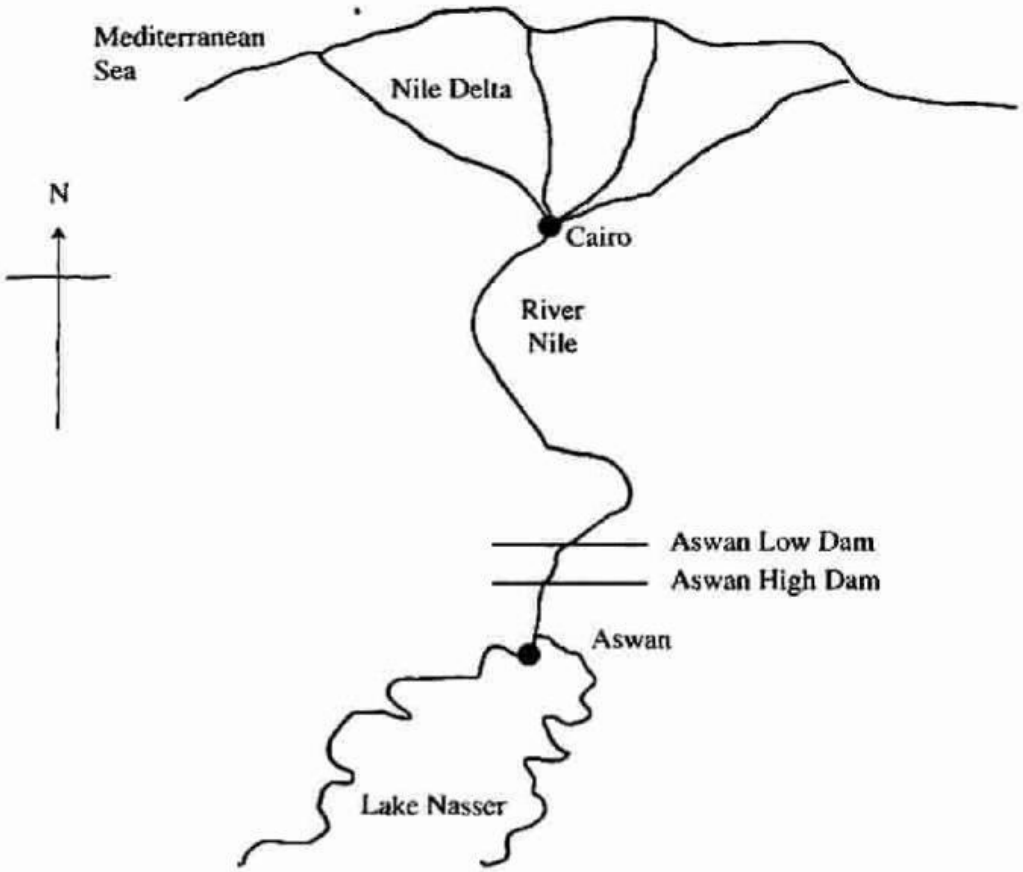
B Up to now, people have blamed this loss of delta land on the two large dams at Aswan in the south of Egypt, which hold back virtually all of the sediment that used to flow down the river. Before the dams were built, the Nile flowed freely, carrying huge quantities of sediment north from Africa's interior to be deposited on the Nile delta. This continued for 7,000 years, eventually covering a region of over 22,000 square kilometres with layers of fertile silt. Annual flooding brought in new, nutrient-rich soil to the delta region, replacing what had been washed away by the sea, and dispensing with the need for fertilizers in Egypt's richest food-growing area. But when the Aswan dams were constructed in the 20th century to provide electricity and irrigation, and to protect the huge population centre of Cairo and its surrounding areas from annual flooding and drought, most of the sediment with its natural fertilizer accumulated up above the dam in the southern, upstream half of Lake Nasser, instead of passing down to the delta.

C Now, however, there turns out to be more to the story. It appears that the sediment-free water emerging from the Aswan dams picks up silt and sand as it erodes the river bed and banks on the 800-kilometre trip to Cairo. Daniel Jean Stanley of the Smithsonian Institute noticed that water samples taken in Cairo, just before the river enters the delta, indicated that the river sometimes carries more than 850 grams of sediment per cubic metre of water – almost half of what it carried before the dams were built. 'I'm ashamed to say that the significance of this didn't strike me until after I had read 50 or 60 studies,' says Stanley in *Marine Geology*. 'There is still a lot of sediment coming into the delta, but virtually no sediment comes out into the Mediterranean to replenish the coastline. So this sediment must be trapped on the delta itself.'

