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VIRTUAL SCHOOLS AND COLLEGES

Providing Alternatives for Successful Learning

VOLUME 2

VIRTUAL SCHOOLS AND COLLEGES

PROVIDING ALTERNATIVES FOR SUCCESSFUL LEARNING

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Virtual Schools and Colleges
Providing Alternatives for Successful Learning
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VIRTUAL SCHOOLS AND COLLEGES

PROVIDING ALTERNATIVES FOR SUCCESSFUL LEARNING

VOLUME 2

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1. INTRODUCTION

Virtual schools and colleges are an increasingly important alternative for students and are becoming more and more prevalent all over the world – including Europe. But little is known in Europe about how they operate or what makes them successful. This two-volume handbook will provide you with a sound understanding of virtual schools and colleges, provisional policy recommendations to support effective virtual schooling and information about where you can find out more.

Outline of the Handbook

The handbook is divided into two volumes. This book is Volume 2. It contains an Introduction (this chapter) and chapters on:

- Good Practice in Online Learning
- Teacher Training
- Critical Success Factors
- Policy Recommendations
- Conclusions
- References

Detailed Outline of Volume 2

Good Practice in Online Learning

Based on a survey of the literature on innovation and good practice in virtual schools (undertaken in 2011 and then updated in 2012), this chapter seeks to provide general analysis and preliminary recommendations for innovative good practice in piloting and developing virtual schools. It includes the results of a literature review on the topic of innovative good practice for teachers.

Teacher Training

This chapter draws mainly on experience from European case study and pilot schools and project partners, interpreted in the light of conclusions from an extensive literature search carried out by Professor Niki Davis and published as a separate project deliverable.

Critical Success Factors

This chapter lays out the procedure for isolating, elucidating and defining critical and key success factors, through a process of reflection, research and consultation. We present the critical success factors that were finally selected and we refer back to the case studies to give readers a concrete idea of what those factors mean in the daily practice of virtual schools and colleges.

Policy Recommendations

Recommendations are given, grouped into three broad areas:

- Consolidating and clarifying the policy and legislative landscape in which virtual schooling in Europe currently exists.
- Advising and supporting countries to understand where virtual schooling can help meet national and Commission education and social policies.
- Making the best use of limited resources.

Conclusions

A set of conclusions is listed, grouped by each content-based chapter across the two volumes.

References

A selection of the 14 most important references for the project is provided. Many other references can be found in specific project deliverables linked from:

http://www.virtualschoolsandcolleges.info/project/outcomes

and in Mendeley online bibliographies set up by the VISCED project, such as:

http://www.mendeley.com/groups/1075201/virtual-schools-and-colleges/

The VISCED Project

This work is a direct outcome of VISCED, a European collaborative project that carried out a transnational appraisal of virtual schools and colleges with a systematic review at international and national levels of fully virtual schools and colleges. VISCED is a two year project that began in January 2011 and is part-funded by the Lifelong Learning Programme of the European Commission.

VISCED supports a website where all public project outcomes are published. This also provides a news service on the topic of virtual schools and colleges and publishes a newsletter on a regular basis. To date more than 700 people receive this newsletter. The website also contains a full report, including interviews, with many of those who took part in the Virtual Schools and Colleges Colloquium which was held in Sheffield in May 2012. Interviewees include many of those operating virtual schools and colleges as well as researchers and others interested in the virtual school phenomenon.

http://www.virtualschoolsandcolleges.info

The VISCED Wiki on Virtual Schools and Colleges

Most of the data used in this handbook is available on the VISCED wiki which is open to all interested researchers and policy makers. An inventory of virtual schools and colleges worldwide has been publicly available on this wiki throughout the project. The idea of the wiki is to make available an open and public space where researchers can share information about virtual developments in various different educational sectors. It is supported and maintained by a growing community and is aimed at stakeholders, researchers and practitioners who would like to have easy access to the latest information about how the virtual phenomenon is manifesting itself in schools, colleges and universities around the world. Contributions are welcome from researchers.

http://www.virtualschoolsandcolleges.eu

2. GOOD PRACTICE IN ONLINE LEARNING

Introduction

Worldwide, schools have been turning to virtual learning to improve student performance, save money and empower teachers. Online education can increase the range of courses/programmes available to students, offer improved flexibility, and help meet the goal of teaching students much-needed 21st century skills. Furthermore, there is now significant evidence that technology has been seen to boost student achievement.

