

Formative Assessment in Lockdown CAS Assessment/Research Report

Background

During the CAS Virtual Showcase in the Summer term of 2020, CAS Assessment working group, with support from the CAS Research working group, ran several activities. One of these was an investigation of *Formative Assessment in Lockdown*. This short report outlines the questions addressed, the activities carried out and the findings for this investigation.

Questions addressed

What are the issues of formative assessment in emergency remote teaching (ERT)?

<https://www.gotostage.com/channel/5ffeb8ca2e224b859d765f1295cc0c54/recording/4dab9468de7f4fff94a5a65f013f0ec/e/watch?source=CHANNEL>

Activities

Six activities were undertaken as part of this investigation.

- Step 1: Ran a series of simple polls on social media to gather some view of what formative assessment is being undertaken. The data from these polls are shown in Appendix 1.
- Step 2: Presented information about the investigation in an introductory session at the start of CAS Virtual Showcase. The link to the recording of this session is [here](#). The slides for this session are [here](#). Over 40 people attended
- Step 3: Presented a CAS Virtual Showcase session on ABC, a process for reviewing and designing online learning activities. This process gives a framework and vocabulary in which formative assessment can be identified. The link to the recording of this session is [here](#). The slides for this session are [here](#). Over 40 people attended
- Step 4: Ran an interactive workshop where we looked at our questions. (This was not recorded as it was run on zoom and was interactive.) The google slides that are the result of the session, are [here](#). 13 people attended
- Step 5: Presented the findings from the poll and interactive workshop. The workshop recording is [here](#). The slides for this session are [here](#). Over 40 people attended.
- Step 6: Wrote up a series of outputs from the interactive workshop. Four outputs are to be created.
 - a. [A summary report](#) (this document)
 - b. [A set of top tips](#) (completed)
 - c. [A Hello World article](#) (not yet done)

- d. A more formal research report (not yet done)

Findings

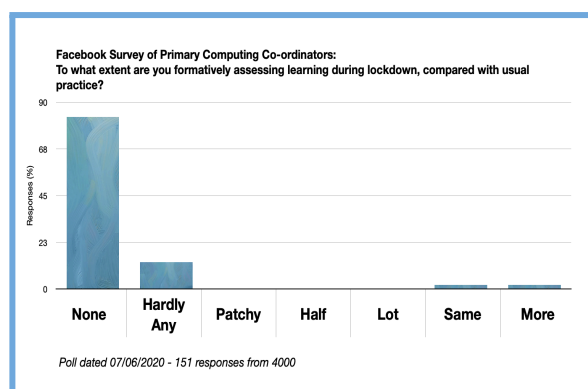
To what extent is formative assessment happening during emergency remote teaching?

To answer this question, we ran a series of simple, informal polls in early June 2020 on social media to gather some view of what formative assessment is being undertaken. Over 200 participants took part in the polls.

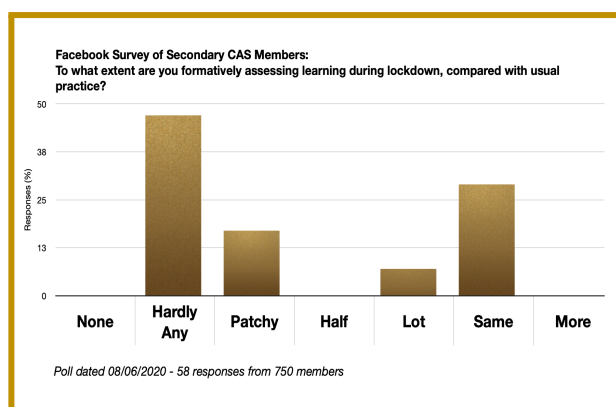
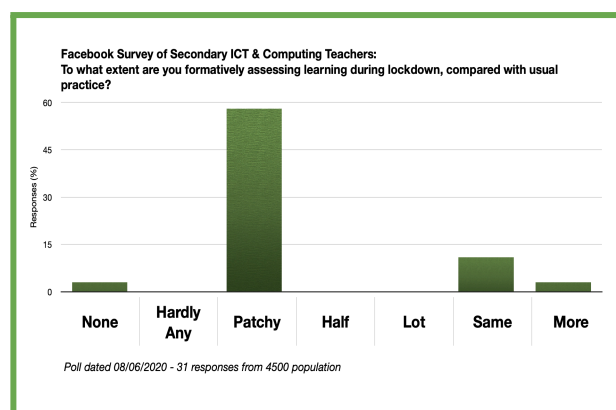
151 participants responded to the poll on the primary computing co-ordinators *Facebook* page. This is a large *Facebook* group with over 4000 members. **The vast majority (96%) of primary teacher respondents said they were doing no or hardly any formative assessment in computing compared with normal practice.**

Fewer educators responded to the same poll in a similar-sized secondary *Facebook* group - in the ICT and Computing teachers group, only 31 responded. The same poll was asked of the 750 members of the CAS Secondary *Facebook* community, with 58 respondents. There is no way to tell if the same people replied in each poll. However, what is interesting is that there was a different general pattern of response. **Around a third of the secondary respondents in both secondary polls said they were doing the same as normal and roughly two-third reported doing hardly any or a bit of formative assessment** (see Appendix 1).

