
SCHOLA LIBERUM

a free school for the third millennium



Project Proposal

Prepared by: Professor Stephen Heppell, Juliette heppell and team
Wednesday, 8 June 2016
draft proposal for comment and conversation

OPPORTUNITY

Schola Liberum: a new model of free school, for this third millennium

"Just imagine it - within walking distance of your front door. A small school - where the teacher knows every child's name..."

Michael Gove, 2010

"I really believe that individuals have a lot more sense than people give them credit for. Parents know what is best for their children, so if they are unhappy with what is on offer, why shouldn't they be free to set up alternatives?"

Rachel Wolf 2009

"Much of the problem-solving work carried out in the world today is performed by teams in an increasingly global and computerised economy. <- - -> Moreover, with greater availability of networked computers, individuals are increasingly expected to work with diverse teams spread across different locations using collaborative technology"

PISA 2015: collaborative problem solving framework

"In terms of the overall quality of education, inspections show that pupils in small schools are not disadvantaged in comparison with those in larger schools because of the size of school. Small schools are equally capable of providing an effective education and many are among the most effective in the country."

OFSTED 2000

Raison d'être

A perfect storm of opportunity makes this possible, affordable, desirable and achievable, now:

- a considerable growth in the technology of, and potential for, on-line tutoring and tech-rich learning
- a real concern that "there are many more children hidden away from the view of the authorities in unregistered schools across the country than previously thought"¹
- some localised but significant school place shortages
- a global move towards valuing project based learning and collaborative problem solving at a distance²
- an economic skills need for connected, collaborative, problem solving, and project based teamwork
- a commercial pressure to create on-line academies and other learning institutions that needs a UK based, controlled, trusted pilot to evolve governance, protocols and processes

¹ Letter of advice from Sir Michael Wilshaw to Secretary of State for Education, 16th May 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/523694/Unregistered_schools_advice_note_16_May_2016.pdf

² <https://www.oecd.org/pisa/pisaproducts/Draft%20PISA%202015%20Collaborative%20Problem%20Solving%20Framework%20.pdf>

- a dissatisfaction, for some, in the breadth of existing school choices available - perhaps signalled by a significant (60% over 3 years) growth in home education³
- a concern about teacher shortage - particularly in some important subjects, alongside a growing pool of ex and retired teachers, still fond of their subject and age specialisms

This “perfect storm” of opportunity coincides with the group proposing the “Schola Liberum” free school coming together with a uniquely long and trusted track record in all the key cornerstone areas it embraces, and with a proven history of taking important learning projects to scale; these are safe hands and the timing is right to allow them to collaborate.

Lead Responsible Adults (LRAs), and others

From a participating parent we would seek a commitment to train and attend on a tightly timetabled regular basis as the Lead Responsible Adult (LRAs, these are not teachers) and there would also be a rota of committed “helpers”. We anticipate that grandparents might be a substantial party of this helper team. Everyone involved would need ICPC/DBS clearance of course. Many parents will also host Learning Clusters (see below). Typically commitment would be one full day a fortnight, or a half day a week, plus training and development evening sessions. We believe that for most this can be congruent with their employment. Learning Cluster children will have a regular schedule of hosted spaces, supplemented with work elsewhere, for example in museums, libraries, local businesses, and Base Camps.

Mapping the timetable, personalised learning plans, LRAs, helpers, a full curriculum, personal tutor support, on-line experts, visits, projects, peer support and opportunities onto daily schedule of Learning Clusters is complex but is a technology challenge. It is complex, but possible. Effectively we will provide a turnkey solution for any new Learning Cluster with a manual of operation and a set of protocols.

