Existing Future Classroom Scenarios

1. **A Breath of Fresh Air (Outdoor Study Project)**: Learners go out into the school grounds to understand why the ladybird population has decreased in the last year. They gather data using a range of technologies to bring what they find back to the classroom. They create a short film to share and reflect on their findings.

   Outdoor Study project : video https://www.youtube.com/watch?v=jLeIqa8h4eo

2. **Biblio-High-Tech**: This is a 'physical-digital' library or hub for learning. Learners can use it individually whilst within the physical space, or virtually whilst in other classrooms or at home/other places. They can also use it in groups for class sessions. It is a flexible comfortable physical location with virtual reach to enable 'anytime, anywhere' learning.

3. **Insightful Instruction**: Learners choose an open project through which to develop their subject knowledge of a personal interest and their research and media production skills. In conjunction with subject specialists and experts, a programme of work is developed alongside criteria for assessment.

4. **Online Repositories Rock**: Learners develop their digital literacy competencies through a programme of work designed around quality online resources from museums, libraries and observatories. They compare these resources with those they find themselves online as a starting point to learning how to evaluate what is found and developing critical skills.

5. **Personal Learning Agent**: Teachers help learners to design a personal programme of work which fulfils the curriculum requirements and which builds on their prior knowledge, level of understanding of the subject and learning preferences.

6. **Out-Of-School Matters**: The aim of this scenario is to recognise learners' informal learning outside of school and formally accredit it. Learners are encouraged to upload any evidence of their increasing skills and knowledge in relation to personal hobbies and interests to an online portfolio where teachers can access this learning and accredit it where appropriate within the curriculum.

7. **Beam in the Expert**: Learners are asked to carry out projects in relation to environmental issues in order to make recommendations. They are required to engage with wider learning communities through contact with one national and one international expert in their chosen area. There are also encouraged to use these contacts to support language learning. Teachers have been supported to map these cross curricular projects to the curriculum and to accredit this work.

8. **Repositories and Responses: Reactive Teaching**: Teachers use technologies such as student response systems to collect numerical votes/open text responses in order to gain a better understanding of learners' knowledge and difficulties. From this, the teacher can better tailor teaching and learning to the students and provide them with opportunities for peer-mentoring. The teacher also draws on online resources held within an App Store to support learning.

9. **Supported through Change**: In this scenario, teachers are supported through the development of networks via which they can gain the expertise and benefits of working with other teachers. Technology allows for the networks to develop and teachers can share resources and ideas for developing teaching and learning within the same subject. Wider networks can also be developed which help teachers with assessing work, for instance, by drawing on the expertise of media teachers to assess multimedia work.

10. **Combining formative and summative assessment:** Teachers use a classroom response system to assess students' understanding and knowledge of a topic. This information is represented within a class wiki. Students are organised into teams to carry out research to address gaps in knowledge. Support for students comes from teachers, other students and experts via the "people bank".

11. **Developing collaborative approaches to learning about business:** Students design a business idea mapped to the school curriculum. They support development of their entrepreneurial skills and knowledge through real-life, authentic tasks. The student and teacher set up a virtual "hatchery" to hatch or develop ide- as supported by parents, local businesses and schools as well as the "people bank".

12. **Embedding exam preparation in learning activities:** The scenario provides both teachers and students with useful and innovative ways of using technology to build a bank of resources that can be used for ongoing learning and revision. This enables the teacher to introduce transferable skills and cross-curricular activities whilst still addressing the certification needs of the students.

13. **Mathematics in a multicultural setting:** This scenario uses the language of mathematics to improve participation and communication in a multicultural setting. Using simple and authentic questions and challenges, activities will be informed by research carried out by additional language students and worked through in multiple languages.

14. **Mentoring teachers to improve digital literacy:** This scenario supports action- based teacher collaboration and professional development through the fostering of students' and teachers' digital literacy. Through peer and network learning, as well as drawing on the expertise of students, teachers' digital literacy skills are developed.

