



Cambridge International AS & A Level

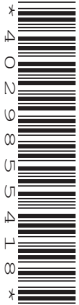
THINKING SKILLS

9694/42

Paper 4 Applied Reasoning

October/November 2021

1 hour 45 minutes



You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **all** questions.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

This document has **8** pages. Any blank pages are indicated.

- 1 (a) State the main conclusion of Mr Lee's argument in Document 1. [1]
- (b) Analyse the structure of the reasoning in paragraph 5 of Document 1. [3]
- (c) (i) Identify **three** intermediate conclusions in paragraphs 3 to 4 of Document 1. [3]
- (ii) Identify **one** unstated assumption in paragraph 4 of Document 1. [1]
- 2 (a) Identify and explain **three** flaws and/or weaknesses in Mr Lee's reasoning in paragraphs 2 to 3 of Document 1. [6]
- (b) Explain how Mr Lee's reliability weakens his argument. [3]
- 3 Paragraph 5 of Document 3 introduces a pie chart.
- Identify and explain **three** weaknesses in the support given by the pie chart to the claim, "Teachers clearly think the use of electronic devices will transform learning". [6]
- 4 *You are advised to spend some time planning your answer before you begin to write it.*
- 'We should encourage the use of electronic devices by students in lessons.'
- Construct a reasoned argument to support **or** challenge this claim. In your answer you should make critical use of the documents provided. [27]

DOCUMENT 1**Letter from Millennium School to parents of Year 2 students**

Dear Parents,

- 1 From next September, Millennium School will be introducing the use of electronic tablet devices for all Third Year students, to support their education both in school and at home. Students will be required to bring their own tablet to each lesson. This will not yet be necessary for other students at Millennium, but a phased expansion of the programme to the remainder of the school will take place from the following year.
- 2 We hope that parents will support the introduction of this educational programme. The use of electronic tablets has been trialled over the last three years and we are very excited at the prospect of the enhanced learning opportunities the tablets will give. Many other schools in the area have introduced or will be introducing similar schemes. This exciting development will ensure that Millennium School remains at the forefront of educational innovation.
- 3 The opportunities for enhanced learning are considerable. An enormous number of apps are available that can enhance learning in specific lessons, such as animation creation in art, mapping in geography, and online dictionaries in any lesson. The internet provides a vast resource of up-to-date information, so the devices support the development of research skills. More information is available at the click of an icon than in a thousand school libraries. No longer will students have to read long extracts from dusty textbooks or listen to long and boring teacher explanations. The devices also offer the opportunity for enhanced learning through assessment and feedback. Teachers can set work electronically that students can complete on their devices. This work can be marked, and feedback given, very quickly.
- 4 At Millennium, we don't just want our students to pass examinations; we also want them to thrive in this increasingly technologically advanced world. It is important that students bring their tablets to every lesson, because they will need to be highly skilled in using these technologies to build towards more advanced learning as they progress through the school and beyond. Lifelong learning is the future and it is important that it starts here.
- 5 We are aware that there will be cost implications for our parents. In order to soften the financial impact, we have set up a scheme for buying and insuring the tablet which will spread the cost over three years. We think this scheme will be affordable for the majority of families. In addition, our ICT department has researched and chosen the least expensive device that will fulfil all the requirements of a school ICT course. Information will also be provided about the purchase of the specific apps required for each subject, a full list of which can be found on our website.

Yours faithfully,

Mr T Lee
Director of ICT Innovation
Millennium School

DOCUMENT 2

Using computers in class harms results

Two important studies by prestigious universities have found that using computers in lessons could be harmful to education and that removing such devices from classes is equivalent to improving the quality of teaching in a range of subjects.

The first, from the Massachusetts Institute of Technology, found that students who were banned from using laptops or other digital devices in lectures did better in their exams.

The study, undertaken between 2014 and 2016, divided 726 students in economics classes randomly into three groups. One group of students was not allowed to use laptops or tablets at their desks. Another group was allowed to use computers and other devices. A third group had some limited access to tablet devices. The researchers concluded that “The results from our experiment suggest that computer devices have a substantial negative effect on academic performance.” In discussing their findings, they went on to suggest that the distraction of an electronic device with internet access outweighed any benefits derived from ease of note-taking or research.

The students involved were studying at West Point Military Academy in the US, where the cadets are ruthlessly ranked by exam results. It seems that even for the cream of the future US army, the distractions of the digital world proved irresistible. “It is quite possible that these harmful effects could be magnified in settings outside of West Point,” the researchers concluded. A leading education commentator said “Of course, nothing about this is conclusive and it needs to be read in the context of the undergraduate experience, but there are some interesting reflective points for all educators.”