In Volume 1 of this handbook we describe a number of small pilots designed to extend innovative good practice which can be replicated both in fully virtual schools and bricks-and-mortar schools aiming to enrich student learning through extending their virtual capacity. This chapter focuses on conclusions from a worldwide literature search on innovative practice in online learning.

Most of the literature to date on virtual schooling has concentrated upon first defining and then describing the benefits and the challenges of online learning at the primary and secondary (K-12) levels. It is only in recent years that researchers have set their sights on specifically identifying good practice in virtual teaching and learning – and indeed, what it takes to deploy a new online programme in the first place. The research base in K-12 distance education continues to expand, and includes both comparative studies and studies that attempt to identify the factors associated with instructional quality and effectiveness. This is a complex topic, in which the complementary strands of pedagogy and teaching methodologies must be considered in the context of both technological use and administrative realities.

Based on a survey of the literature on innovation and good practice in virtual schools (undertaken in 2011 and then updated in 2012), this chapter seeks to provide general analysis and preliminary

recommendations for innovative good practice in piloting and developing virtual schools. It includes the results of a literature review on the topic of innovative good practice for teachers.

Highlights of the 'good practice' literature in each category are discussed below. Given the scope of this study and the nature of the project, our review is representative but not comprehensive. However, we are confident that – of the hundreds of documents examined – we have identified key documents and salient points which will aid educators preparing their own virtual schools or programmes.

Emerging Themes

The five main themes emerging in our research, and which we have used as organising principles here, are:

- Policy and planning;
- Advice for teachers;
- Pedagogy and learning styles;
- Content development and instructional design;
- Technological innovation.

A sixth important theme is teacher training: this is dealt with in the next chapter.

Organising principles for online learning have not changed in the year since our first report on innovative good practice was released, but we detect a growing emphasis on certain factors and technologies. These are detailed in context below, but in brief, include:

- Increased awareness of the parent or guardian as a student's learning coordinator, who must be involved in – and feel engaged by – the learning process;
- A shift towards the educational use of technologies previously considered primarily social, e.g. smartphone apps, Facebook and even Twitter;

- More interest in blended learning models, such as the 'Bring Your Own Device' strategy; rapid uptake of mobile devices like smartphones, iPads and eReaders as educational tools;
- The sudden popularity of the video-based 'flipped classroom';
- Decreased interest in podcasts, Second Life, and other 'fringe' learning tools.

Literature Review

Our initial study identified 129 relevant articles, with a strong focus on US, Canada, Australia and New Zealand schools (though no regions have been excluded); follow-up research resulted in 175. Although the VISCED project focuses on students in the 14–21 age group, publications that focus on primary (and occasionally, tertiary) education have been included here where relevant.

As noted previously, this literature review is deemed to be representative but not exhaustive.

Methodology, Subject Matter and Keywords

Books, peer-reviewed journals, articles, reports and other high-quality publications were collected using the Mendeley reference management and social networking system. These were then added to a private Mendeley Group entitled "Virtual schools – innovative good practice for teachers".

For this study we undertook comprehensive research using the federated EBSCOhost online research databases. EBSCOhost searches multiple databases simultaneously, including ERIC (Education Resources Information Center), Academic Search Complete full-text database, Education Research Complete and LISTA (Library, Information Science & Technology Abstracts). Searches were performed by Keyword, Subject, and Author. A modicum of general Google searching was performed as well, and relevant reference lists and bibliographies were examined.