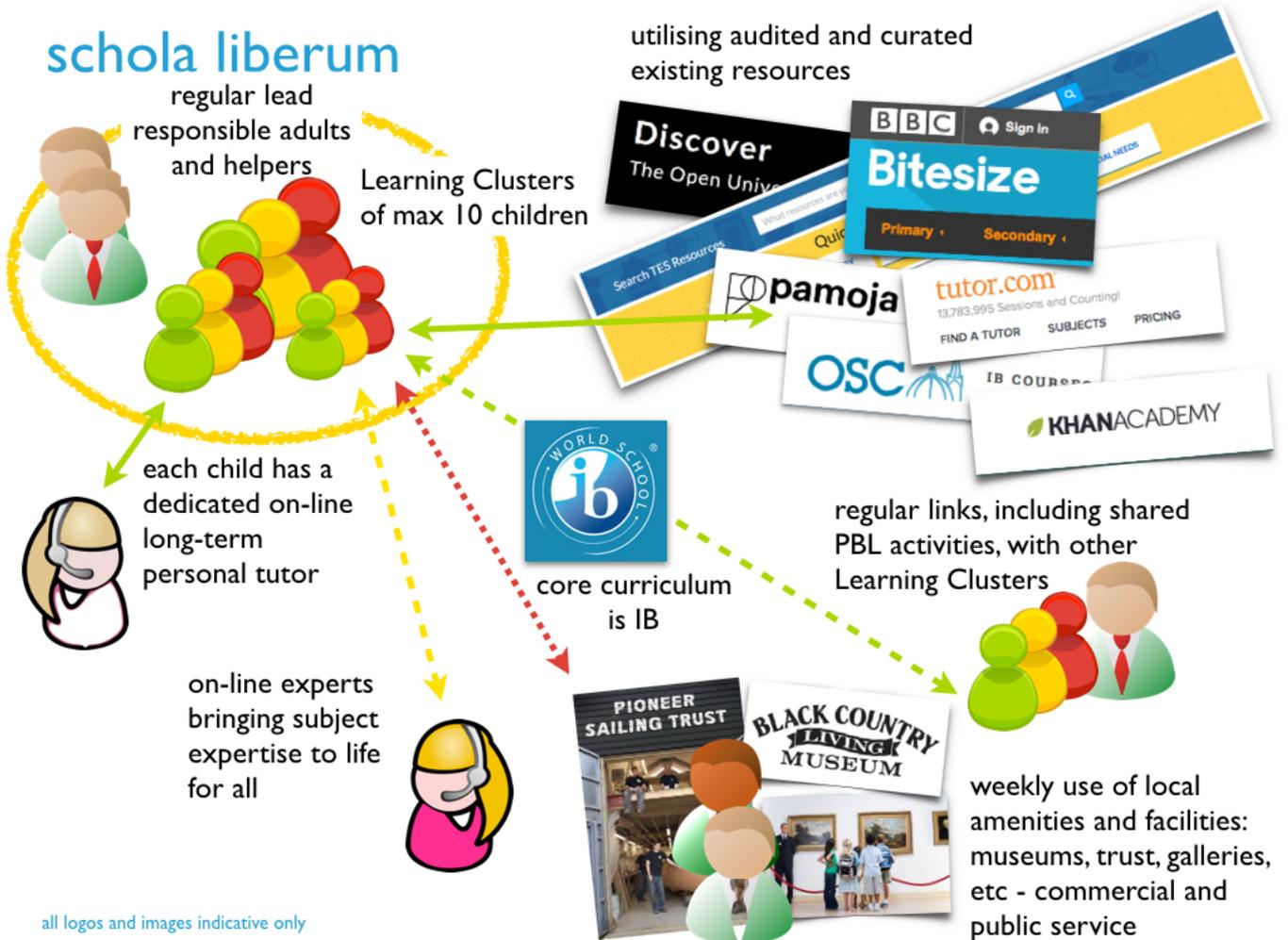
Central core team

At Schola Liberum’s centre a small core team will manage the detail, data, statutory requirements and scale planning of all this and will also be part of a constant regime of quality assurance, observation, progress and advice. Initially our core team will be centrally involved in the set-up and evolution of our two pilot Learning Clusters. The overall institution will thus have a nominal “headteacher”, a content and pathways manager, a CTO, and governance through a conventional representative governing body. Obviously with scale this core team will grow slightly but the marginal cost of roll-out will fall very quickly.

Learning Clusters

Alongside the manual of operation and protocols (see above) we will be prescriptive about some of the details and minimum requirements for each Learning Cluster. Those prescriptions will include ambient details (light levels, ventilation...), furniture configurations (we do not want to create miniature 1970 classrooms in people’s front rooms!) and technology (in terms of access, bandwidth, shared screen opportunities and more). These might require small, simple but very affordable changes to space. Again, a manual of preparation will be available to Learning Cluster hosts. All LCs will operate on a Use My Own Devices (UMODs) basis.

³ the number of primary-age children recorded as home educated rose by 60% in the three academic years to 2014-15. In the secondary phase, the increase was 37%.