A second study, published by the London School of Economics, found a link between the effect of banning mobile phones and students’ ability. Students at phone-free schools performed better in exams, especially those in the bottom 60% of 11-year-olds. It concluded that “Banning mobile phones improves outcomes for the low-achieving students and has no significant impact on high-achievers. In contrast to the laboratory-style research, our study measures the cumulative effects of internet-enabled classroom technology,” the researchers said.

DOCUMENT 3

Does swapping a pen for a keyboard help our children to learn?

Thirteen-year-old Maria's school bag contains her lunch, her smartphone, and her laptop. Her phone is her first port of call for homework instructions, feedback and, unsurprisingly, messages from friends. She uses her laptop when she needs to do a lot of writing. "I much prefer it to pen and paper." The cost of phone and laptop is well over \$1000.

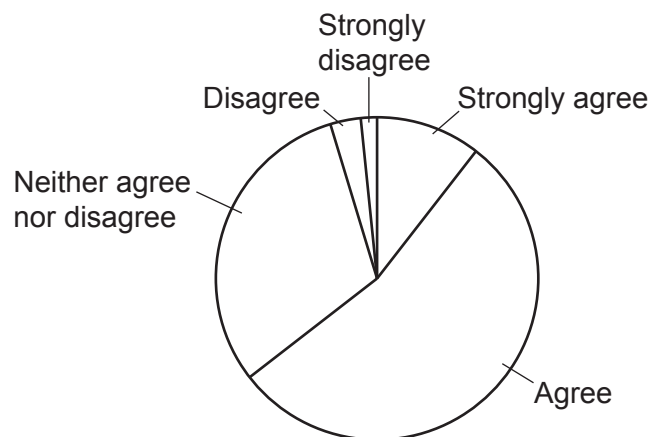
Maria's High School is among thousands asking students to bring electronic equipment, paid for by their parents, into class. The school trialled the use of technology with its younger age groups, but from 2017, all year 9 students have been expected to bring their own. The e-learning coordinator at Maria's school, Mr Garcia, said that students choosing their own device was not the best option. "The school has negotiated a deal with a supplier that will reduce the total cost to less than \$450 per student."

Some experts believe that using digital technology in the classroom could lead to better educational outcomes for students; others claim that the effects could be negative. One educational expert noted that children were more likely to use a device well if it was their own. "They can personalise it... play games on it and they don't have to hand it back at the end of the day." One professor of e-learning at a leading university says it's difficult to measure the effects of technology on learning. "It's like food. You don't work very well without any of it. But too much of it doesn't do your body much good."

However, parents have complained about the expense. Mr Garcia told us "The school has a pool of older laptops in reserve for those without their own. We want to ensure all students have equal access to technology. Students and teachers are still getting used to the changes. Many teachers trained several years ago and are not fully confident about incorporating the technology into their lessons, so the school is holding courses for staff. We live in a constantly changing world and schools must move with the times."

I asked Maria if the electronic devices were a distraction. "Only occasionally among my friends," she confessed. Mr Garcia asked other teachers in his school about their views on students using electronic devices in lessons. The answers are shown in the chart below. "Teachers clearly think the use of electronic devices will transform learning," he said.

Using electronic devices in lessons is useful to my teaching



Report on Australian newspaper website

DOCUMENT 4

Some comments from parents, students and teachers

Whatever the good intentions, students will not be able to resist checking their phones rather than completing the task in hand or listening to instructions.

Experienced teacher

I don't see why students need to carry them all the time. There will be times when they are not relevant – during PE, or a science or engineering practical for example. Surely the school just needs to have a bank of devices that can be booked out for individual lessons when they are needed. This would be much cheaper for parents and less distracting for students.

Parent of Year 7 student

We pride ourselves on being an eco-friendly school and the reduction in the use of books and paper will contribute to the school's positive effect on the environment.

School Principal

Twenty years ago, nobody would have considered using electronic devices in schools. Today's electronic devices will be out of date in 20 years. Why are we spending time teaching our children skills that they will never need?

Parent of Year 6 student

There is no need for these devices to be a distraction, any more than scribbling on a sheet of paper or passing notes to your friends in class is. Software is available that can be installed on the school's laptops that prevents access to inappropriate applications or websites.

IT teacher

I much prefer learning using electronic devices. The colours and large fonts make reading easier and animations really show you what is going on.

Student

I mostly use the devices for quick quizzes at the end of a lesson to check learning. The students love them and get really competitive. They even work harder in the rest of the lesson if they think their reward will be getting out the laptops for a quiz at the end. The information I get also lets me identify gaps in knowledge that I can address during subsequent lessons.

Recently qualified teacher

My worry is that more time spent using electronic devices will mean less time learning important traditional skills such as reading, writing and arithmetic.

