

“Robots cannot drink coffee or real ale”: the undeniable spark of face-to-face teaching moments in digital learning journeys

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Abstract

The purpose of this study is to evaluate student perceptions of a yearly workshop, held as part of the Master’s in Industrial Project Management programme at the University of Birmingham.

This study employed action research methods to understand how the use of technology to deliver fully online and hybrid teaching during the COVID-19 pandemic (2020-21) and its immediate aftermath (2022)¹ impacted on student experience. A mix of technological tools was used, most notably the virtual world environment Virbela, MS Teams, the digital collaboration platform Miro, and telepresence robots. The data indicate that students generally preferred the hybrid teaching mode, which combines face-to-face interactions with remote learning. While fully online teaching offered higher flexibility in a time of crisis, the hybrid approach optimised both digital resources and in-person engagement, leading to enhanced student satisfaction, particularly for the social aspects of learning and community building.

Introduction

The Master’s degree in Industrial Project Management² (IPM) is a three-year part-time programme conducted fully online by the School of Chemical Engineering at the University of Birmingham, in partnership with GlaxoSmithKline (GSK)³. The programme was

¹ The WHO officially declared the COVID-19 emergency over only on May 5, 2023. See WHO. [www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-coronavirus-disease-\(covid-19\)-pandemic](https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic)

² www.birmingham.ac.uk/postgraduate/courses/taught/chemical-engineering/industrial-project-management.aspx

³ www.gsk.com/en-gb/

inaugurated in 2009 and converted to online learning in the academic year 2016-17. The students complete three 20-credit taught modules per year in the first two years. In the third year of the programme they conduct a research project worth 60 credits. The programme is delivered through the University's adopted virtual learning environment (VLE), Canvas⁴.

In year 1 and 2, students can participate in non-compulsory workshop that we call the 'Hub'. This offers students opportunities to interact with their peers and the teaching staff and to revise and deepen their knowledge on programme materials through targeted activities. This workshop used to be conducted over three days in person at the University of Birmingham and in another location, generally in Asia or the Middle East. In terms of content, the Hubs offer a mix of presentations, group activities, informal discussions and icebreakers and contributions from external speakers.

In response to the COVID-19 restrictions in 2020, our programme, like many others documented in academic studies (Dulama and Ilovan, 2020; Mishra *et al.*, 2020; Gherheş *et al.*, 2021, Gourlay, 2021), had to pivot quickly from the planned in-person Hubs to an online event. However, Gourlay (2021) observes that "virtual learning" is not entirely detached from "physical, material movement, placement, or practices", suggesting that it involves "embodied" (p. 58) engagements and interactions. The data from our study highlights how this emerged for both the exclusively online and the hybrid events.

In that first year, the Hubs were delivered exclusively via Virbela⁵. Virbela is an immersive virtual world environment where users can meet and interact through realistic-looking human avatars. The purpose of using Virbela was to make the interaction more realistic and engaging, and to prevent video fatigue (Salim *et al.*, 2022). Its use in educational contexts has not been widely studied yet, but Mora-Beltrán *et al.* (2020) provide a relevant case study, suggesting that Virbela brought about significant advantages related to student

⁴ www.instructure.com/canvas

⁵ <http://www.virbela.com>

motivation, participation in groupwork, and establishment of communication “without the pressure of face-to-face interactions” (p.51).

In 2021, an attempt was made to use another virtual environment, Frame VR⁶, as this had the potential to offer students a more intuitive tool by allowing the use of video along with the avatars. However, due to technical difficulties, some students were unable to access the platform and interact with the environment, and this led to reverting back to Virbela and MS Teams.

In 2022 the Hubs were held in a hybrid mode, from the University of Birmingham. By “hybrid” we mean “lectures/seminars/classes in which some students are physically present in a classroom and others join online simultaneously from remote locations” (Goria, 2022). The Hubs’ duration was reduced to two days each, but with longer hours each day compared to the purely virtual events. MS Teams was used in conjunction with telepresence robots⁷ to enable the students who were connecting remotely to interact with the classroom. Quite simply, telepresence can be defined as “the experience of being present at a real-world location remote from one’s own immediate physical environment” (Mair, 1997, p. 118). The robots used in the Hubs are remotely controlled tablet devices mounted on a moving support: the educational applications of this kind of device have been investigated recently, particularly for “homebound children” and pupils absent from school (see Johannessen *et al.*, 2023 and Velinov *et al.*, 2021). Finally, the digital collaboration platform Miro⁸ was used in all Hubs across the three years to support interaction and to gather the daily feedback from the students.