Summary

A technology rich part-virtual free school, fully within the relevant inspection framework - but without a substantial capital investment, using local premises in homes, vacant retail space and local facilities, with multiple and connected, tiny but supported, communities of mixed age learners (Learning Clusters), following the International Baccalaureate curriculum, using on-line tutorial resources, but with personalised tutoring support, harnessing adaptive learning where appropriate, often supported by retired / exited teachers and other subject professionals (including in-work specialists).

The local premises would be supplemented by the use of existing public sector and other facilities: museums, parks, employment internships, botanic gardens and more. Over time the growth of a series of Base Camps (the concept of Field Centres would be indicative) would allow immersive learning (including overnighting) in alternative contexts, offering a broader socialisation experience.

This is not a subset of what a school should be but a superset that equips its students to be effective, connected, qualified, employees, parents, citizens & entrepreneurs in this new millennium, offering more, not less, but differently.

12 project cornerstones

1. **Very local learning clusters.** Around 10 children, one responsible adult⁴ at any time plus their nominated “helper”. Very local, indoor, outdoor, in other premises (museums, libraries, parks...), workplaced, agile.
2. **All adults involved are DBS or ICPC cleared,** including participating parents.
3. **Funding is built around the AWPU** with supplementary factors where appropriate and available. This would include Pupil Premium and post 16 funding. Although Capital requirements are minimal, there are other new costs associated with a substantially on-line component and other costs (for example teachers’ pension contribution) will be different, and will need to be modelled and explored. In essence, this should not cost more than conventional state education but should cost less.
4. **Students know each other very well** - very much a learning “family”. Each child has a dedicated on-line tutor who is personal & long term too.
5. **Learning is personalised,** stage not age, ambitious and prioritised.
6. **Learning is grounded** - a substantial focus on applied learning meeting locally defined needs whilst giving curriculum relevance at all times. Substantial amounts of learning will be in the community, through internships and workplace experiences, in local organisations and facilities. There is an expectation that children will spend 40% (around two days per week) of their time applying learning in external activities; that would included playful learning especially for the younger age children.
7. **Mixed age** and **Stage not Age.** Clear research favours both. With tiny numbers in each Learning Clusters these are natural organisational principles anyway. The age range is 2 - 18, although 0 - 18 or indeed to 21 (graduate) may be possible in later stages. In the first instance, cohorts in Schola Liberum’s Learning Clusters will be targeted at 4 - 14, although older siblings would not necessarily be rejected. Those initial cohorts would then grow through to our ceiling age.
8. **Transparency.** Placing particular emphasis on celebration and exhibition the work milestones of children progressing through Schola Liberum will be exhibited and evident at all times. This applies between Learning Clusters as well as within. Communities will see and know what learning is occurring.
9. **A designedly global focus** (very much in line with Pisa 2018) with a clear intention to provide our children with the remote working and trans-cultural team based capabilities needed for active participation in employment, citizenship and community going forward into this century. We anticipate Learning Clusters in multiple countries as we progress.
10. Schola Liberum will use **existing resources.** There is no intention here to become a bespoke publishing house. Our conviction, and considerable experience, is that there are very many on-line resources: free, charitably provided, or commercial. Any and all of these can provide significant personalised pathways but need careful curation and auditing for relevance. Additionally, adaptive testing and other personalised resources should, and can, play a part. This field is changing rapidly at present.
11. This model is different, but it is **not a subset of existing school opportunities.** It is a different set and we think that for some it is a better set.
12. **Cost per student is no greater** than for traditional state school and could well prove to be cheaper in that there is no major capital requirement at all.

⁴ ICPC / DBS cleared

The core development team:

Professor Stephen Heppell

Described by the Department for Education and Skills (DfES) in 2006 as "*the most influential academic of recent years in the field of technology and education*", Professor Heppell holds The Felipe Segovia Chair of Learning Innovation at Universidad Camilo José Cela, Madrid, the Chair in New Media Environments, Centre for Excellence in Media Practice, Bournemouth University, and the Emeritus Chair in New Learning Environments, Anglia Ruskin University. In 2006 JISC were kind enough to say that "*Stephen has a vast portfolio of successful, large scale, learning projects behind him*".