Productive keyword search terms of note (when used in combination) included:

- K-12, high schools;
- Secondary school(s);
- Innovate, innovative, innovation;
- Good practice(s), best practice(s), practice(s);
- Pilot(s), piloting;
- Teacher(s), teaching, instructor(s), instruction;
- Technology;
- Virtual; virtual schools; online; distance, distance education;
- Synchronous, asynchronous;
- Videoconferencing; Elluminate;
- Canada, Australia, New Zealand.

Other terms yielded results that were more isolated or sporadic.

GEOGRAPHY

Most articles included in our survey are written by American authors, and draw on data from studies of American virtual schools – unsurprising in that there are considerably more virtual schools in the US than in any other country. We initially added additional geographical search terms specifically to examine other English-speaking contexts (e.g. Canada, Australia and New Zealand).

TARGET AUDIENCE

It seems that secondary school teachers are not, for the most part, the stakeholders expected to be reading articles on virtual schooling. Perhaps because of the nature of education within the US, the target reader is more often an administrative or managerial organiser. Experience confirms that teachers are not always given the agency to innovate, but are often assigned technologies, curricula and content delivery modes based on budgetary decisions taken at an administrative level. Extrapolating *guidance for teachers in particular* has therefore taken some effort. (Note, however, that over time a significant number of primary and secondary school educators have

emerged as authors on peer-reviewed journal articles in this area – as have school librarians.)

Educational Level

Although there is a rich and rapidly expanding base of articles addressing innovative good practice and pedagogy at the primary and secondary (K-12) levels, this body of literature is still dwarfed in comparison to that for undergraduate and postgraduate education.

Educational Mode

There is much literature addressing technological innovation within traditional, blended or hybrid schools; the general topic of "technological innovation in the classroom" is an expansive one. Many articles work from the assumption that students are based in traditional K-12 face-to-face classrooms exclusively (though this is less common in articles published after roughly 2009). In keeping with the VISCED definition of virtual school, wherein all or most instruction is delivered remotely via the internet (and most homework undertaken online), we have only rarely analysed articles which address the use of technology *only* within the traditional classroom setting.

References

Throughout both volumes of this handbook, references in the text have been kept to a minimum, for reasons of design and space. A limited number of key references cited here are given at the end of the chapter and the full list of references is given in the VISCED report – D3.8 Innovative Good Practice – Final Report, which is available on the project website.

Key Guides and Standards

The reports identified below are in agreement on most critical points regarding good practice in the development and delivery of online courses for students in primary and secondary education.

Most are aligned to the US educational system, but the principles addressed are universal. It is recommended that educators piloting virtual programmes review these documents.

- *National Standards for Quality Online Teaching Version 2* (2011) – the International Association for K-12 Online Learning (iNACOL) standards for teaching online.
- *National Standards for Quality Online Courses* (2011) – International Association for K-12 Online Learning (iNACOL) standards for online courses.
- *The Quality Matters Program: Grades 6-12 Rubric – Nine General Standards* (2011) – Quality Matters Program's process to ensure quality in online courses.
- *The ISTE NETS and Performance Indicators for Teachers (NETS•T)* (2008) – International Society for Technology in Education standards and performance indicators for teachers.
- *2010 Report on State Virtual Schools in SREB States: Executive Summary* (2011) – Annual SREB survey of the region's state virtual schools identifies trends in online education for policymakers and practitioners.
- *Virtual Schools: What Every Superintendent Needs to Know* (2009) – Written for the chief administrative officer of a US K-12 school district, but relevant to deploying online learning in any schools context.

Underlying Conceptualisations in the Literature

We have undertaken extensive tagging of the publications collected in Mendeley, and a review of top tags reveals underlying conceptualisations within the bulk of the research. The top tags are as follows:

- USA; Innovation; Asynchronous learning; Synchronous learning;
- Blended learning; Best Practice; Blogs; Wikis; Instructional Design;

- Professional Development; Instant Messaging; Pedagogy; Standards;
- Curriculum; Australia; Content Development; Canada;
- Evaluation; Guide; Teacher Training; Elluminate; Videoconferencing;
- iNACOL; Lessons Learned; Assessment; Game-based Learning;
- Mobile Learning; Blackboard; Effectiveness; WebCT; Moodle;
- Case Study; Learning Theories; Pilot Programs; Virtual Worlds;
- Florida Virtual School; Completion Rates; Good Practice;
- Policy and Planning; Trends; Homeschoolers; Whiteboards;
- Emerging Technologies; UK; Quality; Webcasts;
- Interactive Whiteboards; Literature Review.

