

NCEA Online

Student Experience Evaluation Report 2018 Level 1 Digital Only Science Trial

Final



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

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1. INTRODUCTION

The 2018 Level 1 Digital Only Science Trial was available from 18 June to 6 July for its initial mid-year delivery and then from 11 – 28 September and 15 – 26 October as part of the end-of-year digital Trials. The defining features were:

1. It was a “digital only” examination in that it could not have been replicated in paper form because of the extent of the digital features; and
2. There was a mid-year delivery in the last three weeks of Term Two so that we could better understand whether there was any value for schools and students in having an assessment opportunity closer to the time that students may have undertaken their learning.

This was an innovation trial designed to test new digital features, ways of asking questions and providing responses.

The insights from the 2018 Science Trial are informing the operating model and digital assessment service design for 2020 onwards. With respect to the digital features that extend beyond static resources and text manipulation, we believe it is important to keep working with schools on co-designing engaging and relevant approaches to external assessment. Examinations need to be equitably accessible and usable, reflective of the teaching and learning, and taking advantage of the digital technologies available.

1.1 EVALUATION APPROACH FOR THE LEVEL 1 SCIENCE TRIAL

This Trial was set up to have the same objectives framework as the 2017 Trials and Pilots. The objectives include to:

- maintain momentum and further develop engagement in digital assessment
- deliver strategic value
- demonstrate moves toward innovation in external digital assessment.

The primary evaluation method was by user survey.

1.2 PARTICIPATION BY DECILE, ETHNICITY, AND GENDER

There was a total of 5,176 recorded student logins (from 5,051 distinct students across 82 schools)¹ for mid-year and end-of-year deliveries of the Digital Only Science Trial. Table 1 shows the participation by Science Trial delivery and Table 2 shows the student logins by school decile².

¹ Students were able to participate in one or both of mid-year and end-of-year deliveries of the Science Trial, provided they did not attempt the same standard in both. There were 7,866 registrations overall from 96 schools for both deliveries of the Science Trial.

² Note that school roll size varies across decile bands. There are relatively fewer students enrolled at lower decile schools.

Table 1. Science Trial Participation by Delivery

Delivery	Student Logins	Number of Schools
Mid-Year	3,491	47
End-of-Year	1,685	40
Total	5,176	82³

Table 2. Science Trial Participation by School Decile

School Decile	Student Logins
1	176
2	6
3	301
4	805
5	493
6	925
7	652
8	577
9	377
10	819
99	45
Total	5,176

Table 3 shows student logins by ethnicity. Māori and Pasifika students comprised 23% (1,214 of 5,176) of all the Science Trial participants.

Table 3. Science Trial Participation by Total Response Student Ethnicity⁴

Ethnicity	Student Logins	Percentage
Māori	867	17%
Pacific Peoples	425	7%
Asian	877	17%
European	3,598	57%

³ Five schools participated in both the mid-year and end-of-year deliveries of the Science Trial.

⁴ Ethnicity is reported using total response methodology, where each student is included in up to three ethnicities that they identify with. Due to this, the sum of individual ethnicity data may be larger than the total number.

MELAA ⁵	106	2%
Other	36	<1%
Unknown	21	<1%
Total	5,176	

Table 4. Science Trial Participation by Student Gender

Gender	Student Logins	Percentage
Female	2,554	49%
Male	2,608	50%
Unknown	14	<1%
Total	5,176	

1.3 SUPPORT OFFERED AND USED PRIOR TO AND DURING THE TRIAL

Documentation regarding managing and administering the Trial, including guidance on logging in and the use of the marking tool, was provided to schools and teachers. Further advice was offered by NZQA through email and telephone support.

Familiarisation exercises were made available so key elements of the digital assessment could be experienced before undertaking the Science Trial.

There were 40 schools undertaking the Science Trial as first-time participants to digital Trials and Pilots since 2016.

1.4 INFORMATION ON THE SURVEY AND RESPONDENTS

The student survey was designed to measure students' response to and experience of the digital examinations especially their response to the digital features of the Science Trial, including establishing students' use of electronic devices for learning. Students were not asked for their view on the value to them of this Trial's mid-year timing.

The student survey was made available to students within the SoNET system, directly after they submitted their examination. The survey consisted of nine questions, requiring 20 responses. The student survey was designed to take approximately five minutes to complete. There were 1,016 responses to the survey – **a survey response rate of 20%**. Of these there were 219 survey responses from Māori and Pasifika students.