Stephen has very considerable relevant experience including former lead sponsor setting up what has now become the Island of Portland Aldridge Community Academy (IPACA), now successfully housed in repurposed and converted buildings; chair of the current government's Education Technology Action Group set up at the behest of Michael Gove, Matthew Hancock and David Willetts; founder and former chair of the Inclusion Trust for children excluded from school by circumstances or behaviour; founder of the Information Technology in Teacher Education group ITTE; Thinker in Residence at Mark Oliphant College, South Australia with it's state leading gains in student performance.

Stephen also sat on Graham Badman's 2009 Review of Elective Home Education in England for the then Secretary of State for education.

A fuller biography is at <http://rubble.heppell.net/heppell/quickbiog.html>

Professor Lucy Hooberman

Lucy Hooberman is an experienced media (digital and mass media) executive who has held strategic posts as well as delivery /production posts.

Lucy Hooberman is currently Professor and Director Digital Media & Innovation at the University of Warwick. She was previously the BBC Future Media and Technology Division's Innovation Executive/Executive Producer Innovation shaping the BBC's on-line thinking and practice. Substantial projects included:

Local to Global: Managing all the digital strategic research needs of two huge divisions (Nations & Regions, and World Service) as they integrated content in 35 languages into regional and national programming based on language needs of the UK's diverse communities;

Arts Online: User focussed research and analysis of what the public meant by the Arts which lead to a revisioning of all BBC's digital Arts assets to meet the needs of audiences, Learning and and governance needs;

BBC Blog Platform: Leading six divisions to agree to experiment with Blogging first internally then externally and rolling out the BBC Blogs platform.

Lucy began producing factual programmes at Channel 4, before Executive Producing and commissioning factual programmes for the BBC. Her responsibilities also included editorial and financial flows, compliance and delivery. Working with lawyers, finance and other stakeholder departments.

Professor Hooberman was the co-founder of Warwick Creative Exchange with Warwick Business School and the Centre for Cultural Policy Studies. A new network to derive research collaborations between education and the creative economy. Lucy's keynotes, book chapters and experience of content creation and curation are respected worldwide.

Juliette Heppell

Juliette Heppell is an "outstanding" rated teacher in an "outstanding" rated London state school. Juliette leads a department, is also a professional coordinating mentor (responsible for all routes into teaching within her school) and works as an education consultant with a number of British companies, including the BBC. Juliette has been a lead teacher within the London West Teaching Alliance, working with other lead school mentors, leading mentor training and both helping with and running both the outstanding teacher programme and the improving teacher programme. She has helped develop a school scitt program, worked on the Teach First, Troops into Teachers, and schools direct programmes, as well as traditional PGCE routes and older programmed (like GTP) with a number of London universities. She holds a higher degree in 'Leading innovation and change in education'.

All of her projects are centred around learner voice (student, trainee teacher, new teacher and established teacher groups), of which the most widely emulated in schools around the world has been her work on her students' own student led redesign of their learning environment. Juliette's detailed narration of the impact of this project in her (free and five star rated) iBook "Designing a learning space" has been widely read worldwide and much valued.

Juliette's work identifying safe and secure ways of innovating with social media within the classroom - which itself led to a substantial Nominet Trust research project - and her early embracing of mobile technologies have evidenced a pathway that engages the disengaged student and parent, supports improving teachers and accelerates coasting students. Juliette's remarkable students have debated live with UK ministers, have Skyped around the world in support of others, have electrified vice chancellors with their vision of what university life might be, and above all else have succeeded academically where circumstance predicted that they would fail.

Juliette's inputs to conferences, TeachMeets, national media, to CPD and to university courses are eagerly anticipated in the UK; her advice is sought by everyone from the education publishers to individual parents.

Carole Chapman

Carole worked directly in education for 20 years, as a teacher, a department head and a senior leader in London schools before moving to Essex LA to administer and deliver alternative education programmes.

In 2000 Carole moved to a university department where she worked in educational research before leading a project for the DfES and National College of School Leadership, in collaboration with the London Leadership Centre, to develop the new online National Professional Qualification for Headship.

In 2004 Carole project managed a Culture Online collaborative project "Every Object Tells a Story" alongside Channel 4 and the Victoria and Albert Museum. The highlight of this project was the 'video taxi' which drove around the country, including visiting and succeeding in some of the least accessible sites, for example traveller camps.

