I'm a Scientist, Get me out of here

Green Zone

Evaluation Report

April 2020

Contents

Background

I'm a Scientist, Get me out of here (IAS, **imascientist.org.uk**) is a student-led, STEM enrichment and engagement activity that connects school students with scientists.

Following school closures from 20 March 2020 due to the global outbreak of COVID-19, the Green Zone was run as a pilot for further *I'm a Scientist, Stay at home* (IASSAH, **imascientist.org.uk/stayathome**) zones planned for the 2020 Summer Term.

Deliverables

Deliverable 1:
Green Zone

The Green Zone (**green.imascientist.org.uk**) was run as a pilot zone to work out what improvements would be required to enable a massive upscaling of the *I'm a Scientist* activity.

It was an online space in which teachers could book live chats for their students prior to the Easter break. Delivery included moderation, and management and liaison with teachers and scientists.

Green Zone Report

A summary of key data on activity in the Zone, with examples of engagement and some analysis of popular discussion topics is available in the *Green Zone Report:*

about.imascientist.org.uk/2020/green-zone-report-march-2020

In summary:

- 16 schools took part — *13 of which fit into our definition of WP or underserved schools*[1]
- 393 students
- 36 live chat sessions
- 11,023 lines of live chat

[1] For more information on how we identify WP and underserved schools, see: **about.imascientist.org.uk/under-served-and-wp**

Deliverable 2:
Initial planning for Summer Term activity

Research and modelling of capacity requirements

Modelling of capacity requirements were carried out. Availability would be staggered, with capacity increasing every two weeks.

The numbers below reflect the modest scenario of a 5% uptake from schools.

Each fortnight, 250 scientists and 300 schools would need to be onboarded, and liaised with, and up to 30 concurrent live chats moderated. This model has continued to be updated based on updated feedback from teachers.

Per fortnight

	W/C 20 April	W/C 4 May	W/C 18 May	W/C 1 June
Total zones	5	5	7	2
Primary zones	*2*	*2*	*4*	*1*
Secondary zones	*3*	*3*	*3*	*1*
Scientists	240	240	336	96
Schools	300	300	540	140
Classes	2,400	2,400	3,360	960
Concurrent chats	20	20	28	8

Cumulative

	W/C 20 April	W/C 4 May	W/C 18 May	W/C 1 June
Total zones	5	10	17	19
Primary zones	*2*	*4*	*8*	*9*
Secondary zones	*3*	*6*	*9*	*10*
Scientists	240	480	816	912
Schools	300	600	1,140	1,280
Classes	2,400	4,800	8,160	9,120
Concurrent chats	20	40	68	76

Research on and liaison with potential funders

The modelling work made it clear that the potential demand for IAS could be enormous and would require significant funding.

Funders were categorised into 3 streams:

1. Core funders
2. Existing funders
3. New funders

Core funders

The IASSAH zones serve the purpose of continuing STEM engagement in schools. The biggest operation in this area is normally the STEM Ambassador scheme funded by BEIS/UKRI. At the initial conversation with Wellcome Education and STEM Learning, who run the STEM Ambassadors scheme.

The UKRI public engagement team contacted us on 19 March to discuss our plans for online engagement. By 25 March the conversation had developed into a requested proposal with a couple of budget levels. On April 22nd we received confirmation of funding from UKRI allowing a stepchange in the number of schools and students we can cater for.

Existing funders

Existing funders either approached us, or very quickly (within minutes) agreed to reallocate funds to support IASSAH zones. These include the Medical Research Council (MRC), British Psychological Society (BPS), Science Foundation Ireland (SFI) and Wellcome Sanger.

New funders

EngineeringUK have agreed to fund an engineering zone. Other funders such as the Turing Institute, Johnson Matthey, and EDF Energy were delayed due to our inability to confirm what we can deliver because of the delay in a decision from UKRI. Johnson Matthey subsequently confirmed involvement.

Assessment of interest levels from scientists and teachers

Scientists and engineers

A survey was carried out to assess interest in online STEM engagement during the school closures. It was shared with scientists and engineers registered on the *I'm a...* events mailing lists — including past participants — and collected 723 responses between 2nd and 7th April.