As the survey respondents were self-selected, care must be taken when applying the findings to all the participants of the Science Trial.

⁵ MELAA stands for Middle Eastern/Latin American/African

2. FINDINGS

2.1.1 OVERALL SATISFACTION

As stated in section 1.4, this survey had a response rate of 20%. Students who responded to the survey had mixed satisfaction with the examination compared to doing the examination on paper. Regardless of whether they sat the mid-year or end-of-year delivery of the Science Trial, about half of the student survey respondents overall (49%, 437 of 884) agreed or strongly agreed with the statement 'I liked doing this examination better than an examination on paper.' Māori and Pasifika student survey respondents answered similarly, with 55% (79 of 144) and 44% (29 of 66) respectively agreeing or strongly agreeing with the statement.

In response to the question 'What did you like most about completing the exam digitally?', student survey respondents said that it was easier and faster to type than to handwrite, that answers could be easily reviewed and corrected, and their hands didn't get sore from too much writing. The second most common response to this question was that the video was helpful in answering questions.

The most common responses to the question 'What did you dislike the most about completing the exam digitally?' were that the graphing tool and formula editor are difficult to use compared with writing on paper, and that there were issues with videos and animations when the Wi-Fi or computers were slow. "Nothing" and "everything" were responses here also.

2.1.2 THE DIGITAL EXAMINATION EXPERIENCE

Most of the survey respondents (76%, 755 of 991) agreed or strongly agreed that the familiarisation activities told them what to expect in their digital examination. At end of year a greater percentage agreed or strongly agreed (81%, 342 of 423) compared to at mid-year (73%, 413 of 568). However, 10% (104 of 991) responded that they did not know that the familiarisation activities existed. That said, fewer end-of-year respondents said they did not know that the familiarisation activities existed compared to those who sat the Trial assessment at mid-year – 8% (34 of 423) compared to 12% (70 of 568).

Table 5 shows that the digital features of the examination were received positively by the survey respondents⁶. Most of the survey respondents agreed or strongly agreed that punnet tables (82%, 626 of 759), video and interactive animation resources (80%, 720 of 897), formula editor (73%, 598 of 821), and graphing tool (61%, 504 of 828) were helpful in answering the questions. The formula and graphing tool were the subject of negatively inclined feedback in open ended questions. On average the features received a neutral usefulness ranking from student survey respondents.

⁶ It was difficult to discern how student survey respondents distinguished between the "helpfulness" / "usefulness" questions regarding interactive resources and tools, as these sets of questions were asking for very similar information. Although the design of these questions may have allowed some potential inconsistency in what this data may be telling us, the responses to these questions have been reported in Table 5 separately.

Table 5. Summary of student perception of digital features of the examination (excluding Not Applicable responses).

Examination digital feature	Helpfulness ⁷		Usefulness rating ⁸		
	Agree and strongly agree	Disagree and strongly disagree	4 & 5 (useful rating)	3 (neutral)	1 & 2 (not useful rating)
Punnet tables	82% (626)	18% (133)	40% (283)	31% (219)	29% (207)
Video and interactive animation resources	80% (720)	20% (177)	40% (343)	26% (221)	34% (297)
Formula editor	73% (598)	27% (223)	37% (294)	28% (225)	34% (271)
Graphing tool	61% (504)	39% (324)	32% (255)	30% (237)	37% (295)
Total	2,448	857	1,175	902	1,070

The response profile for Māori and Pasifika student survey respondents to questions about their perception of digital features was compared to the overall response and was not significantly different.

2.1.3 DIGITAL TECHNOLOGY AT HOME AND AT SCHOOL

Most of the respondents completed the digital examination on a laptop (65%, 640 of 982) or a desktop (35%, 340 of 982). A very small percentage (<1%, 2 of 982) reported using a tablet. Most of the devices were school provided (60%, 534 of 892) while the rest (40%, 358 of 982) of the devices used were the students' own.

Respondents indicated that digital technology was very often or quite often used for homework (75%, 736 of 986) and in class (55%, 550 of 998) and not as much for internal assessments, with 42% (412 of 977) indicating that digital technology was used very often or quite often for internal assessments. Students who sat this Trial assessment at its end-of-year delivery were more likely to respond 'very often' or 'quite often' to the last (internal assessment) part of this question than the mid-year delivery students (55%, 231 of 417 compared to 32%, 181 of 560).