This tag cloud proved an excellent starting point for visualising the body of literature as a whole; one can track the most popular topics from the top. We find that:

- Most articles are written by USA-based authors, or focus on US-based schools.
- Modes of innovation within the online schooling context are commonly – e.g. in nearly half of cases – abstracted as either Asynchronous or Synchronous Learning.
- Blended Learning is often discussed alongside purely online learning.
- Blogs and Wikis are common go-to examples of technological innovations in virtual schools. Instant Messaging figures prominently in distance learning contexts as well.
- Other top learning tools/modes discussed are Mobile Learning, Videoconferencing, Game-based Learning, and Virtual Worlds.
- The most popular commercial learning tool discussed here is Elluminate (now Blackboard Collaborate), a synchronous tool exceptionally popular in US virtual schools.
- Issues of general concern for researchers are Instructional Design, Professional Development, Pedagogy and Standards.

Curriculum, Content Development and Evaluation (of online programmes) follow.

- Best Practice, Good Practice and Effectiveness are discussed quite often.
- iNACOL (International Association for K-12 Online Learning) attitudes and reports are widely hailed and openly discussed.
- The Florida Virtual School (FLVS) is repeatedly profiled, analysed and examined for clues as to its success; lessons are drawn from other exemplars e.g. Michigan Virtual School.
- Emerging Technologies and Trends are identified and proscribed for teacher use (the term 'emerging' or 'emergent' seems a synonym for innovative in the US K-12 context).
- We find numerous *How-To* style publications which can only be described as Guides for the development and delivery of online courses in the K-12 environment.

Research Summary

Policy and Planning

General frameworks

Successful online learning begins with advance planning, and online courses cannot simply be dropped into an existing school curriculum as seamlessly as something more straightforward like a maths textbook. There are manifold issues to consider, not least of these the changing needs of students, parents, teachers and even key administrators (e.g. principals) as learning moves increasingly online.

Many successful online schools first identify a parent, online tutor/mentor, or site facilitator working at the location where a student will access a course, to provide the first line of assistance to students; they are explicit about their expectations of support staff and parents, who are pivotal to student success.

In a recent report, the Blackboard Institute (Anon 2011) offers a study of successful US virtual programme traits, with 17 expert interviewees agreeing that the key to virtual schools success is securing buy-in from teachers, administrators, parents and the community. They specifically recommend integration as follows:

- Every virtual learning programme needs at least two champions: one to serve as an advocate in the community, and one to manage day-to-day operations.
- One to two professionals must spread the leader's vision by working in small groups or one-on-one with teachers, administrators and counsellors.
- Organisers must actively communicate with and solicit feedback from the community. An on-going dialogue should involve administrators, teachers and others, and be informational (e.g. explore virtual learning benefits, content, research and examples of success).
- Leaders must address and dispel common misconceptions immediately (e.g. that online courses are easier, or that online teachers are less available to students).

The following questions should be answered for each virtual programme before proceeding:

- Will we build or buy the course content?
- How will we define and measure the rigour of a course?
- Will virtual classes be synchronous or asynchronous (or both)?
- Will the classes be delivered on a set term or a continuous basis?
- Will the classes involve teamwork?
- How will we determine the pace of online classes?
- Do we want consistency between the classes?
- What will be the role of the teacher in online courses?
- How much flexibility will teachers have with the courses?
- Is the content standardised?
- How will we measure quality?