15. **Our school, our environment:** Using technology to raise environmental aware- ness. This scenario raises students' awareness of climate change and how to manage energy use. It involves working with the wider community and active monitoring devices and other measures to estimate the school's carbon footprint.

16. **Professional development in the global classroom:** This scenario encourages teachers to become networked in order to support trying out and co-development of new innovative practices. Teachers give each other support across different countries and students have the opportunity to share their work in these alternative settings.

17. **Researching online social behaviour:** Students research online behaviour to share experiences with peers and develop an understanding and guidance for man- aging their online identity and activities. Students present their findings in the for- mat of their choice, for instance video, podcast, poster, presentation.

18. **Students creating science learning resources:** Students support one another to learn difficult concepts in science. They create their own "virtual science muse- um exhibit" alongside sample problems to teach a concept from the curriculum.

19. **Using multiple resources and technology to research a common topic:** This scenario develops students' skills to recognise what resources are appropriate and valid and when they should be used. It aims to challenge some students' overdependence on the internet.

20. **Designing maths games:** This scenario introduces students to the skills of computer programming and develops their mathematical skills through the creation of interactive games using simple, intuitive online programming software such as Scratch.

21. **Designing with multi-touch technologies:** The scenario supports student collaboration and comprehension of difficult concepts in design and technology through the use of multi-touch technology. The multi-touch applications students work on are networked to the main classroom interactive whiteboard so that each group's progress can be demonstrated throughout the lessons.

22. **Digitally mapping local biodiversity:** This scenario develops students' knowledge of local ecosystems and digital mapping skills through outdoor learning. It engages them in scientific understanding of the local area and in species identification via online repositories and interaction with experts. It supports them to use digital media effectively to communicate their knowledge and opinions to others.

23. **Home-school communications:** This scenario uses social media to encourage three-way communication about learning between teachers, students and parents/carers in order to begin to bridge the gap between home and school.

24. **Homework and school work "flip":** This scenario enables a radical transformation of activities, relationships and expectations by "flipping" the core element of the educational experience: school time and homework time.

25. **Schoolville:** This scenario uses the tools and principles from video game design and social networking to foster cross-curricular learning with an emphasis on citizenship.

26. **Virtual engines:** The scenario deploys simulation software to create virtual proto- types that behave realistically according to the laws of physics. This enables the possibility of recreating authentic conditions in which learners can experiment with decision making, problem solving and where learners can experiment with far reaching ideas in a safe environment.

27. **GPS Enabled Learning Games**: Using GPS devices to arrange geo-located treasure-hunts on school grounds, the search will lead to a location where puzzles and problems need to be solved.

28. **Supported through Change**: To support professional development of teachers using a model that combines cognitive apprenticeship (coaching) and peer teaching enabled by telepresence technology between connected IWBs.

29. **Hackspace**: To draw on the informal learning opportunities provided by HACKSPACE to increase creativity with an entrepreneurial spirit in the classroom.

30. **Audio/video Feedback**: Using audio-recording equipment to record feedback given to a piece of student work. The recordings are uploaded to the VLE. Students are given extra-credits if they access the recordings and if they can demonstrate that they acted on the recommendations. The recordings give clues and direct students to additional resources (books, web-based, etc.).

31. **Create a Model**: Using models and visualisations to support an argument or to solve a problem

32. **Digital producers**: Using digital media to create "broadcasts" of curricular work: presentations, classroom discussions and other school activities are

captured and recorded through various means, they are then edited and uploaded to the web or to the VLE.

33. **Mindmapping the soil**: To use mind-maps and related approaches as a powerful tool for learning, in particular to promote deep understanding while at the same time encouraging a cross-curricular approach.

34. **Digital tools for effective, engaging science**: Using digital resources to undertake tasks in STEM subjects which would be difficult or impossible to do in most classrooms or schools.