D Once north of Cairo, most of the Nile water is diverted into more than 10,000 kilometres of irrigation canals and only a small proportion reaches the sea directly through the rivers in the delta. The water in the irrigation canals is still or very slow-moving and thus cannot carry sediment, Stanley explains. The sediment sinks to the bottom of the canals and then is added to fields by farmers or pumped with the water into the four large freshwater lagoons that are located near the outer edges of the delta. So very little of it actually reaches the coastline to replace what is being washed away by the Mediterranean currents.

E The farms on the delta plains and fishing and aquaculture in the lagoons account for much of Egypt's food supply. But by the time the sediment has come to rest in the fields and lagoons it is laden with municipal, industrial and agricultural waste from the Cairo region, which is home to more than 40 million people. 'Pollutants are building up faster and faster,' says Stanley.

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Based on his investigations of sediment from the delta lagoons, Frederic Siegel of George Washington University concurs. 'In Manzalah Lagoon, for example, the increase in mercury, lead, copper and zinc coincided with the building of the High Dam at Aswan, the availability of cheap electricity, and the development of major power-based industries,' he says. Since that time the concentration of mercury has increased significantly. Lead from engines that use leaded fuels and from other industrial sources has also increased dramatically. These poisons can easily enter the food chain, affecting the productivity of fishing and farming. Another problem is that agricultural wastes include fertilizers which stimulate increases in plant growth in the lagoons and upset the ecology of the area, with serious effects on the fishing industry.

F According to Siegel, international environmental organisations are beginning to pay closer attention to the region, partly because of the problems of erosion and pollution of the Nile delta, but principally because they fear the impact this situation could have on the whole Mediterranean coastal ecosystem. But there are no easy solutions. In the immediate future, Stanley believes that one solution would be to make artificial floods to flush out the delta waterways, in the same way that natural floods did before the construction of the dams. He says, however, that in the long term an alternative process such as desalination may have to be used to increase the amount of water available. 'In my view, Egypt must devise a way to have more water running through the river and the delta,' says Stanley. Easier said than done in a desert region with a rapidly growing population.

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Questions 18–23

Do the following statements reflect the claims of the writer in **Reading Passage 2**?

In boxes 18–23 on your answer sheet, write

YES	*if the statement reflects the claims of the writer*
NO	*if the statement contradicts the claims of the writer*
NOT GIVEN	*if it is impossible to say what the writer thinks about this*

18 Coastal erosion occurred along Egypt's Mediterranean coast before the building of the Aswan dams.

19 Some people predicted that the Aswan dams would cause land loss before they were built.

20 The Aswan dams were built to increase the fertility of the Nile delta.

21 Stanley found that the levels of sediment in the river water in Cairo were relatively high.

22 Sediment in the irrigation canals on the Nile delta causes flooding.

23 Water is pumped from the irrigation canals into the lagoons.

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Questions 24–26

*Complete the summary of paragraphs E and F with the list of words **A–H** below.*

*Write the correct letter **A–H** in boxes 24 26 on your answer sheet.*

In addition to the problem of coastal erosion, there has been a marked increase in the level of **24** ..... contained in the silt deposited in the Nile delta. To deal with this, Stanley suggests the use of **25** ..... in the short term, and increasing the amount of water available through **26** ..... in the longer term.

A artificial floods	**B** desalination	**C** delta waterways	**D** natural floods
E nutrients	**F** pollutants	**G** population control	**H** sediment

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READING PASSAGE 3

You should spend about 20 minutes on ***Questions 27–40****, which are based on Reading Passage 3 below.*

The Return of Artificial Intelligence

It is becoming acceptable again to talk of computers performing human tasks such as problem-solving and pattern-recognition



A After years in the wilderness, the term 'artificial intelligence' (AI) seems poised to make a comeback. AI was big in the 1980s but vanished in the 1990s. It re-entered public consciousness with the release of *AI*, a movie about a robot boy. This has ignited public debate about AI, but the term is also being used once more within the computer industry. Researchers, executives and marketing people are now using the expression without irony or inverted commas. And it is not always hype. The term is being applied, with some justification, to products that depend on technology that was originally developed by AI researchers. Admittedly, the rehabilitation of the term has a long way to go, and some firms still prefer to avoid using it. But the fact that others are starting to use it again suggests that AI has moved on from being seen as an over-ambitious and under-achieving field of research.

B The field was launched, and the term 'artificial intelligence' coined, at a conference in 1956 by a group of researchers that included Marvin Minsky, John McCarthy, Herbert Simon and Alan Newell, all of whom went on to become leading figures in the field. The expression provided an attractive but informative name for a research programme that encompassed such previously disparate fields as operations research, cybernetics, logic and computer science. The goal they shared was an attempt to capture or mimic human abilities using machines. That said, different groups of researchers attacked different problems, from speech recognition to chess playing, in different ways; AI unified the field in name only. But it was a term that captured the public imagination.