This apparent difference in the incorporation of formative assessment in teaching and learning between primary and secondary teachers impacted the way that the next steps in our investigation were conducted. We decided to ask primary and secondary teachers to respond separately in our interactive activities.



Primary results to poll on the use of formative assessment in lockdown.



How is formative assessment being achieved in emergency remote teaching?

To answer this question, we ran an online interactive workshop. Thirteen educators, seven primary, five secondary and one person who taught both attended the session. Teachers were introduced to the idea of emergency remote teaching and the learning types of *ABC*¹. The teachers were then asked a number of questions and their responses captured through the use of stickers, notes and collaboratively created notes. The google slides, that are the result of the session, are [here](#) and are summarised below.

The teachers suggested a wide range of approaches to provide formative assessment in emergency remote teaching (see Appendix 2, Figures A and B) which were categorised into three themes:

- Quizzes
- Activities where the learning was visible through asynchronous² activities with asynchronous feedback, e.g. work set in Showbie³, Seesaw, Google classroom, Purple Mash. Some of these systems have built-in feedback mechanisms, some do not (and other approaches are taken)
- Activities learning was visible through synchronous⁴ activities with synchronous feedback, e.g. online meetings using Google Classroom

An example of the approaches for formative assessment in primary teaching in lockdown is shown in Figure 1.

¹ *ABC* is a process for developing online learning activities created by UCL. <https://blogs.ucl.ac.uk/abc-ld/>

² Asynchronous activities are those which occur when the learners and their teacher are not online at the same time.

³ <https://www.showbie.com/>

⁴ Synchronous activities are those which occur when the learners and their teacher are online at the same time and accessing the learning event together.

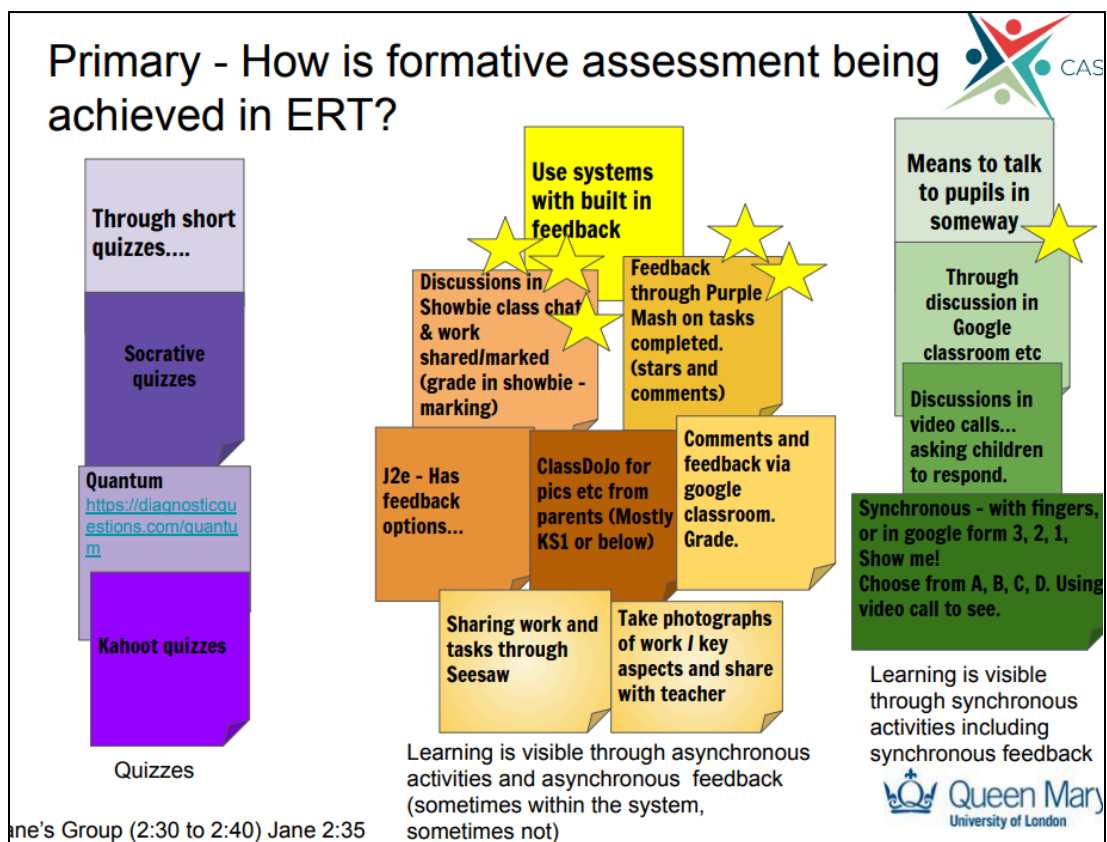


Figure 1 Analysis of primary group responses to the question related to how formative assessment is being achieved.

The secondary group recorded similar approaches, again quizzes, and some asynchronous and synchronous activities. Some of the items recorded for these activities were barriers to formative assessment, such as that many different platforms were being used. There was also commentary that in some instances feedback was always given and in others the opposite, that sometimes feedback was not given. There is a divergence in the provision of formative assessment within Key Stages and across Key Stages.