Research methodology

This longitudinal action research project (Norton, 2008) was conducted over three years (2020 to 2022) with a focus on continuous improvement, cyclical evaluation, and reflection, in a spiral of “plan, act, observe and reflect” (p. 69). Its primary goal was to assess the effects of virtual/hybrid hubs on student participation, engagement, and satisfaction. Our

⁶ <https://framevr.io/>

⁷ [Double Robotics - Telepresence Robot for the Hybrid Office](#)

⁸ www.miro.com

ultimate objective was to elevate the student experience across three cycles of the “Hub”. We utilised student feedback and reflections as pivotal tools for guiding modifications, all in pursuit of enhancing student engagement and satisfaction in alignment with our research goals. Where applicable, immediate changes were applied after the daily feedback provided on Miro boards by the students, but the larger and more systematic reflection and action was brought about by the analysis of the data gathered at the end of each Hub. Ethical approval was obtained for this study in 2020 and then again in 2022 for the hybrid version⁹.

Data gathering methods and process

Participation in the Hubs is not mandatory. Overall, 28 students out of 37 (over 75%) enrolled in the relevant cohorts participated in the Hubs over the three academic years considered. Appendix 1 illustrates their attendance patterns. The data collection methods changed from 2020 to 2021 and 2022. This change was prompted by the realisation that the initial procedures used in 2020 were overly complicated and demanding for the students to engage in. Moreover, each component of the data collection process in the first year was not producing sufficiently unique data to justify the overall complexity.

All data were collected anonymously in the three years, except for the in-depth interviews and the reflective essays, which were anonymised at the point of analysis. Wherever the students’ comments are linked to a name in the data, this has been substituted here with a numeric code from 1 to 28.

Table 1 shows the data gathering methods used. A detailed explanation follows in the text.

2020	2021	2022
Feedback at the end of each day (Miro) (17 students)	Feedback at the end of each day (Miro) (13 students)	Feedback at the end of each day (Miro) (8 students)
Reflective assignment (17 students)	Reflective assignment (13 students)	Reflective assignment (8 students)
Survey (4 students)	n/a	n/a

⁹ The code for the latest approved ethics application is ERN_2022-0484

In-depth interviews (3 students)	n/a	n/a
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Table 1 – data gathering methods by year.

From the first online Hub, all students were asked to provide feedback at the end of each day, using the whiteboard application Miro, anonymously. The board has the following sections: What was good about today, what was not so good today, Ideas (for improvement) and actions. Figure 1 below shows an example of a feedback Miro board.



Figure 1 – Miro board from the first day in the year 1 hub in 2020.

Moreover, all participating students submitted a reflective essay (500-700 words) commenting on their expectations, Hub content, technologies used, and providing suggestions for improvement (detailed guidance available on request). Students obtain a pass/fail assessment without a mark. The essay counts for 30% of their final grade in either module 3 (year 1) or module 6 (year 2), but the grade is determined by the weighted average of the module's other assessments.

For the Hubs held in 2020, students were also asked to complete a survey, consisting of 17 questions (a mix of closed and open-ended questions, available on request). Since the response rate was low (4 out of 17 participants), we interviewed three students (students 1,

2 and 3 in this study) who volunteered to support the study to gain a more detailed understanding of their experience. In the second and third year, we gathered data only from the Miro boards and the reflective assignments. All quotes included in this study come from the reflective assignments, unless otherwise stated.

Results and discussion

The student feedback on the Hubs has been consistently positive over the three years. Every method of data collection has shown high levels of overall student satisfaction. To gain a more in-depth understanding, we specifically sought students' evaluations on the content and teaching/learning methodologies of the Hubs. Additionally, we asked for their assessment of the educational technologies used and their associated benefits. These elements, naturally, are intertwined in several key areas.

In the sections that follow, we have organised our findings and discussions into two main categories: firstly focusing on the content and teaching/learning methodologies of the Hubs, and secondly on the educational technologies and their respective affordances.