See Appendix One: SUMMARISED RESPONSES BY QUESTION for more detailed breakdown of responses.

⁷ Question 5: I found the following features of the exam helped me to answer the questions.

⁸ Question 6: Rate the following features in the exam from not useful (1) to extremely useful (5) or Not applicable.

2.1.4 SUGGESTIONS FOR IMPROVEMENT/FEEDBACK

In response to the questions ‘Do you have any feedback about this digital exam?’, and ‘Do you have any ideas for how these standards could be assessed differently? How?’, student survey responses ranged from liking/enjoying the digital examination and that no improvement was needed, to just doing the exam on paper.

Suggestions for improvement included making the graphing tool and formula editor easier to use as well as general improvements to the interface. Some suggested having the flexibility to allow students to answer word questions digitally and to write graphs and calculations requiring equations and formulae by hand, and that only those examinations that require minimal equations and formulae should be digital. Other suggestions included using a tablet with stylus, having spell check, on-screen calculator, keyboard shortcuts, and improving the administration of the Trial.

2.1.5 QUOTED RESPONSES BY MAIN THEMES

Student responses to the questions above have been grouped according to their main themes. These responses are selected as a possible representative set of responses.

Generally positive comments:

“It was good and really helped and applied to me as my hand writing is terrible and I’m good with computers so it caters to me very well.”

“I very much like this better. No more sore hands!”

“It was a great experience to test the new functions of digital exams.”

“I don’t really have any complaints about it.”

“It allowed me to focus more on my answers to the questions, as typing the answers is more efficient than writing them out by hand.”

“Easier to write, with less strain on wrists. Could easily undo errors instead of scribbling.”

Generally neutral comments:

“Needs some touch ups, but not horrible.”

“It was good but there is still lots of work to be done and at this point I would much rather complete a paper exam as it is easier and quicker to write out formulas etc.”

“I think the only exams assessed digitally should be english, history and geography or exams that revolve around essays. I found this science exam hard to do online and mathematics should definitely NOT be assessed online.”

“The digital exam itself was good but it was just problems with Wi-Fi, loading and getting everything to work.”

Generally negative comments:

“I prefer paper exams because of convenience when it comes to writing, it’s just what I’m used to.”

“I personally like writing on paper because it helps me get all my ideas down but I found that digitally, it’s harder to get ideas down.”

"I found it so much harder to concentrate because it gave me a headache and my eyes got tired ... I also can't type very fast at all so it would be hard to finish it in time."

"The chance that there always is of your computer causing you problems..."

"I don't think enough effort has really been put into it to so that it is user friendly."

"I really disliked the idea of having to click many buttons to make the formula and that typos were frequently being made and made me spend more time on rechecking my explanations."

Positive feedback on digital features of examination:

"[I liked] the short videos and images to really get a good idea of what the question was asking."

"The interactive animation resources and videos were helpful because you could see exactly what was happening almost as if you were doing the experiment in real life."

"The punnet square helped me answer the question because I had an example to use in the answer. I understood it better when I could visually see what the question was talking about during the first video."

Neutral feedback on digital features of examination:

"Easy to input answers, formulas take a while but not long enough that it hindered in anyway."

"I thought that the picture of the bun raising in the oven was cool but I'm not sure if it was helpful."

"It was [boring] and tedious the only thing that is better than pen and paper is the videos but other than those the rest is still inferior to pen and paper in every way."

"They didn't, the only thing that helped was the videos and animation, the graphing tool did not work as well and took far too much time as well as the punnet squares and formula editor."

Negative feedback on digital features of examination:

"They slowed me down and made it harder in general."

"It took so much time to fill out the equations and having to click on everything [,] when on [paper] it would take less than 5 seconds to [answer] the question. And the graphs [were] so bad I tried my best but I still [didn't] even know what my own graph [meant]."

"I cannot say that the graphing tool is very good. It needs more development and has to become easier to use. It frustrated not only me, but some other people, who said that after the exam they had to draw their lines manually due to the curve tool being hard to use."

Suggestions for improvement:

"The formula writing ease of access (shortcuts) should be improved so that writing formulas takes less time."

"I would like there to be an autocorrect feature for non-english exams as I found myself correcting my typing quite often which side-tracked me from the questions."

"Maybe make it more straightforward online rather than teachers having to give all these instructions, hand out codes, write links, needs to be a little less complicated."

See Appendix Two for a more detailed breakdown of the responses to the open-ended questions.