What are the barriers to formative assessment in lockdown?

Teachers related a number of barriers which were contributing to why formative assessment was difficult in lockdown (see Appendix 2, Figures C and D) which are summarised in Table 1. These have been summarised according to the main stakeholder to which they relate.

Stakeholder	Barrier to formative assessment in lockdown
Pupil	• Pupils are not engaging • Pupils don't have access to kit • Learning is not visible to the student
Teacher	• Teachers need training on how to design lockdown lessons with formative assessment • Learning is not visible to the teacher • Feedback takes too long • Automated feedback is useful, but there is a tension between this and deeper activities • Pupils are progressing at such different rates and its difficult to change the teaching

Parent	• Lack of parental support of pupils/ engagement • Levels of engagement vary.
School policy and Infrastructure	• Safeguarding requirements could have an impact on face to face teaching • Lots of different software and hardware being used, overloading teachers, pupils and parents • Coordination of different aspects of school experience is difficult • Trying to implement online teaching tools for present needs immediately (making things hard)

Table 1: Summary of barriers to formative assessment in lockdown

What is working?

Teachers were asked what is working to enable formative assessment to be used in emergency remote teaching. A range of approaches was shared as shown in Appendix 2 (Figures E and F) and are summarised in Table 2

Stakeholder	What is working for formative assessment in lockdown
Pupils	• A focus on pupil engagement and motivation (e.g. praise, emailing, showcasing work, pupil discussion and collaboration (e.g. <i>Flipgrid</i>), linking attendances and engagement) • More structure through synchronous teaching sessions • A focus on pupil independent learning skills development • Help for pupils on how to use platforms/ tools
Teachers	• Having expert teachers on hand who can teach colleagues • Development of rubrics for activities • Well-crafted assessment activities which make learning visible and are related to the learning, e.g. multiple choice question which focus on misconceptions • Well-crafted assessment activities which provide clear feedback and next steps (e.g. <i>Google Form</i> assessment based on previous exam questions with examiner feedback in the feedback)
Parents	• A focus on parent engagement (e.g. some parents are involved) • Help for parents to use the platforms/tools
Schools policy and Infrastructure	• Using synchronous sessions • Already having a pre-existing strategy and implementation of an online/remote use of technology • Having a single common online learning/sharing platform already in place, e.g. <i>Showbie</i>, <i>Show My Homework</i>, <i>Google Classroom</i> • Having a centralised tool for communication with students/families, such as <i>EduLink</i>. • Using tools which link attendance and teaching and learning outcomes and engagement (e.g. <i>SIMS</i> and <i>EduLink One</i>) • Activities which require pupils to discuss/share ideas or collaborate (e.g. <i>Flipgrid</i>) • A place for showcasing work • There is buy-in on the importance of teachers and pupils being able to use technology - the momentum of which we should not lose

Table 2: Summary of what is working for formative assessment in lockdown

Summary of actions needed

At the end of the session, there was a general discussion about next steps.

The following ideas were raised:

- Top tips on what is working in formative assessment in lockdown would be useful.
- Written case studies are not useful as they are often not relevant and hard to apply.
- However, a podcast of people talking about what they are doing would be useful.
- A *Quick Read* on formative assessment in lockdown would be very useful.
- The quality of MCQ should be improved (i.e. training or guidance would be useful on thinking about the purpose of the question, wording, underlying concepts, distractors etc. (e.g. is the question being used to reveal misconceptions or to show current understanding or progress).

- Focus should shift from what technology is being used to pedagogy of what is being taught.
- There is a mismatch between the grouping of *Eedi* (also known as Quantum and Diagnostic Questions)^{5 6} quizzes to the way that teachers want to use them. The TeachComputing⁷ resources from the NCCE do not map to the quizzes, so teachers have to re-work the question groupings. Could this be done centrally? Ask the Eedi team (JW action).

Conclusion

There is a divergence of the provision of formative assessment within key stages and across key stages. There appear to be different amounts of formative assessment happening in primary computing than in secondary computing classes. There appears to be very little formative assessment happening in primary computing. In secondary, there seems to be two broad categories of the degree of formative assessment, with around two-thirds of teachers in our polls reporting very little formative assessment and a third reporting doing about the same as normal. However, our sample size was very small.

Quizzes are a popular approach for formative assessment, but care needs to be taken to ensure they fit with the teaching, and that there is useful feedback and changes to the learning based on the outcomes.

Both asynchronous and synchronous approaches are being used. Asynchronous activities include those in which the work is set ahead of time for pupils, and then they do it later at their own pace. Feedback is sometimes built into platforms used, sometimes not. Alternatively, synchronous activities, that is live sessions in which learners can engage with their teachers in some way, allow for immediate feedback are also being used.

Pupil barriers to being able to take part in formative assessment include a lack of pupil engagement, pupils not having access to kit and pupil learning not being made visible to them. These barriers are being addressed by a focus on engagement, more structure through synchronous teaching, and helping pupils by giving them skills to be more independent learners and training and support to use tools.