The activity was described:

> *I'm a Scientist and I'm an Engineer are online, student-led STEM engagement activities running since 2008, that connect school students with STEM professionals across the UK and Ireland.*
>
> *The online programme is continuing over the summer term during school closures. We want to connect schools with scientists and engineers interested in online engagement like you. More information is available at imascientist.org.uk*
>
> *The online activities would run from late April to the end of term in July and include:*
>
> - *Connecting with students in text-based live chat sessions alongside other STEM professionals (like a group WhatsApp, example chat) - chats take place on weekdays between 9am and 4pm and last about 45 minutes*
> - *Answering other questions whenever you have time*
> - *Briefing notes and a half hour training session will be provided, if you've not taken part before.*

80% of respondents (578/722) reported that they would be interested in taking part in this activity.

When those who said they would — or might — be interested in taking part were asked how much time they would be willing to give to connect with school students, the majority of respondents (53%, 369/699) said "a chat a couple of times most weeks".

At time of writing more than 1,800 scientists and engineers have applied to take part in the UK *I'm a Scientist*, and *I'm an Engineer* activities.

Deliverable 3:
Evaluation

Teacher interviews

Telephone interviews were conducted with five participating teachers, who had responded to interview requests.

All teachers taught at non-selective, state schools. Teachers B and D were primary school teachers; Teachers A, C, and E taught at secondary schools.

The aims of these interviews were to:

- Assess the educational value of the activity
- Understand teaching practice and communication systems during school closures
- Gain feedback on the processes for improvement
- Assess future demand for the activity
- Assess satisfaction of service

Considering the educational value of the IASSAH activity, teachers commented on a number of aspects:

Teacher A highlighted IASSAH as an opportunity for students to interact with adults who aren't in their house, as well as a chance for them to teach a "fresh lesson", rather than setting work and getting work back in return.

Teacher B — a primary school teacher — had sent information to parents, telling them that IASSAH was an amazing opportunity to connect with a wide range of real scientists; they were told to read through the scientists' profiles; and they were told that the activity would be fully moderated, meaning that it is safe to use, and private. The teacher felt that the wide range of scientists taking part in a general (non-themed) zone was ideal for a primary school.

Teacher C valued the IASSAH experience; they felt that it is useful to do something different. Normally science has practicals, Q&A, discussion, and lecturing; remote teaching on the other hand is mostly about kids reading and doing worksheets. IASSAH is a valued chance for interaction, and helps to keep the students motivated.

Teaching practice and communication systems during the school closures varied, as might be expected, though there were common issues:

Teachers A and C both noted that their schools were maintaining a regular lesson timetable and expecting students to follow this. Teacher C noted that compliance has been an issue and there did not appear to be plans in place to ensure compliance. Teacher D expects that there will be a need for schools to be stricter in ensuring compliance in the summer term.

Teacher B said they were not expecting to return to school until the autumn, and had already been given a 12-week rota.

Teacher C's school are continuing to provide education and follow the curriculum, however this has been challenging as some students don't have access to a computer or have to share with a sibling.

In Glasgow, on the other hand, one teacher noted that all students in Primary 5 and above have been given an iPad.

Teacher C noted that there is no expectation that Years 11–13 will be doing anything post Easter break.

In terms of tools and processes teachers are using; teacher, Teacher E's school has a convoluted system for communicating between school and home. They wanted to use a ParentMail system called Go for Schools, but was refused as this is for essential emails only. Teacher E also mentioned using Google Classroom. Teacher A reported using the system Firefly, though in the context of it having crashed meaning that they were not able to notify some students about an IASSAH live chat.

Teacher B is currently using PurpleMash to set work and do live marking everyday, where students have a live chat facility for class interaction.

Considering processes for improvement of the IAS platform and the *Stay at home* zones, teachers provided a number of suggestions:

1. Teacher A noted that teachers currently cannot see the list of students online in a live chat; a list of students — and their real names, together with site display names — would be appreciated.