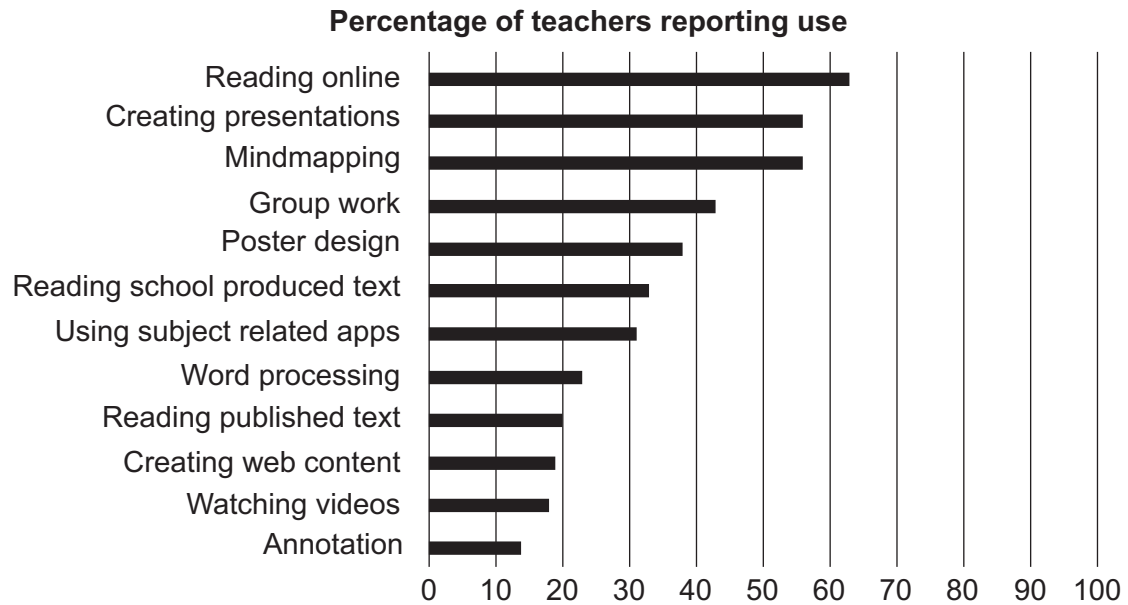
Parent of Year 8 student

One of the most effective and inexpensive ways to increase educational attainment is for teachers to give feedback on student work quickly, while the student can still remember doing it.

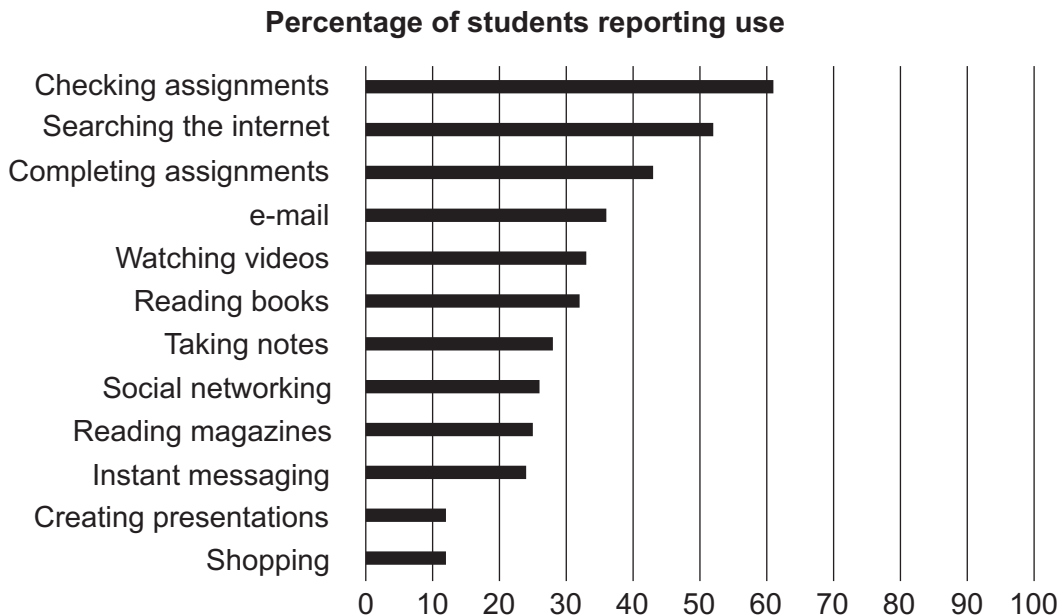
Deputy Headteacher

DOCUMENT 5**Two surveys undertaken at the same European school****Graph A**

Teachers were asked what activities their students used electronic devices for in their lessons.

**Graph B**

Students were asked what activities they used electronic devices for in their lessons.



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