Teacher barriers to be able to implement formative assessment include teachers needing training on how to design “emergency remote teaching” or “lockdown learning” which includes formative assessment. As a result of the lack of expertise, learning is not being made visible. Other problems include feedback taking too long, and when pupils make progress at different rates, there are difficulties in changing the teaching. There is some use of automated feedback, but there is a tension between the type of more shallow learning which may be occurring with these types of feedback and a need for in-depth feedback. To overcome these barriers, some schools are very fortunate to have teachers with expertise in using technology; these teachers are being called upon to train and support their peers. Teachers are also overcoming difficulties by developing clear rubrics for assessment activities which support self-assessment. They are also creating or using well-crafted assessment activities which focus on: relevant learning objectives, making the learning visible, including feedback and providing next steps for learning.

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⁵ <https://eedi.com/>

⁶ https://www.computingatschool.org.uk/custom_pages/107-quantum

⁷ <https://teachcomputing.org/resources>

very fortunate to have teachers with expertise in using technology, these teachers are being called upon to train and support their peers. Teachers are also overcoming difficulties by developing clear rubrics for assessment activities to support self-assessment. They are also creating or using well-crafted assessment activities which focus on relevant learning objectives, make the learning visible, include feedback and provide next steps for learning.

Parent barriers to formative assessment include parents not supporting their pupils to engage in learning. Some teachers are overcoming this barrier by focusing effort on parent engagement, such as creating help material for families and even running training courses.

School policy and infrastructure barriers to formative assessment include there is lots of different software and hardware being used, high levels of complexity of coordinating different aspects of the school experience, safeguarding policies restricting the use of synchronous (or face to face) teaching, and some schools hastily implementing online teaching during lockdown. Some schools are overcoming these barriers by already having a pre-existing strategy and implementation of a remote use of technology. Existing implementations include Showbie⁸, Show my Homework⁹, Google Classroom¹⁰, Microsoft Teams¹¹ and other toolsets. Where a tool includes a centralised communication with students and families feature, this was seen as very useful. Despite safeguarding restrictions, the inclusion of synchronous teaching and learning was seen as important, as was the use of tools that included a place to showcase pupil work for motivation and family buy-in.

School policy and infrastructure barriers to formative assessment include safeguarding policies restricting the use of synchronous (or face to face) teaching, there being lots of different software and hardware being used, the complexity of coordinating different aspects of school experience and some schools trying to hastily implement online teaching during lockdown. Some schools are overcoming these barriers by already having a pre-existing strategy and implementation of a remote use of technology. Within this existing implementation a single common platform has been seen as being particularly effective, such as showbie, show my homework, google. Similarly where this tool includes a centralised communication tool with students and families this was seen as very useful. Despite safeguarding restrictions, Including synchronous learning in teaching was seen as important as having a toolset that included a place to showcase was also mentioned as very important for pupil motivation and family buy-in.

Finally, what seems important is that there is a heightened interest in using technology, including setting up online remote learning platforms, training teachers, for communication with and engagement of pupils and families, and we should not lose this momentum. However, there are many barriers that need to be overcome, but some teachers are overcoming these, and this expertise needs to be shared.

As a follow up to the working group activities detailed here, one of the members of the group has suggested looking at formative assessment probes in Computer Science in the same ways as they have been used in Science. For more information on this see Appendix 3

Differences in practice in formative assessment during the period of 'lockdown' between and across Primary and Secondary phases were initially identified using a simple social media poll. Despite only 200 people taking part, their responses yielded very interesting information.

Teachers reported that quizzes are a common means of assessing learnings. and that some quiz software include useful feedback mechanisms and analytical tools; nevertheless, it is important that quizzes should be aligned with and inform teaching and learning.

⁸ <https://www.showbie.com/>

⁹ <https://www.teamsatchel.com/products/smhw.html>

¹⁰ https://edu.google.com/products/classroom/?modal_active=none#%2Fready-to-go

¹¹ <https://www.microsoft.com/en-gb/education/products/teams>

Teachers reported using a combination of synchronous, i.e. live, and asynchronous, i.e. set ahead of time for pupils, teaching events. Whereas the synchronous events allow for immediate assessment and feedback, asynchronous events relied on teachers building in a means by which learning could be assessed and that assessment communicated.

A number of barriers to achieving reliable and valid assessment of pupil learning during 'lockdown' were identified by the teachers, which have been organised into four categories, i.e. those affecting (i) pupils, (ii) teachers, (iii) parents and families, and (iv) school policy and infrastructure.

With regard to pupils, engagement and equipment availability were considered to be barriers. Addressing equipment availability presents a challenge for the short term; teachers have, though, been able to use synchronous teaching to bring structure and visibility to the pupils' learning. Moreover, teachers have been employing strategies and training to build pupils' independent learning skills.

Barriers pertaining to teachers relate to how and by what means they communicate with their pupils and the pupils' families. Teachers have been in need of training in the design of learning activities and formative assessment in challenging circumstances. They also expressed the need for training in how to provide timely feedback to students and respond to individual needs, e.g. the pace at which pupils progress through the assigned learning activities. A related issue concerns the use of software with automated feedback: the depth of analysis and feedback can fall short of that communicated by a teacher with expertise and a more holistic understanding of the pupils.