   This feature has been added to teacher dashboards on the site.[2]

2. Teacher E requested easy to forward information that could be passed on. For parents, information could include information on safeguarding, privacy, the educational content, and asking them to join in the chats for primary school students; and for schools' Senior Leadership Teams, information on safeguarding, the educational content, and evidence of engagement and learning including lists of participating students and transcripts.

   Information to pass on to Senior Leadership Teams and parents has been provided.[3]

3. Teacher E raised a concern about the potential for students to share the registration URL with people not in the class.

   This issue cannot be directly addressed as there is no way to prevent people from sharing information. It is, however, a known issue and is mitigated through moderation.

4. Teacher E would like to be able to brief the class at least three days in advance of the live chat; this means knowing which scientists to expect.

   A list of scientists signed up to attend each chat has been added to teacher dashboards.[4]

5. Teachers were asked how they felt about moderating live chats themselves, rather than having an IAS moderator. In general, the more experienced teachers — those who have taken part in a few chats — were more positive about the idea. One teacher said they would be comfortable moderating their own chats, though cautiously as they had a toddler to look after at home. Teacher E said they would be cautious about self-moderation, that it would mean limiting live chats to their own classes, rather than whole year groups; though noted that this wouldn't be a deal-breaker.

   Teachers are now invited to self-moderate their chats after their third live chat. A

[2] See also: *Deliverables; Deliverable 4: Improving reporting systems*
[3] IASSAH SLT Document:
imascientist.org.uk/wp-content/uploads/2020/05/IASSAH-UK-SLT-document.pdf
[4] See also: *Deliverables; Deliverable 4: Improving reporting systems*

"pause button" has also been added to the live chat user-interface, to allow the teacher to pause the chat and temporarily prevent students from sending messages.

Looking at the future demand for, and satisfaction with the IASSAH activity, overall teachers were positive about their experience in the Green Zone and were likely to participate further in IASSAH.

Teacher A had live chats with Years 7 and 9, the chats were excellent and the teacher felt that the process worked well and was easier than in the March IAS activity which they had also taken part in. Teacher A would be likely to take part twice in the Summer Term with each class, not every week.

Teacher B had opened the activity to students from Years 3–6, and around 20 students took part. They had instant feedback from some parents wanting to do the chat again, and understood there were a good number of parents helping younger students, as well as some doubling up of siblings.

Teacher D noted that they would be more likely to take part in mornings as afternoon allows for flexible working.

Scientist interviews

Telephone interviews were conducted with three scientists participating in the Green Zone during the course of the activity. Scientists were invited to interview based on their level of engagement — from those who had done many chats, to those who had done only one or two. Three scientists responded.

The aims of these interviews were to:

- Gain feedback on improvements
- Understand the dynamics of a large zone
- Assess future demand

Scientists' work schedules varied; while all were at home, one was maintaining regular working hours, one was starting work at lunchtime, and one was off work while their unit was shut down.

A desire to be helpful to teachers and parents was mentioned by two of the scientists as reasons for signing up to take part in the Green Zone. Scientist A said that the chats make them feel "like a superhero". Scientist B is the public engagement representative for their unit and finds the activity to be a useful way to keep in touch with what school students are thinking.

The scientists were asked about how they were choosing which chats to sign up for and managing the sessions within their daily routines.

Scientist A's strategy was to look for the less full chats (those with fewer scientists signed up), and that she preferred the evening chats as they fit better with their schedule; they also suggested weekend chats.

Scientist B's strategy, similarly, was to look for chats planned for the day, and to attend the ones which didn't appear full. This contrasted with the way they worked in a previous IAS zone which they had previously participated in; at the time the scientist had been writing a literature review and made a plan to do three or four chats most days, these helped to refresh and worked as a "productive break". Similarly, Scientist C commented that the Green Zone live chats, "break up the workload nicely during mundane tasks."

Scientist C had done a couple of chats with a lot of scientists taking part (10 or more), and hadn't enjoyed these as much as smaller ones; they felt it was harder to get answers noticed and have conversations with the students[5]

Scientist A noted that they had been ignoring the emails with notifications of new live chats as she had found it confusing to think about chats happening the next day versus chats happening in two weeks' time.