Content and teaching and learning methodology of the Hubs

The content and methodology of the Hubs represent, at least in principle, an aspect of continuity between the Hubs held in person until 2019 and subsequent years. In fact, the initial goal of the move to online delivery was to preserve the content and objectives of the Hubs despite the constraints due to the pandemic. Most students were satisfied with the structure, content and methodology of the Hubs across the cohorts.

The survey conducted in 2020, with its limited responses, as explained above, showed a good level of satisfaction with the content and methodology aspects of the fully online version of the Hub. All 4 students - out of 17 – agreed that the Hubs were useful and well organised and 3 out of 4 agreed that the content was appropriate. More significantly, though all other data gathering methods (Miro boards, reflective assignments and (in 2020) in-depth interviews) broadly confirmed these findings.

Student 8 summed it up in their reflective assignment as “the workshop was structured very well, breaks frequent enough and of a sufficient duration [...] the agenda and content of the workshop was first class”. And in the words of student 10, who started out being “sceptical”: “the three-day hub exceeded my expectations. [...] the agenda as a whole was meticulously planned, well-paced and adhered to the planned objectives”. Other students (for example students 10, 13 and 20) also declared that their expectations were exceeded.

The forced move to the online Hubs was particularly concerning in terms of building a suitable social and community environment for the students – especially the first-year students who had not had the benefit of an in-person Hub before 2020. Hence, three games were introduced into the schedule: the first, a “light-hearted and fun” quiz, as described later on by student 27, to recap the previous two modules of the relevant year of the course; the second, a team building game (“The invisible path game”, available on Virbela) and finally a communication game (“the Chair game”) that highlights the importance of correct and balanced communication in projects. The Virbela game was not reproduced in the hybrid version of the Hub in 2022, where Virbela was not used. All these events were highly appreciated, for various reasons, but mostly for their potential to build social connections and render the atmosphere more relaxed and engaging.

The recap quizzes were found to be useful by all students who mentioned them in their feedback: for example, student 20 commented that they helped in reminding them of the content of the previous modules, while student 23 mentioned the “relaxed atmosphere” that supported engagement. The communication game was also very successful, both from a social and educational perspective, with student 1 commenting: “that got me thinking immediately about how I currently run my own projects” (from the interview) and students 2 and 4 being particularly appreciative, with student 2 saying, “my favourite activity at the Hub was the chair game” and student 24: “one of the most interesting I have participated in”.

The invisible path game was also a clear success, being mentioned favourably by almost all participating students (for example, student 3: “the invisible path allowed me to reflect on

the concept that people can give different feedback/advice simply because [they] can see the path from a different angle that highlight a different thinking process”).

In terms of the structure of the Hubs, several students recommended more frequent meetings, both for social interaction and community building purposes and for pedagogical purposes. This is a theme that is shared throughout the three years. Some students highlight the social aspect, such as student 11: “to create social interaction and engagement within the cohort at early stage” and student 1: “two or three of these hubs a year or [...] an extra couple of days here and there”, and 2: “let’s do this more often, [...] it doesn’t have [...] superstructural, very well-organised. I mean, just a casual one [...] two or three hours” (from the interview). Others highlight the opportunity to “deep dive one topic” (student 3) and “bi-monthly ‘mini-hubs’ to discuss a specific topic” (student 6); students 9, 4 and 18 share similar considerations. None of the students’ suggestions mention specifically in-person events, which would be consistent also with the information emerging over the year regarding the students’ limited availability and limited opportunity to travel. Due to the context, we can assume that most of them meant online events that could be held through the academic year without the major disruption to their work and studies that a two- or three-day event, including travel to a different continent, brings.

Regarding the duration of the yearly Hubs, many students have commented that the time was not sufficient to accomplish all the goals. For example, student 6 suggested “that the duration could have been increased to include more cases or to give us more time to discuss in each of the case studies or exercise”. Student 25 agreed that the workshop (on two days in 2022) was “brief”. Students 26 and 22 also concurred on this point. These reflections were more oriented towards dealing with the subject matter of the course than the social interaction aspect. Hence, also in response to this concern, the structure of the first module in year two “Projects, systems and control” was modified to incorporate two short (1.5-2 hours each) live sessions to deal with some complex issues in the programme and to introduce practical activities on the topics of causality and critical chain: these were judged by the teaching staff to be particularly difficult for the students to address without specific guidance.