35. **IWB Journey**: To promote classroom level integration of IWBs

36. **ICT Journey**: To promote school level ICT integration

37. **Quadcopter with 3D printed parts**: In this project, already piloted in Austria, students must build a flight-capable drone (remotely controlled multicopter/quadrotor e.g. at http://quadcopters.co.uk) as part of their STEM lessons. When one or two model kits have been assembled, students design and construct a model using a 3D printer to create the parts. As students are motivated to make their model fly, they find out a lot about the required know-how through self-study. The combination of design, prototyping and practical implementation provides many opportunities for new teaching scenarios.

38. **Personalised learning paths**: The main purpose of the scenario is to improve student's learning experience, and ultimately students' knowledge and skills, by adapting learning paths to students' needs. There are different levels of adaptation. First, teachers work with students to assess initial knowledge and define personal learning goals. Second, interactive and adaptive software is used to adapt exercises to students' comprehension level and respond to emotional states during learning. Third, there is a global level adaptation where different groups of students will work on different subjects according to their interests to foster motivation and engagement. All over this process, students are encouraged to reflect on their learning and to create links between what they learn at school and the outside. Teachers guide students on their project and help them assess their learning over the school year.

39. **Message in a bottle**: The main participants are members of a class and their teacher – although others, e.g. parents, experts, the local community can participate. The scenario also encourages collaboration between student groups on an international level. Groups of pupils create puzzles (messages in a bottle) to other groups and hide them with the help of geolocation technology in the area. Teachers are mainly coordinators while students create, collaborate, evaluate and self-assess during the mini projects.

40. **Coding to learn**: In this scenario there is a collaboration between teachers and initiatives developed by organizations and private individuals in the IT sector, such as Let's Teach the Kids to Code in Norway (http://www.kidsakoder.no/), or Computer Clubs for Girls (http://www.cc4g.net/) and its aim is to arouse interest in coding among children and adolescents. The reason is that there is a huge need for knowledge of coding and programming in the labour market, but this is not reflected in school subjects and curricula. In Norway the Let´s Teach the Kids to Code is in the process of establishing a collaboration with the local after- school programme, where students at the lower secondary level teach those at the primary level how to program games with the aid of visual programming languages such as KODU and Scratch.

41. **Restructured school**: The school day and curriculum has been adapted in this scenario. Older learners (those 13 and over) no longer need to be at school from 8:00 and leave at 15:00. Instead they have a specific two hour slot in which they have to attend. For the rest of the school day they work on projects or in a flipped classroom. Learners also collaborate during the week with other students that are working on the same project, or working to prepare for lessons after flipping. Furthermore students can decide where they need to go in order to fulfil their assignments, e.g. to the city, park, forest or library. Learners can borrow instruments and tools when required from the school. The rationale for this is so that learners can cope with the big amount of information there is around, and how to use it in their projects. It allows learners to explore and create things and to collaborate and be taught or teach their peer

42. **Online tutors**: This scenario describes an instant digital tutoring project using smart phones. A teacher is available online for each subject throughout the day. Students open the instant tutoring application on their mobile device and choose the subject they need help with. They then post their questions to a forum and the teacher answers. Because the answers are saved all the other students can see the questions and answers and learn from them.

43. **Flipping the teacher: A teacher/student tech club**: In this scenario teachers and students learn 21st century skills together rather than teachers learning as personal development. Those students with technical skills publicise them within the TechTutors skills bank. These TechTutors can be assigned to either a younger student group or a teacher or class that wants to develop that skill set. The TechTutors are also encouraged to work with the teachers at the lesson planning stage suggesting how they might harness technology to assist in the delivery or assessment of the lessons. Advanced and willing students are encouraged and provided specialist training in IT and networking areas using curriculum developed by CISCO, Intel and others. They are given time to shadow visiting

technicians, who are actively encouraged to share their skills with students. They also identify and organise appropriate personal training for teachers and interested students in relevant technology that they deliver in an after school club type environment. Ideally the school would work with a local IT training company to provide student TechTutors with a basic IT competence qualification.