When asked in general about their availability going forward to take part in IASSAH, Scientist B was happy to take part in at least one chat per day, though said they would probably do more; Scientist C thought they would be able to do chats a few times per week.

Finally, scientists were asked how they felt about answering questions about the COVID-19 outbreak. Participants had been provided with guidance on how to address such questions[6] and in general the scientists were happy with this. Scientist C said they had been treating such questions as they would any question outside their field; directing them to others for advice. For Scientist B, these questions are in their field of research and they felt confident signposting and discussing research as well as guidance.

[5] This should not be an issue in the planned Summer Term zones, as a limit of six scientists per chat will be imposed.
[6] Guidance on questions related to Coronavirus: **imascientist.org.uk/coronavirus-questions-guidance**

Metrics

Activity was focussed in live chats, with the Green Zone seeing over double the number of chats when compared with a regular zone, with much lower activity in ASK, where only 69 questions were submitted by students.

	GREEN ZONE	IAS 2012–19 AVERAGES
Schools	16	10
Students logged in	393	385
% of students active in ASK, CHAT, VOTE, or comments	74%	87%
Questions asked	69	637
Questions approved	54	284
Answers given	118	512
Comments	16	66
Live chats	36	16
Lines of live chat	11,023	5,722
— Lines of live chat from scientists	*6,231*	
— Lines of live chat from students	*4,793*	
Average lines per live chat	306	357

The Green Zone had different dynamics to a normal zone. Activity was more focused on the live chat sessions and less on the Ask section. There was no voting and at the time it was not so easy to see which scientists were likely to turn up to a chat so less preparation was possible.

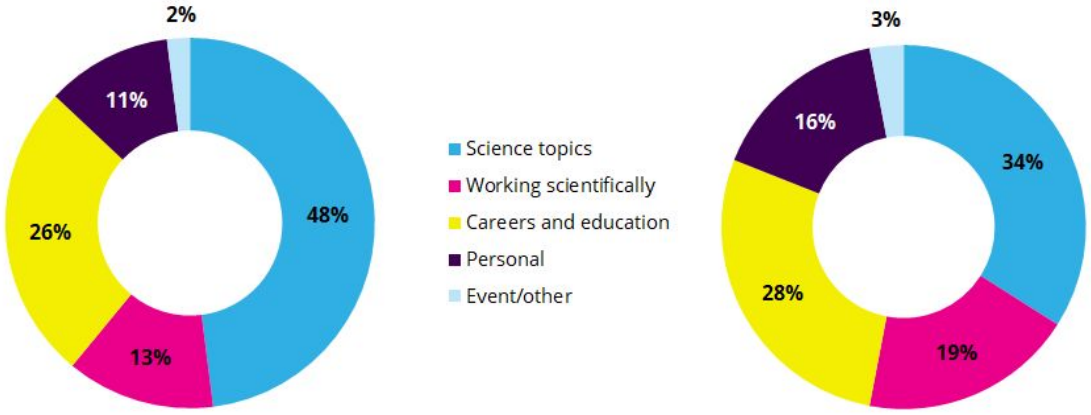
The chats were very well attended by scientists, but student turnout was varied. Many classes only managed single digits, but one had 45 students attend. Teachers were working out how to communicate with students and to encourage them to comply with instructions.

Semantic analysis

Topics of interest

Students were keen to find out about possible career paths. Scientists answered many questions surrounding their interests in and outside of work. Some students raised questions surrounding the COVID-19 outbreak. Live chats were also used to discover more about the human body, weather systems and food.

Above: *Word cloud showing frequent words used in live chats in the Green Zone by students and scientists*



Above: *Themes of questions posted in ASK in the Green Zone* ***(left)*** *compared to IAS zone averages 2017–20* ***(right)***[7]

[7] For more information on how question themes are coded, see: **about.imascientist.org.uk/what-do-students-ask-about**

Difference in interaction from a normal event

Questions and topics of discussion in live chats followed generally the same course as regular IAS zones, while there was discussion around the COVID-19 outbreak, students were also interested in the scientists' work, and their lives outside work.