Efforts by teachers to overcome these barriers include: accompanying each learning activity with a clearly worded, comprehensive rubric which aids self-assessment; and providing well-crafted assessment activities which are relevant to the learning objective, and in which learning is visible and feedback, including next steps, are provided.

Teachers have reported a lack of engagement from parents and families in supporting learning at home and in encouraging their young family members to engage with the learning opportunities provided for them. Some teachers have found that communicating with their pupils' families, providing guidance and, where appropriate, training can bridge the gap.

With regard to schools' policies and infrastructure, the main barriers identified relate to: the imperative for schools to maintain strict safeguarding practices; the wide range of software and hardware usage; and the complexity involved in managing a challenging situation and a potentially hasty implementation of strategy. Schools which have a pre-existing strategy for the use of remote learning, and those which draw upon a single platform with a centralised communication tool, have been in a better position to respond to lockdown.

Reflecting upon the information gathered, it would seem that the selective use of synchronous teaching events and the showcasing of the outcome of learning can be effective in motivating pupils and engaging families. Moreover, we should draw upon expertise to overcome the barrier to carrying out effective and purposeful formative assessment.

A further reflection relates to the heightened interest in the use of educational technology during lockdown, i.e. online learning platforms, the need for teacher training and the means by which schools communicate with and engage pupils and their families. It is important that the momentum is not lost.

* * *

As a follow up to the working group activities detailed here, one of the members of the group has suggested looking at formative assessment probes in Computer Science in the same ways as they have been used in Science. For more information on this see Appendix 3

Appendix 1 Poll data

	Facebook				Twitter
	Primary Computing Co-ordinators 7/6/2020 (4000 members)	ICT & Computing teachers 8/6/2020 (4500 members)	CAS Secondary 8/6/2020 (750 members)	CAS Research 4/6/2020 (80 members)	8/6/2020
None (added by a participant)	126 (83%)	1 (3%)			8 (38%)
1.We are hardly doing any	20 (13%)		27 (47%)		8 (38%)
2.We are doing a bit, but it's patchy		18 (58%)	10 (17%)	7 (70%)	
3. We are doing about half of what we normally do				2 (20%)	
4. We are doing quite a lot but not as much as normal			4 (7%)		3 (14%)
5. We are doing the same amount as normal	3 (2%)	11 (35%)	17 (29%)	1 (10%)	2(10%)
6. More than usual		1 (3%)			
More than usual, as it's more important when you can't be in front of your students to understand where they are at (added by a participant)	1 (1%)				
Doing more as previously used AfL not written feedback (added by a participant)	1(1%)				
	151	31	58	10	21

Appendix 2 Working Group Responses to Questions

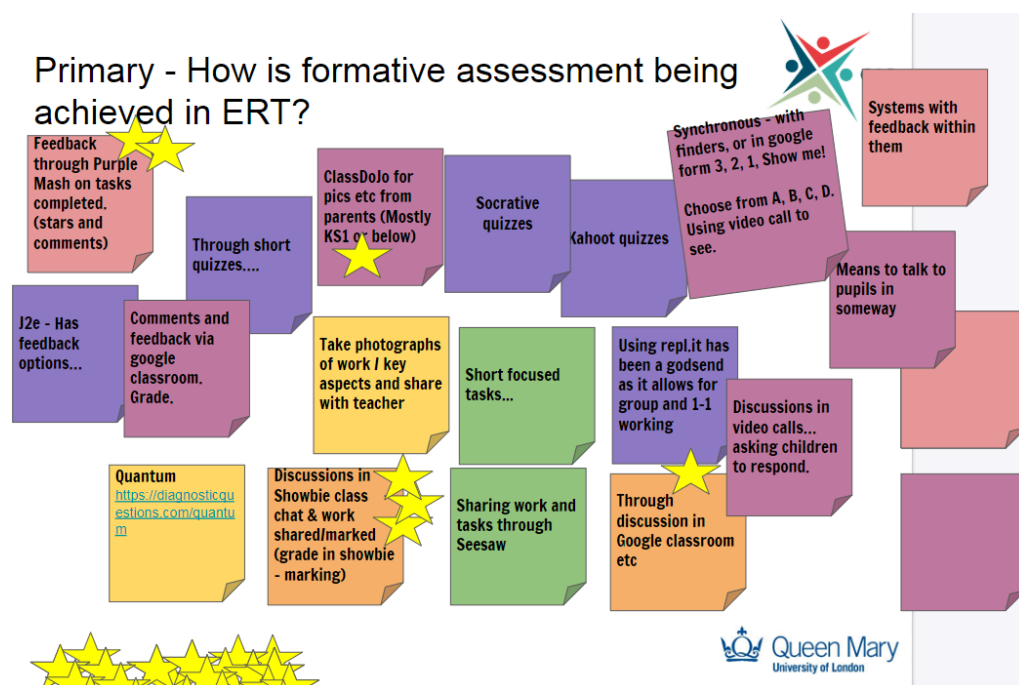


Figure A: Responses for the primary group on the question related to how formative assessment is being achieved.