Panel members offer the following advice:

- Offer an online, open entry/open exit, competency-based model that allows students to go through the material at their pace and on their schedule.
- Use virtual professional development to offer more courses to more teachers, focusing on topics that merge technology and pedagogy, such as 21st Century learning.
- Ensure that leaders have passion, understanding of online learning, know the difference between online education and bricks-and-mortar education, and can think in terms of virtual learning's broader impact within a learning community.
- Train parents to use computers and learning management systems to access their child's classes and grades, so they have the knowledge to support their children's online learning.
- Create a mentor programme for new teachers.
- Dispel common misconceptions about online learning as they arise.
- Gain decision-maker approval and funding prior to implementing the programme; actively communicate with and solicit feedback from the learning community.

The International Association of K-12 Online Learning (iNACOL) devotes an entire web portal to "How to Start an Online Learning Program: A Practical Guide to Key Issues and Policies."

A number of US-based organisations offer their own frameworks for preparing, implementing and evaluating schools-based online courses.

The National Education Association (2002) makes general recommendations in these areas:

- *Curriculum*. Online curricular offerings should be challenging, relevant, and aligned with appropriate standards for student learning.
- *Instructional Design*. Online courses should be designed to take advantage of the online learning environment and support the development of 21st-century learning skills.
- *Teacher Quality*. Teachers should be skilled in the subject matter, learning theory, technologies, and teaching pedagogies appropriate for the content area and the online environment.
- *Student Roles*. Students should be actively engaged in the learning process and interact on a regular basis with the teacher and online classmates.
- *Assessment*. Assessment should provide opportunities for students to reflect on their own learning and work quality during the course, and offer an opportunity to demonstrate mastery of content.
- *Management and Support Systems*. Support systems should provide resources to teachers, students, and parents comparable to those provided by face-to-face courses, and special support necessitated by the unique circumstances of the online environment.
- *Technological Infrastructure*. The technology behind the course should work reliably, simply, and economically. Technical assistance should be available whenever needed by users.

Berge and Clark (2009) synthesise the work of others cited in this report, and advise that once a school or programme is poised for implementation, the course organiser needs to:

- Set virtual learning programme goals and objectives.
- Develop a communication plan and begin building a positive image and stakeholder support.
- Establish development teams as needed in key areas, consider appropriate curriculum and instruction models, and create development timelines.
- Consider the district's capacity and willingness in terms of resources (funding, staffing, equipment, etc.) to build the components of a virtual school programme.
- Consider and select virtual learning providers and external partnerships to provide components the district/school will not be building (at least initially).
- Build district technology, curricular, instructional, and administrative capacity as needed, based on build or buy decisions.
- Institute performance assessment measures at the beginning of the online learning programme.
- Continually evaluate the programme for improvement and accountability purposes.
- Demonstrate and communicate the success of the programme to district stakeholders.

Others explore related themes. These include:

- The related roles and responsibilities for today's administrators;
- A warning that online teachers may feel an increase in workload and dissatisfaction with the teaching experience;
- One group finds that adequate support services may increase course completion rates; mentors, on-site support staff, counselling, and quality technical support will all result in positive outcomes.

Less commonly cited, but equally important considerations are:

- Awareness that developing an online or blended programme requires a high level of investment.
- Accessible high-speed broadband internet, considered as vital to K-12 infrastructure as electricity and water.
- Frequent communications with the teacher for parents as well as students, across multiple media.

Successful schools are seen as self-examining, and have been found to plan for internal and external evaluation measures for success. They may perform surveys of students, teachers and site coordinators; analyse for cost-effectiveness; and perform annual evaluations of teachers and students. Metrics may range from quantitative benchmarks, such as enrolment, retention, passing rates, dropout rates, number of highly qualified teachers and comparisons of standardised test scores (where available), to qualitative measures, such as online evaluations and anecdotal stories. iNACOL advises that schools must invest in data systems and accountability measures accurately to assess student and school performance; as of 2012, robust measures of student achievement did not exist in most US states.

For a number of illuminating case studies of successful virtual schools, see *Keeping Pace with K-12 Online (and Blended) Learning* (Watson et al 2012 – in the General References, plus the 2010 and 2011 reports).