As can be seen above, questions in ASK related to science topics more often than might be seen in a regular IAS zone, though it is worth noting that the Green Zone saw only around 10% as many questions posted in ASK as a regular zone might.

Observations

During the Green Zone, assessment, and monitoring of ways in which students, teachers, and scientists used the activity were carried out. Below follows a summary of the learning.

Some variance in the number of students present in each live chat was observed when looking at whether teachers have told students that attendance is required or not, with more students logging into the chats where attendance is considered mandatory. There also appeared to be higher turnout in live chats where students were promised a reward of some description (behaviour points, house points, etc).

Some teachers used this activity as an extracurricular — others were using IAS as a scheduled class. This appeared to vary in accordance with age group and the schools' wider policy on set work. The younger the student, the more formal the class appeared. There was an impression that some teachers may have been using it as an easy piece of set work; this view was backed up by the way in which some teachers had cancelled live chats.

Participating students appeared to be largely higher-ability groups, with younger students being more likely to participate than older students. Despite chats with older students being less well attended, there was a considerable swing towards students in these chats discussing careers and education in far greater detail than any previous IAS events.

The understanding was that the majority of the older students — who have effectively finished school — often could not see the benefits of the activity for them. With younger students, who will be returning to school, there appeared to be more success.

In part, teachers were likely offering the activity to students who they considered more trustworthy — i.e. their higher ability sets, or STEM club students — as well as there being some self-selection in which students chose to participate.

There is a need to market the IASSAH site more towards students than the regular IAS sites have in the past — where marketing is largely targeted towards teachers, who would bring their students online. Our engagement throughout this event also highlighted the need to target some parents with information about the activity their children were participating in - highlighting the safeguarding and moderation aspect of

the chats and engagement with the site. This was deemed as particularly necessary for parents of Primary School aged children.

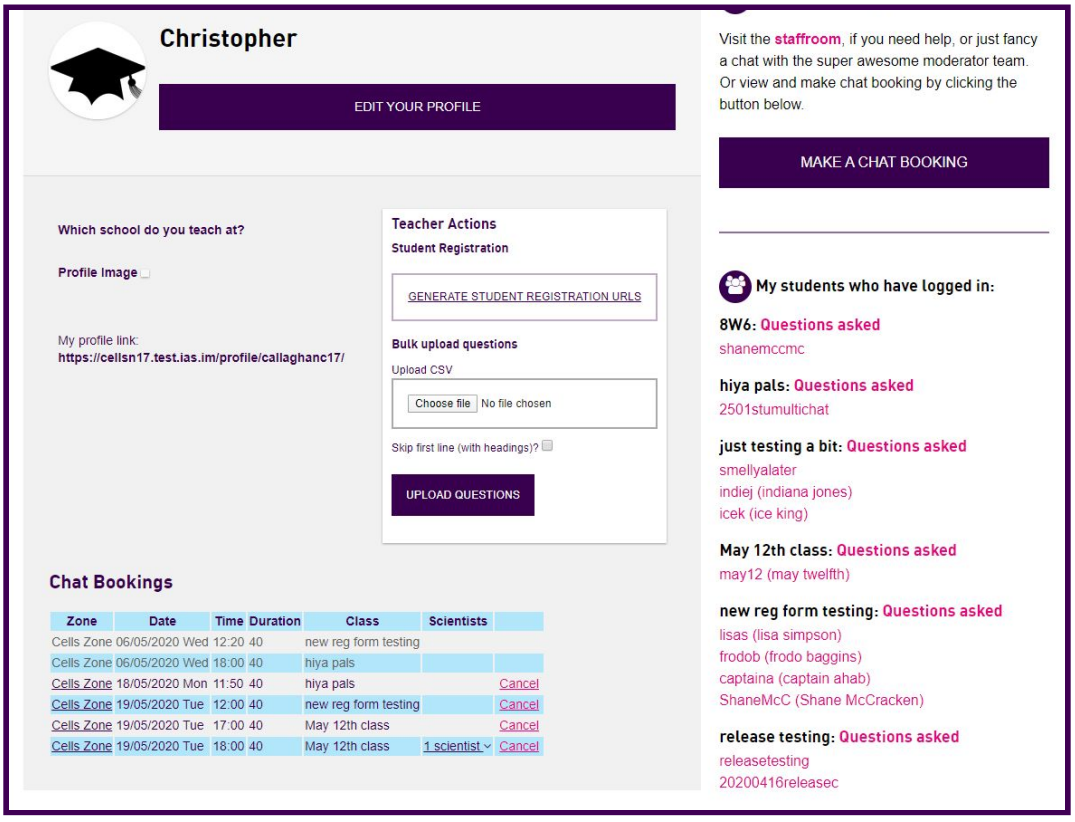
In terms of activity in the chats, there appeared to be a difference in the level of engagement compared with regular IAS chats; students appeared to be having more in-depth conversations with the scientists. This is likely a result of a combination of an extended chat time to 40 minutes and smaller student groups. Students participating in lessons from home are likely to be consistently highly engaged as participation is voluntary. This was reflected in attendance in live chats.