44. **Students designing demonstrations**: In this scenario an Assessment Design workshop is held as part of a major curriculum review. Students are actively involved from the start as stakeholders and seen as valuable co- contributors of ideas. Working in small teams comprised of teachers and student representatives during a "learning development day", they develop new example assessments for various types of learning activities that allow students to show their understanding of concepts and ideas. There is no presentation of ideal assessments or traditional models. Groups are instead presented with a simple question…. "*How could you best show your deep and wide understanding of this topic to others?"*

45. **The food challenge**: Teachers collaborate to design a game fulfilling multiple curriculum requirements in this scenario. Each teacher creates a couple of challenges. Students use their own devices to find the QR code and access the task. Then as a group they have a week to solve the mystery – with the option of involving external experts – to score points. At the end there is a final challenge to prepare a presentation, animation, video, etc. ... that should teach students in primary or lower grades, about healthy eating using the material they've learned.

46. **Pollution everywhere, collecting data**: In groups students will be asked to research and prepare an interactive presentation around pollution. They collect data out of school with their devices: e.g. digital cameras, mobiles, tablet. Teachers also ask students to collect different samples of surrounding water to be analysed later on using the microscope. Students collect water from the nearby lake, water from rain, and water from home. All samples are recorded and captured with the document camera and shared between all groups. Students use social media or blogs created also to share their experiences and teacher uses the school web or LMS to share the resources with the class.Each group will record their final presentation using the document camera and the teacher will keep all this material for evaluation and for next year to use as a class resource that could be used to flip the classroom.

47. **History in my community**: The scenario is set both in and out of the classroom, *and* in both the physical and virtual world. It uses ICT tools to facilitate collaborative work and will evaluate students' attitudes, processes, skills and results. In teams students identify their own subject knowledge around history using predefined topic areas. Then each group elaborates on one topic, sharing their findings in an appropriate format. These are then used

to create a virtual model of the town. Finally this is linked to the real locations using augmented reality via QR codes.

48. **Applications for solutions**: Students work in groups or individually to tackle real problems – often going beyond traditional subject competencies and institutional boundaries - identified by those in the local community with teachers and local businesses acting as mentors and facilitators. Students are expected to work closely with the wider community who provide feedback on their solutions and identify areas of importance to work on (this is an adaptation of the crowd sourcing model). It requires application development software, 3D printers and other prototyping equipment to generate solutions. But a key feature is the assessment process in which the products are presented physically in an exhibition structure as well as online, allowing constant review by all interested parties and as a resource to future students as well as a public portfolio for students.

49. **Developing for developers**: This scenario goes beyond the school boundary and aims to make the learner (working in groups or individually) a designer of their own learning journey. Local software companies act as mentors and provide a "real" working environment with teachers working alongside them. While they tackle an identified problem using business techniques the schools become a resource for students. Students are expected to integrate multiple subjects to develop solutions, and then prototype these – for example by using a 3d printer to produce something solid if required, or by producing wire frame models or mock ups of functionality. They constantly document progress which is reviewed by the local community, peers and teachers and at the end formally present and explain their solutions to interested parties.

50. **Robot helpers**: Robots and screen devices to support the flow of activities, content and data, which gives the teacher and learner timely data on learners' experiences and achievements. The focus in this scenario is on using such technology to assist in the teaching of modern foreign languages. A key feature is the agile learning as the system responds directly to feedback from the students.

51. **Community video challenge**: The students are responsible for addressing a real task, for example the organisation of their school fair; they have autonomy but the opportunity to work with teachers and the community as mentors to complete their task. They have to work effectively together and structure their time appropriately. To document the best practice and explain their choices students must choose the technology (video cameras and editing software, blogs, web development software, video clips, animation software). After the event they review it and incorporate feedback into their presentations. These are then tagged and published.

52. **Productive project work**: This scenario is dependent on ubiquitous and shared computing and the ability to access external resources as well as student portfolios linked to analytics. The students select their own projects and learning objectives across subjects with teachers acting as facilitators rather than as lecturers. In the projects there is a high degree of peer learning and feedback, with teaching and learning distributed – being organised around the learner who is expected to work in and out of the school environment.