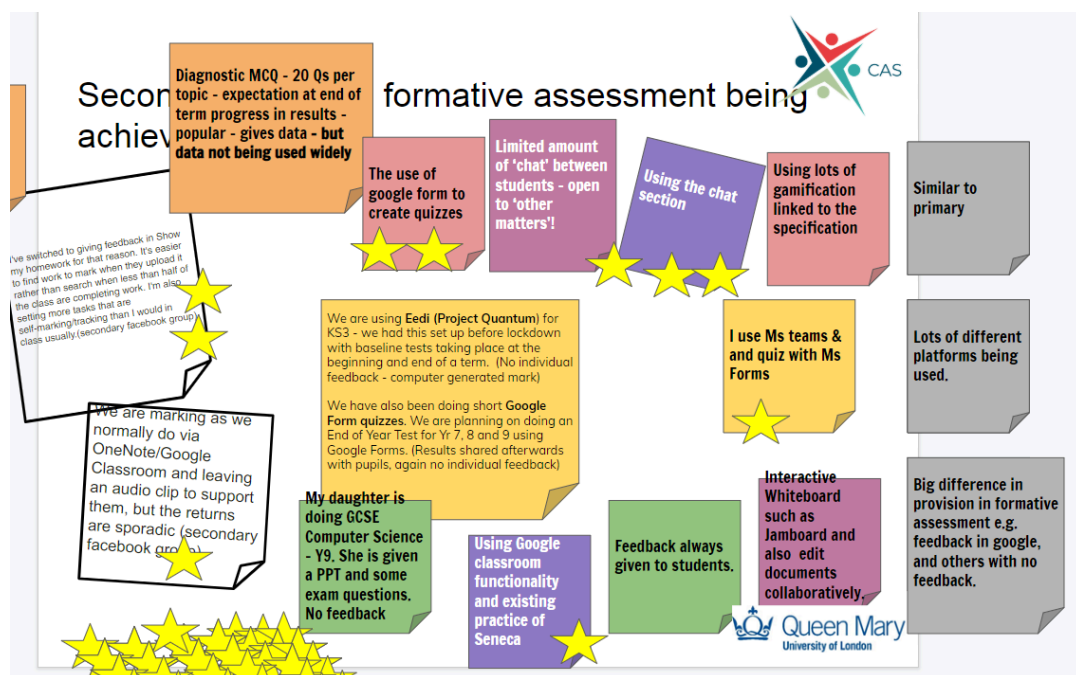
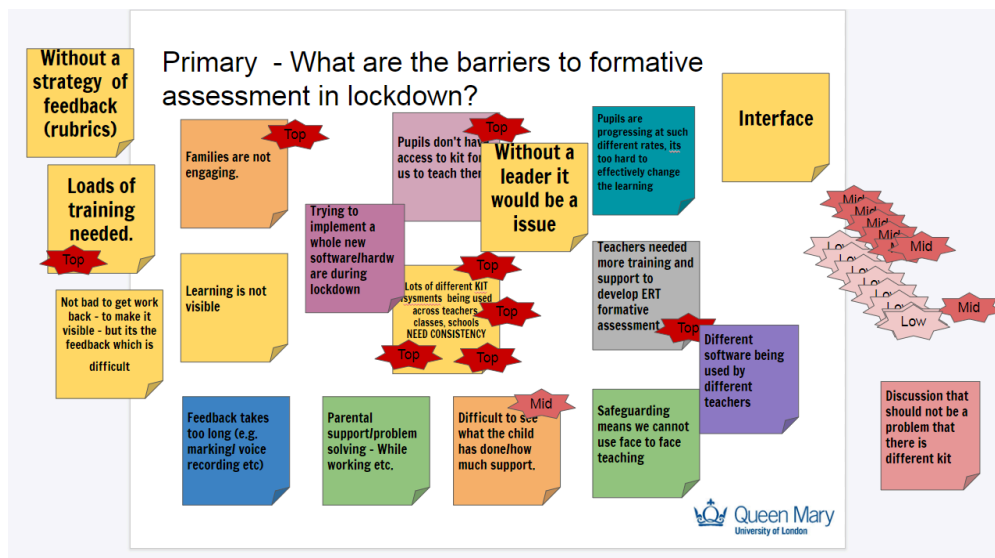


Figure B: Responses for the secondary group on the question related to how formative assessment is being achieved. (The white sticky notes were derived from responses in comments from the polls, the grey sticky notes were summaries added in discussion at the end of the session).