From 2005 - 2009 Carole worked as 'Head of Research and Evaluation' at Notschool.net where her responsibilities included delivering monthly research reports to DfES, developing a suitable 14 - 19 curriculum for young people at risk and liaison with examination boards, care homes, schools, local authorities and third sector organisations.

Since 2009 Carole has carried out research and written research papers for a framework 7 EU project on 'Mobile Technology and Disengaged Learners', advised Academy bodies and other learning organisations on the specification and design of learning spaces, worked with the Nominet Trust on the 'cloudlearn' digital research project, advised and supported the development of inclusion projects worldwide including in Sweden, Ireland and New Zealand and advised schools on the implementation the new Computer Science curriculum.

From 2011 - 2013 Carole worked on an Academy governing body as the school governor responsible for inclusion and vulnerable children.

Indicative timelines

There are two planning cycles, effectively:

The first cycle is intensive and takes two Learning Clusters through the first two years of an evolving Schola Liberum.

Then, having clarified and controlled the per capita marginal cost of growth, the second “roll out” cycle seeks substantial scale.

The first children on-roll would begin their learning in September 2017, the project would move to substantial scale from September 2018.

Because the free school is distributed, virtual and does not need capital funding for building or conversion work, these timescales could shorten with higher levels of initial support.

Planning and consultation phase - is where we currently are. A broad range of inputs has been sought, ranging from James Penny (formerly ICT lead for the Harris Group of Academies and then Solutions Director at academy ICT infrastructure provider European Electronique (James has considerable experience of bespoke independent and online schooling), to Phil Brown (Executive Officer and Lead for the Australia’s Country Education Project supporting the provision of education within rural and remote communities for over 35 years).

This planning and consultation phase phase closes at the beginning of the Autumn Term - September 2016

12 month detailed design phase - covers the next full academic (Northern Hemisphere) year 2016/17.

This detailed design phase would:

- lay down an instruction manual;
- specify necessary details for FF&E;
- identify and contract subject specialists and evangelists;
- build the complex distributed model of governance and organisation;
- properly model the organisational finances, central and local;
- gauge further international interest; map and narrate an anticipated curriculum;
- develop several indicative “day in the life” scenarios;
- continue a parental dialogue through individual conversation, focus groups and existing communities;
- continue a student dialogue through individual conversation, focus groups and existing communities;
- develop a Q&A database of answers (and questions) for interested parents, students and others.

Obviously, we are seeking support for this 12 month detailed design phase.

Identification of four Learning Clusters with personal tutors, responsible adults, locations, etc. This phase will occur in parallel to the detailed design phase, starting September 2016 also. The first two pilot clusters, one coastal community and one inner London (for both contrast and to meet needs) would be joined

within the year by two further clusters. The initial register of, and training support for, on-line professionals (subject specialists, personal tutors, etc) also occurs as a pilot activity within this year.

Curation and auditing of resources for relevance will be an on-going task throughout the life of Schola Liberum. There is such a wide choice of materials available that the job of curating and auditing resources and, where necessary, mapping a value for money judgement against outcomes, will be ongoing throughout the life of Schola Liberum. Within the team we have very high levels of experience of making, judging, using and versioning resources. Allowing the extended membership of Schola Liberum to play a part, students included, will need protocols and development support.

Again we are seeking support for this important phase as we set up.

Technology infrastructure. As mentioned above, we will provide a turnkey solution for each new Learning Cluster, with a manual of operation and a set of protocols. That is a complex but very achievable technology task, particularly because we will design at the outset for substantial scale.

We are seeking support for this important phase as we set up.

Evidence and experience base

Of course, nobody has done this before. But Schola Liberum builds on extensive experience and relevant research. Many of the ingredients have been successfully implemented before, but the recipe is fresh.

Perhaps we should start with small scale. Research indicates that there may be many benefits from smaller learning communities (Supovitz & Christman, 2005; Howley, et al., 2000). Their most important identified benefits include:

raised student achievement; increased attendance; elevated teacher satisfaction; and improved “school climate”

Small schools may also be especially important for disadvantaged or disaffected students by offering more individualised attention and with teacher agility offering a variety of approaches. Also, smaller schools may promote substantially improved achievement and higher graduation rates (Howley, et al., 2000).