It was observed that with some groups, there appeared to be an initial reluctance to engage in the chat. One teacher suggested this may be due to confidence issues, where students were finding it difficult to find questions to ask that they felt were appropriate and useful. These students may have benefited from more specific guidance or website copy over the breadth of possible questions they could ask so they would have a fuller appreciation of what IAS is designed to do before they take part in their scheduled chat. Previously, this would have been replicated by teacher involvement in the classroom setting. IASSAH needs to find a way to mimic this environment.

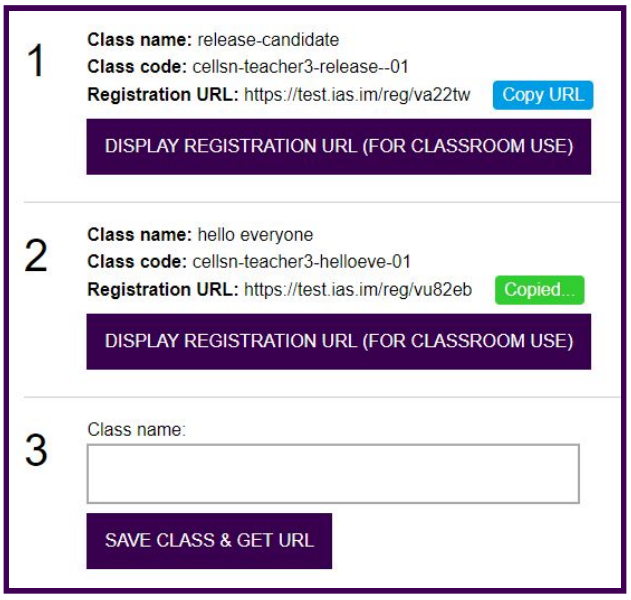
This observation could also be linked to the absence of the classroom environment, where students are able to see each other typing and engage with their classmates about the chat in person.