FigureC: Responses for the primary group on the question related to barriers to formative assessment in lockdown

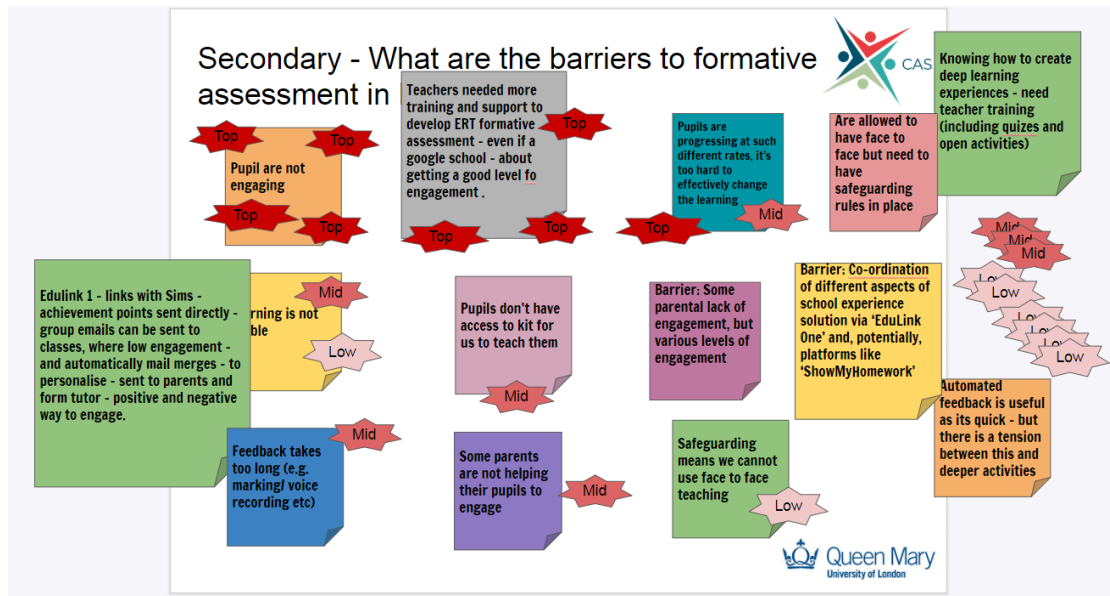


Figure D: Responses for the Secondary group on the question related to barriers to formative assessment in lockdown

Primary - What are the barriers to formative assessment in lockdown?



Figure E: Analysis for the Primary group on the question on the question related to barriers to formative assessment in lockdown

Secondary - What are the barriers to formative assessment in lockdown?

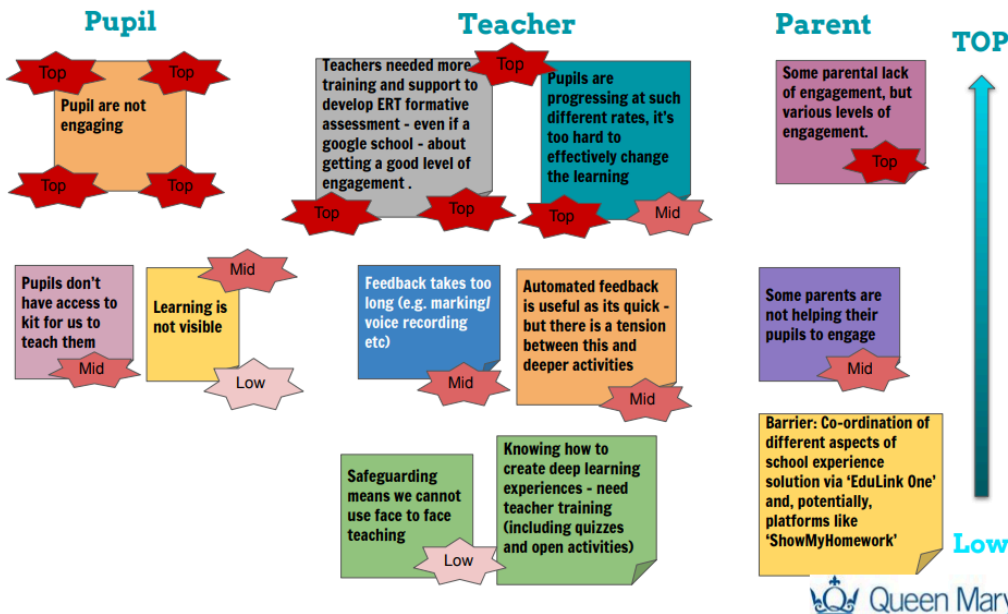


Figure F: Analysis for the Primary group on the question on the question related to barriers to formative assessment in lockdown

Primary - What is working?