Appendix One: SUMMARISED RESPONSES BY QUESTION

Question 1. What device did you use to complete this digital exam?

Type of Device	Count	Percentage
Desktop	340	34.6
Laptop	640	65.2
Tablet	2	0.2
Total	982	

School or own device	Count	Percentage
School provided	534	59.9
Your own device	358	40.1
Total	892	

Question 2. How often do you use digital technology in your learning?

	In Class		In Homework		Internal Assessments	
	Count	Percentage	Count	Percentage	Count	Percentage
Very Often	203	20.3	378	38.3	160	16.4
Quite Often	347	34.8	358	36.3	252	25.8
Occasionally	417	41.8	193	19.6	346	35.4
Never	31	3.1	57	5.8	219	22.4
Total	998		986		977	

Question 3. I found the familiarisation activities told me what to expect in the digital exam.

	Count	Percentage
Strongly agree	117	11.8
Agree	638	64.4
Disagree	94	9.5
Strongly Disagree	38	3.8
I didn't know they existed	104	10.5
Total	991	

Question 5: I found the following features of the exam helped me to answer the questions.

	Video and interactive animation resources		Formula editor		Graphing tool		Punnet tables	
	Count	Percent age	Count	Percent age	Count	Percent age	Count	Percent age
Strongly agree	200	21.5	159	17.3	111	12.1	173	19.1
Agree	520	56.0	439	47.9	393	42.7	453	50.1
Disagree	122	13.1	157	17.1	213	23.1	99	11.0
Strongly Disagree	55	5.9	66	7.2	111	12.1	34	3.8
Not Applicable	32	3.4	96	10.5	93	10.1	145	16.0
Total	929		917		921		904	

Question 6: Rate the following features in the exam from not useful (1) to extremely useful (5) or Not applicable.

	Video and interactive animation resources		Formula editor		Graphing tool		Punnet tables	
	Count	Percent age	Count	Percent age	Count	Percent age	Count	Percent age
1	135	15.3	123	14.0	135	15.4	80	9.3
2	162	18.4	148	16.9	160	18.3	127	14.8
3	221	25.1	225	25.7	237	27.1	219	25.6
4	204	23.2	184	21.0	178	20.3	173	20.2
5	139	15.8	110	12.5	77	8.8	110	12.8
Not applicable	20	2.3	87	9.9	89	10.2	148	17.3
Total	881		877		876		857	

Question 7: I liked doing this exam better than an exam on paper.

	Count	Percentage
Strongly agree	145	16.4
Agree	292	33.0
Disagree	263	29.8
Strongly Disagree	184	20.8
Total	884	

Appendix Two: RESPONSES TO OPEN-ENDED QUESTIONS

Response rate in open-ended questions.

Question		Number of responses	Percentage of responses
4a	What did you like most about completing the exam digitally?	878	86%
4b	What did you dislike most about completing the exam digitally?	874	86%
5e	How did the digital exam feature(s) help you answer the questions?	720	71%
8	Do you have ideas for how these standards could be assessed differently? How?	521	51%
9	Do you have any feedback about this digital exam?	583	57%

For these questions a text mining tool has been used to indicate some of the recurring themes of responses. The output has been edited for coherence and to link raw text mining output to the true responses where possible. It should be noted that the number of survey responses is too small for the text mining tool to have optimum usefulness.

Recurring themes in responses to the following survey questions:

Question 4.a What did you like most about completing the exam digitally?

- Can type faster
- Hands didn't get sore
- Can easily review and correct mistakes
- Video helped understanding
- Nothing

Question 4.b What did you dislike most about completing the exam digitally?

- Doing graph and writing equations is annoying and takes a longer time
- First video is confusing and unnecessary
- Computer problem (lagging, no response, slow when playing, drawing, dragging, etc.)
- Prefer doing paper exam (because of having to click, save, scroll, refresh, etc.)
- Nothing

Question 5 How did the feature(s) help you answer the questions?

- Video and interactive features are helpful

They made it easier to answer and understand the questions

They are helpful but not vital

They did not, it took longer to answer than paper

Features help fix mistakes and keep things tidy

Graphing tools are hard to use

Question 8. Do you have ideas for how these standards could be assessed differently? How?

Just do it on paper

Make it easier to write equations

Nothing

Question 9. Do you have any feedback about this digital exam?

Good experience/opportunity

Improve formula typing

Really like it

Don't like it