C Most researchers agree that AI peaked around 1985. A public reared on science-fiction movies and excited by the growing power of computers had high expectations. For years, AI researchers had implied that a breakthrough was just around the corner. Marvin Minsky said in 1967 that within a generation the problem of creating 'artificial intelligence' would be substantially solved. Prototypes of medical-diagnosis programs and speech recognition software appeared to be making progress. It proved to be a false dawn. Thinking computers and

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household robots failed to materialise, and a backlash ensued. 'There was undue optimism in the early 1980s,' says David Leake, a researcher at Indiana University. 'Then when people realised these were hard problems, there was retrenchment. By the late 1980s, the term AI was being avoided by many researchers, who opted instead to align themselves with specific sub-disciplines such as neural networks, agent technology, case-based reasoning, and so on.'

D Ironically, in some ways AI was a victim of its own success. Whenever an apparently mundane problem was solved, such as building a system that could land an aircraft unattended, the problem was deemed not to have been AI in the first place. 'If it works, it can't be AI,' as Dr Leake characterises it. The effect of repeatedly moving the goal-posts in this way was that AI came to refer to 'blue-sky' research that was still years away from commercialisation. Researchers joked that AI stood for 'almost implemented'. Meanwhile, the technologies that made it onto the market, such as speech recognition, language translation and decision-support software, were no longer regarded as AI. Yet all three once fell well within the umbrella of AI research.

E But the tide may now be turning, according to Dr Leake. HNC Software of San Diego, backed by a government agency, reckon that their new approach to artificial intelligence is the most powerful and promising approach ever discovered. HNC claim that their system, based on a cluster of 30 processors, could be used to spot camouflaged vehicles on a battlefield or extract a voice signal from a noisy background – tasks humans can do well, but computers cannot. 'Whether or not their technology lives up to the claims made for it, the fact that HNC are emphasising the use of AI is itself an interesting development,' says Dr Leake.

F Another factor that may boost the prospects for AI in the near future is that investors are now looking for firms using clever technology, rather than just a clever business model, to differentiate themselves. In particular, the problem of information overload, exacerbated by the growth of e-mail and the explosion in the number of web pages, means there are plenty of opportunities for new technologies to help filter and categorise information – classic AI problems. That may mean that more artificial intelligence companies will start to emerge to meet this challenge.

G The 1969 film, *2001: A Space Odyssey*, featured an intelligent computer called HAL 9000. As well as understanding and speaking English, HAL could play chess and even learned to lipread. HAL thus encapsulated the optimism of the 1960s that intelligent computers would be widespread by 2001. But 2001 has been and gone, and there is still no sign of a HAL-like computer. Individual systems can play chess or transcribe speech, but a general theory of machine intelligence still remains elusive. It may be, however, that the comparison with HAL no longer seems quite so important, and AI can now be judged by what it can do, rather than by how well it matches up to a 30-year-old science-fiction film. 'People are beginning to realise that there are impressive things that these systems can do,' says Dr Leake hopefully.

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Questions 27–31

*Reading Passage 3 has seven paragraphs, **A–G**.*

Which paragraph contains the following information?

*Write the correct letter **A–G** in boxes 27–31 on your answer sheet.*

***NB** You may use any letter more than once.*

27 how AI might have a military impact

28 the fact that AI brings together a range of separate research areas

29 the reason why AI has become a common topic of conversation again

30 how AI could help deal with difficulties related to the amount of information available electronically

31 where the expression AI was first used

Questions 32–37

Do the following statements agree with the information given in Reading Passage 3?

In boxes 32–37 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 about this*

32 The researchers who launched the field of AI had worked together on other projects in the past.

33 In 1985, AI was at its lowest point.

34 Research into agent technology was more costly than research into neural networks.

35 Applications of AI have already had a degree of success.

36 The problems waiting to be solved by AI have not changed since 1967.

37 The film *2001: A Space Odyssey* reflected contemporary ideas about the potential of AI computers.

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Questions 38–40

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

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

38 According to researchers, in the late 1980s there was a feeling that

A a general theory of AI would never be developed.
B original expectations of AI may not have been justified.
C a wide range of applications was close to fruition.
D more powerful computers were the key to further progress.

39 In Dr Leake's opinion, the reputation of AI suffered as a result of

A changing perceptions.
B premature implementation.
C poorly planned projects.
D commercial pressures.

40 The prospects for AI may benefit from

A existing AI applications.
B new business models.
C orders from internet-only companies.
D new investment priorities.

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