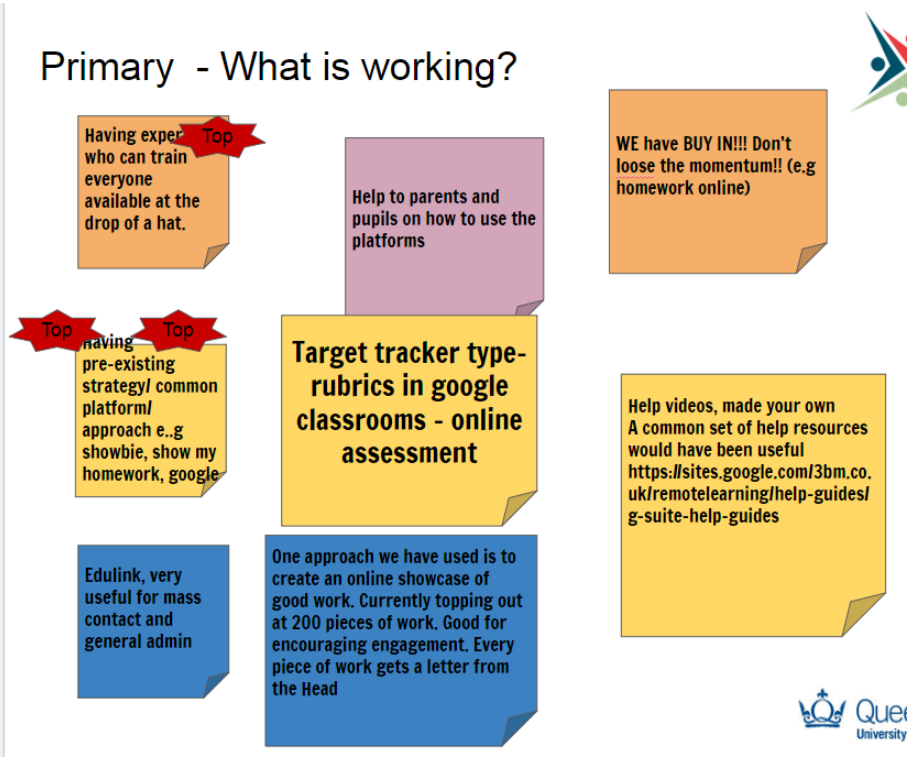


Figure G: Responses for the Primary group on the question on what is working in formative assessment in lockdown

Secondary - What is working?

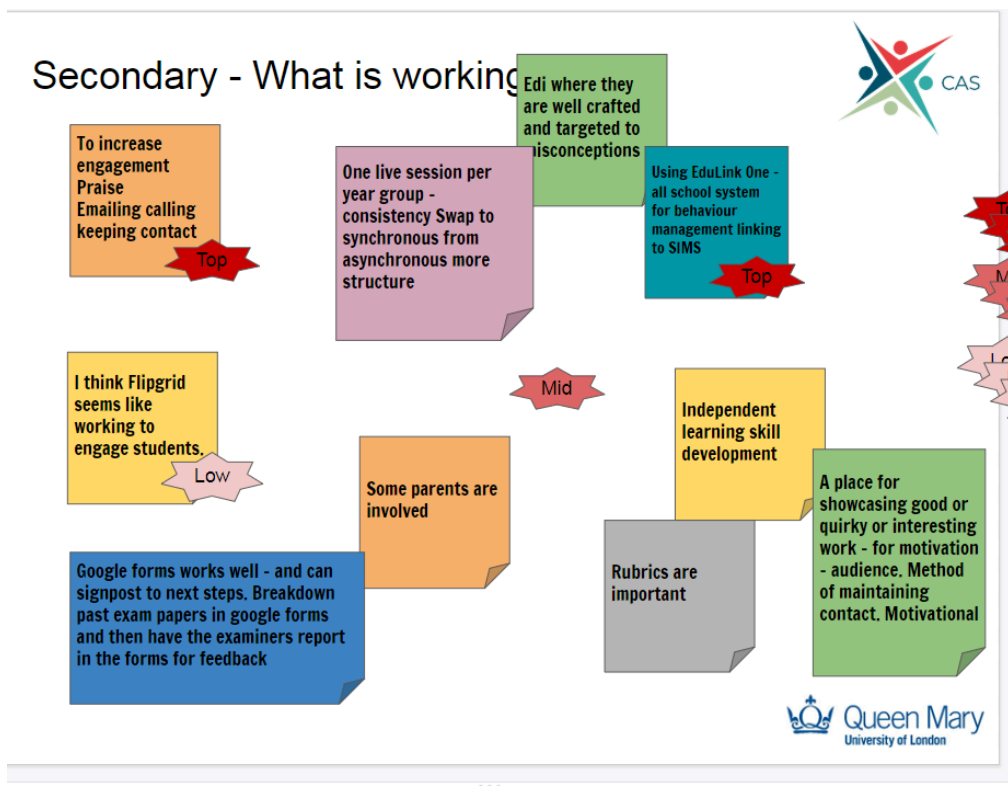


Figure H: Responses for the Secondary group on the question on what is working in formative assessment in lockdown

Appendix 3: About Science formative assessment probes.

Page Keeley and her colleagues develop formative assessment probes in science education in collaboration with National Science Teaching Association(NSTA). These probes are used frequently in science education to gauge students' preconceptions about science and help educators to identify misconceptions to guide the instruction. Similarly, there is a crucial need to develop similar probes for ICT and CS education. Page Keeley's science probes can be used as a model to develop CS probes to inform instruction. Page Keeley's webpage can be found [here](#). In this [video](#), she explains what the science formative assessments probes are. This is another [video](#) on how to use the probes. She explains the science probes as following: "Every formative assessment probe in the *Uncovering Student Ideas in Science* series has a two-tiered structure. In the first part of a formative assessment probe, students commit to a selected answer choice that reveals how they think about a specific idea or concept. These selected answer choices are based on commonly held ideas from published research studies about how students think about science concepts and ideas. Each probe also includes a second part in which students explain their thinking. This can take the form of written explanations or students can engage in discourse practices, using their explanations to present an argument to support their thinking." You can find an example of a science probe [here](#). Similar videos can be produced by teachers for the remote instruction.

Appendix 4 Working group members

Jane Waite (Queen Mary University of London)

Please add your name here