In terms of communication and social interaction, on the other hand, student 1, for example, suggested that “a long-term method of ensuring communication between the students” be introduced. Naturally, students within the same cohort can always communicate through Canvas but no communication system was available for students to communicate across cohorts. Some attempts to develop a social media space for the group failed: a WhatsApp group was spontaneously started after the Hub by some students in 2020, but activity died down after a while, as reported by students 8 and 9; a Slack channel had been opened for the Hub in 2021 but was not widely used, as reported by students 7 and 8. A weekly informal live session for social and interaction purposes was also opened in academic year 2020/21, after the conclusion of the Hub, but was soon cancelled for poor attendance. Finally, a Team in MS Teams was created where all enrolled students and alumni can freely discuss any relevant topic. This allows different cohorts to interact directly, something that is not possible within Canvas, where cohorts are enrolled separately in unconnected courses. The teaching faculty are also enrolled and participate in the Team. This communication channel is currently operational and relatively well attended, with 52 users currently enrolled, 21 of which considered “active” due to regularly posting and participating in conversations and/or reacting to posts.

Educational technologies adopted for the Hubs

Utilising educational technologies was crucial for staff to administer the programme during the pandemic. It also offered a significant chance to assess online and hybrid teaching methods in our continuous effort to enhance the quality of student experiences. Even though this shift was initially dictated purely by the COVID-19 pandemic, most students appreciated the convenience of being able to take part from their own physical location. In fact, student 12 even asserted that “the objective of promoting collaboration between the students was achieved much better through the virtual workshop than through the in-person hub”.

The survey conducted in 2020 offered a moderately positive view of the technology, with all 4 students being at least neutral on overall satisfaction with the choice of technology and helpfulness in addressing the disadvantages of online work.

Miro was viewed as challenging to learn by some. Student 2, for example, had a strong comment, saying “that was a mess at the beginning” (from the interview). Nonetheless, many students praised its interactive features for collaborative planning (students 8, 10 and 13, for instance). Survey results, for example, showed that 3 out of 4 students found Miro “difficult”, while the same proportion found Virbela “easy” to use.

The evaluation of Virbela was more comprehensive, as 4 cohorts of students (divided across two years) experienced it. This was also largely positive. For instance, student 4 called it: “a very good alternative to in-person learning”, while student 6 judged it to be: “a fantastic tool” and student 7: “a very effective and positive experience”. Student 12 also had a very positive judgement: “Virbela provided an excellent platform to merge the gap between a real and virtual session”. Student 8 even declared their intention to use it in their professional setting. Unfortunately, there were some technical issues in accessing the platform, with a few students only able to access via an audio-only phone app. These were mostly due to limitations imposed by workplace hardware and software. As Mora-Beltrán *et al.* (2020) highlight in their study, preparation for use of new technology in education is crucial. In our context one student (student 1) proactively accessed Virbela beforehand to practice, despite the limited time available and other students, student 14, for example, commented in their feedback that a full pre-session dedicated to technology alone would have been useful. While constraints in 2020 made this challenging, feedback led to the provision of preparatory materials and early access to the technology in subsequent years, resulting in fewer issues overall. Some students also highlighted the time needed to navigate and control avatars within Virbela (student 2, for example) and challenges initiating conversations through the avatars.

This was in fact the most debated topic relating to the use of Virbela in the Hubs. On the one hand, as mentioned above, Virbela was used to offer more interactivity and flexibility than video conference tools like Zoom or Teams, which can lead to video fatigue or lack of personal connection when video is off (as student 18 put it, the “faceless nature of teleconferencing applications”). On the other hand, the use of avatars produced both positive and negative feedback. On the positive side, many valued the novel approach: student 2 said “it feels like you are in a classroom [...] it is more fun” and student 13 “felt

more connected to others...via the avatar and having the ability to move around"; for student 10 this enabled "a sense of togetherness, encouraged people to relax and even laugh". However, on the negative side, some criticised precisely the key characteristic of the avatars, i.e., the inability to see facial expressions and body language, affecting natural conversations. Student 7 explained this well, by saying: "I feel the conversations are not as natural...because body language and energy levels are not as easy to observe" and student 9 proposed switching to video calls for group work to "assess feelings/body language".