Deliverable 4:
Improving reporting systems

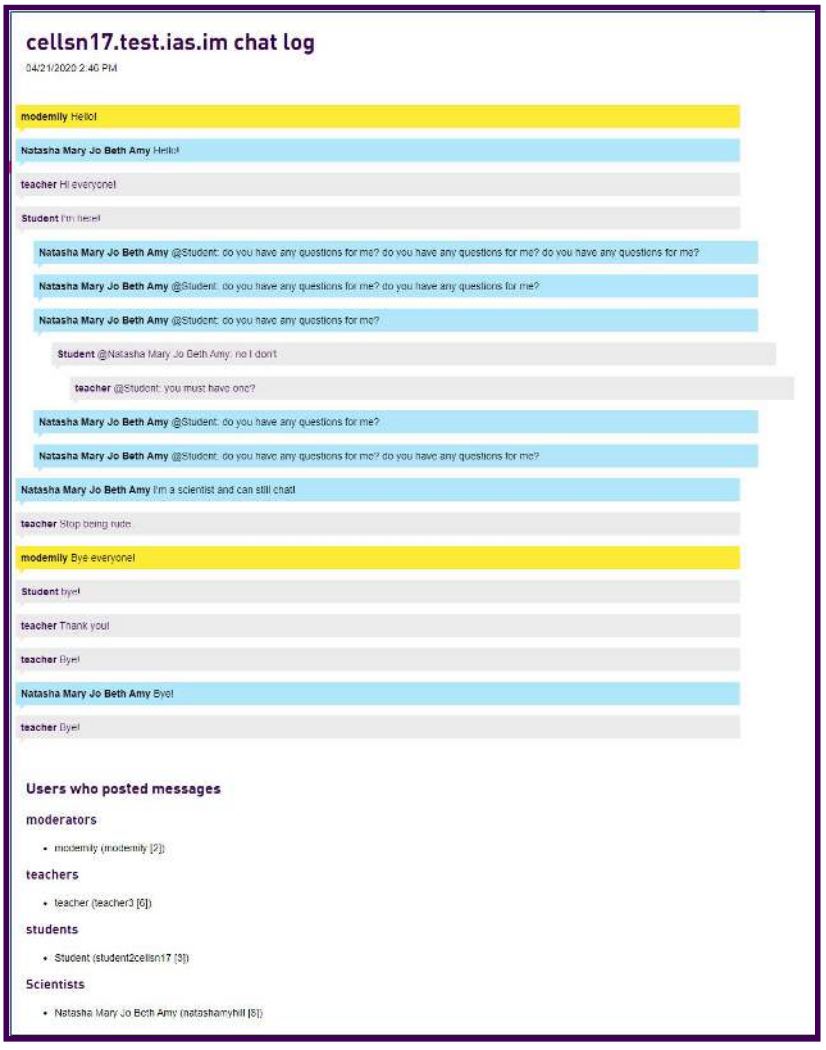
- Development of reporting systems for teachers including:
  - Chat transcripts
  - Student registrations
  - Student question reporting by class



Above: Example teacher dashboard showing link to *Generate Student Registration URLs*; List of chat bookings, with class and the scientists who will attend; List of students who have logged in, and links to the questions they have asked.