Another report (Lawrence 2002) suggests that small schools can be more cost effective than large schools

A more recent review of research studies found that small schools lead to better education outcomes than large schools [Leithwood & Jantzi 2009]

In terms of our own direct experiences, more than ten years of setting up, and then chairing, the DfES funded Notschool project for children who were excluded from school by circumstances or behaviour, drew attention to these significant and documented learning gains:

improved levels of literacy; improved social skills; improved self confidence; improved self esteem; above average development of ICT skills; collaborative working; exceptional technical skills and a better fit to accreditation.

Obviously the Notschool children were complex and difficult individuals. Nevertheless, the external evaluation report for the DfES in 2005 commented:

"Notschool.net cultivates communication leading to collaborative working skills within a virtual community. This is increasingly a 21st Century work environment."

"Of the 2004 – 2005 cohort of Notschool.net researchers 50% moved into further education, 26% entered college related employment and 18% entered full time work"

"Many of those Notschool.net researchers who entered the project showing little evidence of literacy, have demonstrated substantial gains through increased self-confidence in expression, spelling and keyboard skills."

There is much literature on small scale education. For example the top seven beneficial factors rated by Principals of small rural schools⁵ were:

- high expectations for all students;

⁵ Journal of Research in Rural Education, 2007, 22(1) "Rural school success: What can we learn?"

- Structural supports for learning;
- use of student data;
- alignment of curriculum, instruction and assessment;
- individualisation of instruction;
- teacher retention;
- professional development.

With conclusions pointing to the impact of the community-school relationship in providing support for the high academic expectations found in each of the case studies examined.

Similarly the Rural School and Community Trust paper “The Hobbit effect: Why Small Works in Public Schools⁶ identified these reasons “why small works”:

Ten Research-based Reasons Why Small Works

1. There is greater participation in extra-curricular activities, and that is linked to academic success.
2. Small schools are safer.
3. Kids feel they belong.
4. Small class size allows more individualized instruction.
5. Good teaching methods are easier to implement.
6. Teachers feel better about their work.
7. Mixed-ability classes avoid condemning some students to low expectations.
8. Multiage classes promote personalized learning and encourage positive social interactions.
9. Smaller districts mean less bureaucracy.
10. More grades in one school alleviate many problems of transitions to new schools.

which is very much in line with our thinking too with its espousal of mixed age, stage not age, agile learning making up what is evidently an effective model of education (twenty-one of the top 100 chief executives in Australia attended small rural schools for example although those schools account for less than 8% of national school roll).

Where much debate in the last century - and policy decisions - circled around the cost of tiny learning communities, a step change in this century has been both the affordability of communications **between** small learning groups, alongside a compelling and widely articulated economic case to develop the “21st century skills” of collaborative endeavour, project approaches, communication and peer support. Economies of scale of operation no longer equate to economies of scale of shared location.

⁶ Lorna Jimerson August 2006

The team's track record with on-line learning goes back to the 1980s with teletext and electronic mail based learning communities, including fully on-line degree courses. Since then, major on-line projects have included the (then) Guinness world record largest internet learning project in the world with the Tesco funded Tesco SchoolNet 2000 (TSN2K), placing every headteacher in the UK into a 21,000 strong community of practice Talking Heads, the Orange and QCA sponsored eVIVA⁷ innovative "blue skies" pilot project using mobile phones, voice recognition technology and the Internet to support formative and summative assessment across 7 schools for three years, and much more.

Each of these and other ambitious projects yielded a lot of understanding and many salient pieces of advice, from the central role and nature of facilitation, through the evolution of face to face relationships whose genesis was virtual, to the nature of questions and conversation starters in on-line project communities. We have also learned successfully how to take these projects to a very substantial scale, safely but quite rapidly.

This accumulated detail and experience allows us to quick-start the Schola Liberum project, safely.

⁷ <http://rubble.heppell.net/archive/eviva/default.html> qualifications and curriculum authority QCA "The eVIVA project"

Terror and bombing attacks on schools: a Plan B

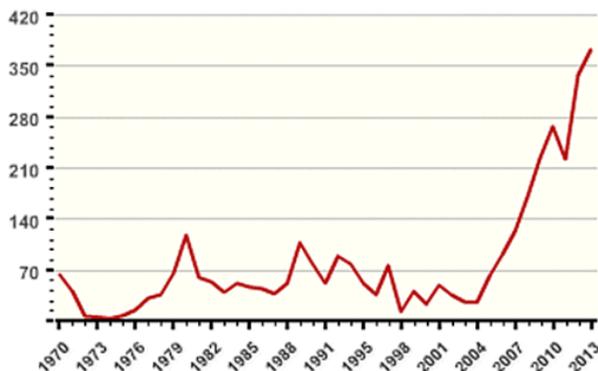
Initially, the section below was redacted from our public facing documents - we didn't want to encourage a worsening of what is reported below. But our proposal was put in June 2016 and we are still waiting for any progress. As we wait, the danger has grown:

In the words of the December 2017 UNICEF press release, children have become frontline targets in conflicts around the world. Manuel Fontaine, UNICEF Director of Emergency Programmes, comments that "As these attacks continue year after year, we cannot become numb. Such brutality cannot be the new normal".