In the literature (Mora-Beltrán *et al.*, 2020, p. 51) Virbela is judged positively precisely for facilitating "social interactions" without "the pressure of face-to-face", as some of our students mentioned. However, both video fatigue and student preferences for keeping web cameras off are discussed in the literature as well: Gherhes (2021) even concludes that students' preference for keeping web cameras off often outweighs the benefits of seeing each other's faces.

In 2022, a significant change in the technology was introduced, with the deployment of telepresence robots used in tandem with the resumption of classroom-based Hubs in Birmingham for those willing and able to attend. The robots, displaying the user's face through a tablet, allowed for autonomous control over both communication and movement. This innovation served to bridge the gap between virtual presence and the dynamic, direct communication that comes with visually interacting with others, thereby diminishing the stark "hard binary" between virtual and non-virtual environments as described by Gourlay (2021, p. 58).

Some difficulties related to audio, internet connection and movement controls were mostly overcome in the first session. Student 18, 20, 24, 25 and 28 all connected remotely using the telepresence robots. Students 26, 27 and 19 were present in the classroom while their classmates were connected through the robots. Most overall impressions were positive: student 25 found it "a pleasant experience" and student 20 found it "very interesting experience" and "more immersive", while student 24 noted that: "I wasn't confident if other participants could hear me well [...]. I felt uncomfortable at times", even though, ultimately "I was heard every time I had something to say". However, the same student (24) also

remarked that “I don’t feel that we, as a team, performed well enough [because of] lack of contact with the team on campus”, student 26, who was present in the classroom, appreciated that the remote students “were able to speak as if we were in the same room”. Student 27, who was a first-year student in 2022, commented that “the event was more interactive than I had expected it to be” and that the students connected through the robots “were more involved and present compared to a standard video call”, even though they had difficulties sharing his handwritten notes with them for the group work. Student 18, who had participated in a fully online Hub in 2021 and was part of the hybrid hub in 2022, found that the robots “very effectively allowed a ‘real environment’ experience for the virtual attendees”. As the only student in the classroom for one of the 2022 sessions, student 19 still found “the interactions with fellow students [...] enjoyable and interesting” and the robots themselves “an impressive solution” and a “vast improvement” on the more traditional solutions alone.

Many comments across the cohorts highlight the appreciation for the social aspects that in-person activities allow. The opportunity to “talk to other students during break time or between activities” was something student 2 lamented the absence of in the online format. Student 23 was also very clear on this, by saying “it would still be better to have the hub in person” and on a similar note, student 10: “a face-to-face approach would have been a good opportunity to meet peers and lecturers”; and similarly student 8: “Always best in my opinion to have everybody co-located as this creates the best collaboration”; and, finally, student 22: “robots can’t drink coffee or real ale”, commenting on the fact that face to face in person interaction allows all those impromptu social contacts that online learning cannot fully provide.

These student reflections lead to the conclusion that the hybrid mode enables a higher quality of interaction, because it allows a more direct use of the “informal human contact outside the class” (student 22), while also enabling the students who cannot travel to participate in the activities. In 2022, the robots provided part of that face-to-face aspect that the purely online format, especially through the avatar system, did not afford.

Conclusions and further actions

While the virtual and hybrid versions of the Hubs were initially developed in response to the COVID-19 pandemic, they have since become a permanent feature of the IPM Master's programme. Based on our analysis, we conclude that the students have a positive view of the online and hybrid Hubs.

Some key takeaway findings from this work include:

1. There is a need for meticulous planning, especially when incorporating software not natively integrated within the given course system. This is particularly pertinent for part-time students who might use their company's equipment, as highlighted by the difficulties with Virbela and Frame VR. This element brings clearly into focus that the physical spaces and tools the students deal with in virtual learning are far from "undifferentiated neutral backdrops – they must always be managed, negotiated with" (Gourlay, 2021, p. 60).
2. Our part-time online students place a high premium on interaction. They greatly value the visual connectivity and prefer the benefits of seeing each other over any potential stress from video conferencing. They also treasure the social and academic opportunities provided by the Hubs (over 75% participation demonstrates this) and make an effort to attend in person whenever possible. Consequently, we should focus on leveraging technological solutions that bolster interaction and adopt hybrid approaches that increase physical student presence, echoing the sentiment of student 19 who advocated for "more students in the room." This aligns with the fundamental intent behind establishing the Hubs, and it is logical to continue pursuing this goal.
3. Intriguingly, students have expressed interest in utilising the technologies introduced in the Hubs in their professional settings to boost or refine online collaboration. As S22 eloquently put it, "in Industry 4.0... the project manager must always stay ahead, constantly evolving as technology progresses."