Above: Example student registration URL generator

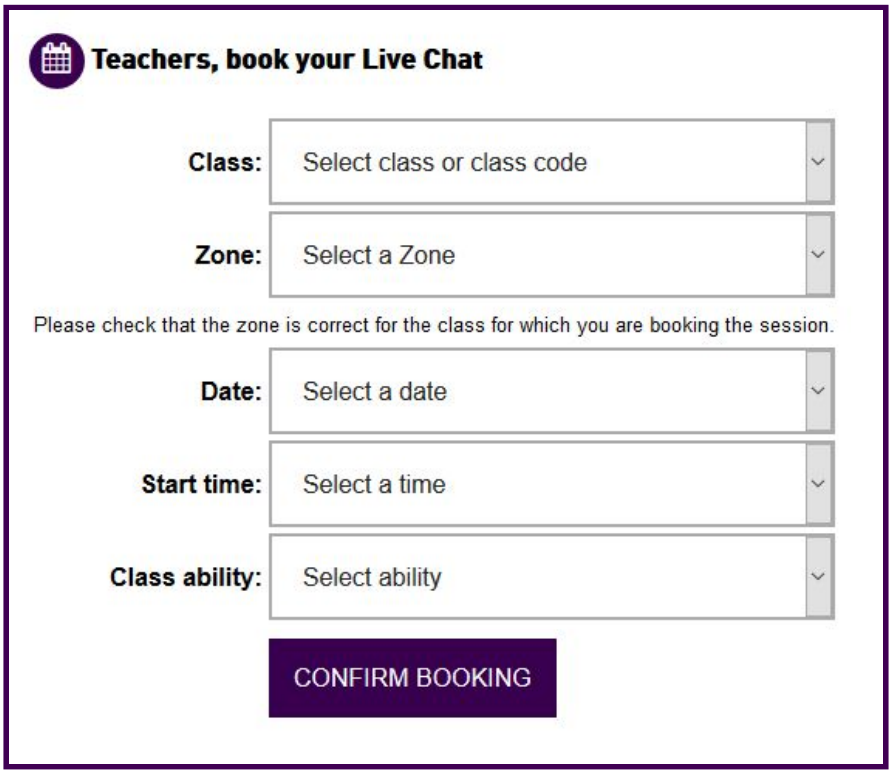


Above: Example downloadable chat transcript

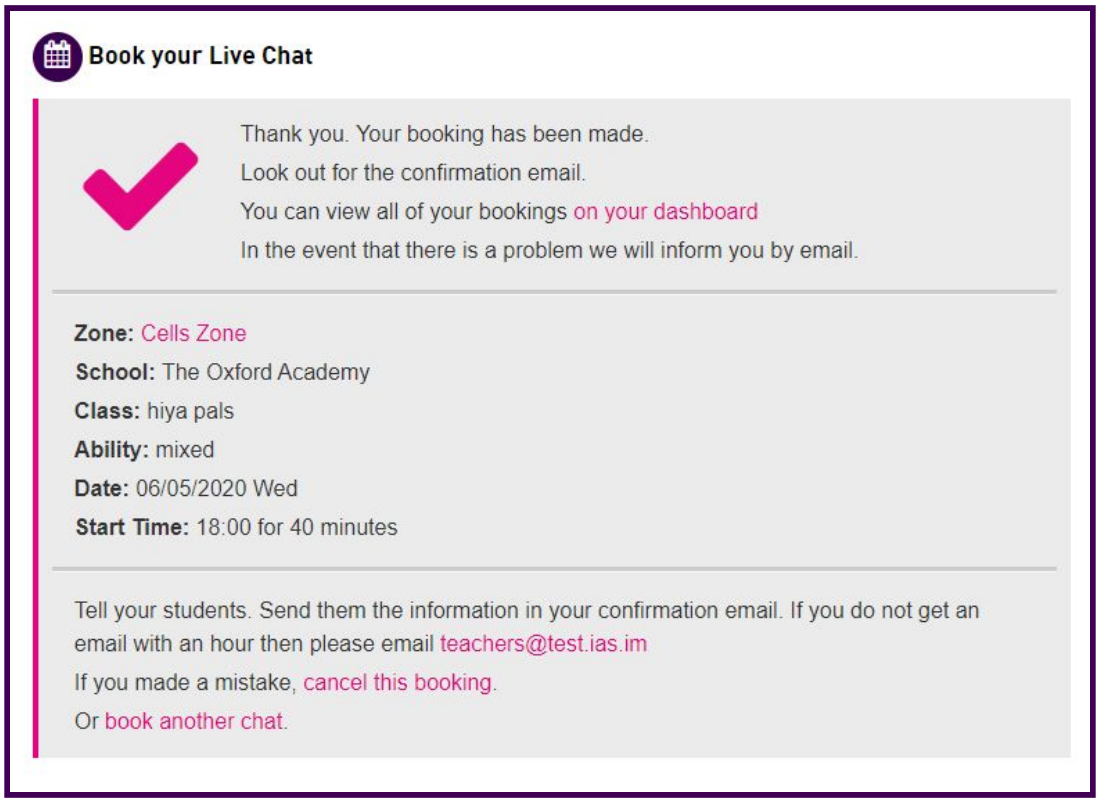
Deliverable 5:
Improving registration systems

- Assess, design and part-implement improved registration systems
    - Teacher and scientist sign up forms
    - Student registration
    - Chat booking systems
- The new sign up systems have allowed us to provide bespoke sign up systems allowing us to monitor in real time where people sign up from, and what for.
- They now integrate with our other systems allowing us better management information and capability to communicate with participants
- New automation of on-boarding systems make us more efficient and provide a better experience.
- The new chat booking system is hugely more efficient and user-centric

"Incredibly easy to set up and run" — Jack Friedlander, Teacher/STEM Coordinator



Above: Live chat booking form



Above: Example live chat booking form confirmation message

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