We think Schola Liberum has a significant role to play both in child safety in dangerous regions and in providing a rapidly scaleable Plan B in regions seeing any dangers increasing, including pandemics. Therefore, we are opening this section to public gaze - it was written in June 2016:

Put simply, the incidence of attacks on schools has increased very sharply since 2004.

Researchers at the University of Maryland have recorded attacks on education between 1970 and 2013. The Y axis on this graph shows incidents, the X axis shows years. You will note the step change.



The last 12 months in particular - throughout 2015 - have seen a series of extremely bloody attacks on schools, colleges and universities. Clearly for some, hurting a culture or a community now embraces hurting its schools. This extends well beyond war zones.

There is a possibility that this will become a European problem. Arguably, a number somewhere around 2 or 3 bombed schools in any one country would be enough to stop many parents releasing their children to school for what may be a substantial period of time. Currently there is no Plan B for allowing education to continue in such appalling circumstances - the economic and cultural cost would be incalculable, but presumably that would be the intention for whatever reason. There are multiple reasons; Boko Haram (the popular short name for Jama'atu Ahlis Sunna Lidda'awati wal-Jihad in Nigeria) roughly translates as: "Western education is a sin".

Additionally the possibility of a pandemic is real and increasing - either accidental or as an act of aggression. The W.H.O. point to a study in the United Kingdom ((Sadique MZ et al., 2008) estimating that, overall, about 16% of the workforce would be likely to be absent due to school closes in a pandemic with a substantial impact on economy and society unless an alternative exists.

One contribution from Schola Liberum would be to share a set of protocols and structures thus allowing an alternative, hopefully temporary, but supported home based learning to step into the gap in the short term. A kind of pedagogic Civil Defence.

In conclusion

This is an experienced team, with an outstanding track record; we are offering this confidential draft proposal for comment and conversation.

Perhaps it is enough to observe, as so many have lately, that the world's largest taxi company, Über, owns no taxis, the world's largest provider of short term accommodation, Airbnb, owns no buildings, huge retailers Amazon and Alibaba carry no stock and have no outlet premises, whilst the largest 'phone conversation provider, Skype, has no telecoms infrastructure. So a school without its own premises should not seem so surprising. Accommodation, connectivity and resources are all out there.

Schola Liberum seeks to build affordable, effective, scalable and exceptional learning opportunities from those pre-existing resources and from proven experience.

GLOSSARY

this section still to be completed - a task for the 12 month detailed design phase.

our shared experience as a team is that agreement on terminology goes a very long way towards building a cohesive project. Our terminology would include definitions, and perhaps better terms, for:

learning clusters

base camps

on-line learning

on-line tutorial support

International Baccalaureate (IB)

responsible adults

assisting adults

stage not age

mixed age

peer support

longitude based collaboration

latitude based collaboration

...and more

READINGS

References not previously footnoted

Howley, C., Strange, M., & Bickel, R. (2000). Research about school size and school performance in impoverished communities. (Report No. EDO-RC-00-01).

Lawrence, Barbara Kent, et al. (2002)

Dollars & Sense: The Cost Effectiveness of Small Schools. (pdfsmall.gif PDF, 44 pp) The Small Schools Project.

Leithwood, Kenneth and Jantzi, Doris 2009. A Review of Empirical Evidence About School Size Effects: A Policy Perspective. Review of Educational Research, 79 (1): 464-490

Supovitz, J.A. & Christman, J.B. (2005). Small Learning Communities That Actually Learn: Lessons for School Leaders, Phi Delta Kappan, 86(9), 649-651.

Talking Heads facilitation team. July 2002, Two Year Research reflections. http://rubble.heppell.net/talking_heads/media/Talking%20Heads%20Report.pdf