References

Dulamă, M.E. and Ilovan, O.R. (2020) 'Online university education during the COVID-19 pandemic. How efficient are the adapted instruction models?', *Journal of Educational Sciences & Psychology*, 10(2), pp. 92-111.

- Gherheş, V., Şimon, S., and Para, I. (2021) 'Analysing students' reasons for keeping their webcams on or off during online classes', *Sustainability*, 13(6), p. 3203.
- Goria, C. (2022) Hybrid Teaching: a futurist model or a realist model for the future? Available at: <https://www.qaa.ac.uk/docs/qaa/members/hybrid-teaching-a-futurist-mode-or-realist-model-for-the-future.pdf>. (Accessed 6 December 2023).
- Gourlay, L. (2021) 'There is no "Virtual learning": the materiality of digital education', *Journal of New Approaches in Educational Research*, 10(1), pp. 57-66.
- Johannessen, L.E., Rasmussen, E.B., and Haldar, M. (2023) 'Student at a distance: exploring the potential and prerequisites of using telepresence robots in schools', *Oxford Review of Education*, 49(2), pp. 153-170.
- Mair, G.M. (1997) 'Telepresence - the technology and its economic and social implications', *1997 International Symposium on Technology and Society Technology and Society at a Time of Sweeping Change. Proceedings*, Glasgow, UK, 1997, pp. 118-124, doi: 10.1109/ISTAS.1997.658870.
- Mora-Beltrán, C.E., Rojas, A.E., and Mejía-Moncayo, C. (2020) 'An immersive experience in the virtual 3D VirBELA environment for leadership development in undergraduate students during the COVID-19 quarantine', *Learning*, 6(7), pp.42-52.
- Mishra, L., Gupta, T., and Shree, A. (2020) 'Online teaching-learning in higher education during lockdown period of COVID-19 pandemic', *International Journal of Educational Research Open*, 1 (June), Article 100012.
- Norton, L. (2008) 'Action Research in Teaching and Learning: A Practical Guide to Conducting Pedagogical Research', *Universities* (1st ed.) doi: 10.4324/9780203870433
- Khan R. A., Atta K., Sajjad M., and Jawaid M. (2022) 'Twelve tips to enhance student engagement in synchronous online teaching and learning', *Med Teach*, 44 (6), pp. 601-606, doi: 10.1080/0142159X.2021.1912310.
- Salas-Pilco, S.Z., Yang, Y., and Zhang, Z. (2022) 'Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: A systematic review', *British Journal of Educational Technology*, 53(3), pp. 593-619.
- Salim, J., Tandy, S., Arnindita, J.N., Wibisono, J.J., Haryanto, M.R., and Wibisono, M.G. (2022) 'Zoom fatigue and its risk factors in online learning during the COVID-19 pandemic', *Medical Journal of Indonesia*, 31(1), pp. 13-19.
- Velinov, A., Koceski, S., and Koceska, N. (2021) 'A review of the usage of telepresence robots in education', *Balkan Journal of Applied Mathematics and Informatics*, 4(1), pp. 27-40. Available at: <https://js.ugd.edu.mk/index.php/bjami/article/view/4216> (Accessed: 18 October 2023).

Appendix 1

Participation in the Hubs by year

2020 fully online	2021 fully online	2022 hybrid
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y2 2020		
Y1 2020		
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
Y1 2020	Y2 2021	
	Y1 2021	Y2 2022
	Y1 2021	Y2 2022
	Y1 2021	Y2 2022
	Y1 2021	
	Y1 2021	
	Y1 2021	
		Y1 2022
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		Y1 2022
		Y1 2022
		Y1 2022

The students attending the Y2 hub online in 2020 had previously attended an on-site Hub for their Y1 – in orange in the table; the Y1 students in 2022 will not have experienced the fully online Hub at all – in green in the table. The students starting year 1 in 2021 experienced one online Hub and one hybrid hub – in blue in the table. The students who started Y1 in 2020 have only experienced the fully online Hub – in yellow in the table.