In particular, policymakers and planners for larger initiatives might explore the *Keeping Pace* (2011) online learning implementation guide (pages 52-61). In these pages on "Planning for Quality" – which are meant to be printed off and laid end-to-end – a simple timeline presents an organised strategic planning process, decision-making guidance in four focus areas (content, teaching, technology and operations) and programme implementation tips. Planners are advised to include key stakeholders and agree on defined educational goals for a targeted group of students as first steps.

EMERGING STANDARDS

A number of organisations are working to establish standards for course creation and delivery in virtual schools. Online courses must address the unique social, educational, and emotional needs of high (secondary) school students, and standards must be established for this purpose. An iNACOL *Survey of Policy and Practice of K-12 Schools Around the World* endorses establishment of national standards for quality online courses and quality online teaching as a possible next step for many countries. Standards provide a more consistent experience, and may influence student achievement, retention and satisfaction in online courses (Barbour et al. 2011).

The Quality Matters (QM) Program, which released standards it intends to revise every two years to keep them up to date, has established its own rubric for online education in US grades 6–12 (though its ideas are applicable in numerous other contexts). QM standards, which adapt ideas from existing virtual-learning standards such as those published by SREB and iNACOL, read as follows:

- *General Standard 1*. The overall design of the course is made clear to the student at the beginning of the course.
- *General Standard 2*. Learning objectives are clearly stated and explained. They assist students in focusing their effort in the course.
- *General Standard 3*. Assessment strategies use established ways to measure effective learning, evaluate student progress by reference to stated learning objectives, and are designed to be integral to the learning process.
- *General Standard 4*. Instructional materials are authoritative, up-to-date and appropriately chosen for the level of the course.
- *General Standard 5*. Meaningful interaction between the teacher and students, among students, and between students and course materials is employed to motivate students and foster intellectual commitment and personal development.

- *General Standard 6*. Course navigation features and the technology employed in the course foster student engagement and ensure access to instructional materials and resources.
- *General Standard 7*. The course facilitates student access to institutional services essential to student success.
- *General Standard 8*. The face-to-face and online course components are accessible to all students.
- *General Standard 9 – Compliance Standards*. This section of the rubric is optional and may be tailored to particular requirements or mandates at the (regional) level. These requirements may deal with subject matter standards, inclusion of specific information in the course outline or syllabus, mandated communications, etc. Up to 10 standards may be added in this section.

In the interest of nationwide accountability, in the US, the *Common Core State Standards Initiative* – a state-led effort coordinated by the National Governors Association Center for Best Practices and the Council of Chief State School Officers – is being established. The initiative brings diverse state curricula into alignment with each other by following the principles of standards-based education reform, seen as a critical first step toward creating an online learning accountability system. Initial standards have been developed, with more than 40 states adopting them as of autumn 2011 (*Keeping Pace* 2011) and 46 as of winter 2012.

A Note on Funding

The issue of costing and funding virtual schooling is a different and much broader one, specific to each country and regional model. Given the unprecedented success of virtual programmes in US schools, however, a brief glimpse of into their funding mechanisms is worthwhile.

General costs are categorised in a broad US survey of virtual schools (*Keeping Pace* 2011) as follows:

- Teachers and instruction;
- Curriculum and instructional materials;
- Technology and infrastructure;
- School outreach;
- School office.

Funding methods may include:

- *ADA/ADM*: Many states fund schools based on average daily attendance (ADA) or average daily membership (ADM).
- *Count day*: Some states (e.g. Nevada and Colorado) have certain count days, in which per-student funding is generated based on enrolment on one or a minimal number of days.
- *Size-based*: A few states fund on something akin to a sliding scale, with funding decreasing on a per-student basis as the total number of students increases.

A few states (e.g. Florida, Utah and Louisiana) have implemented online school funding based on successful completion, instead of on time or a proxy for time. Funding models may be subject to dramatic changes each year as the sector expands (and, potentially, contracts). It was possible to generalise in 2011 that, generally speaking under the US system, most states fund state-wide virtual schools at a per-student level of between $6,000 and $7,000 per year. Per-student costs were harder to quantify in 2012 (*Keeping Pace* 2011 and 2012).

The aforementioned Blackboard panel (with budgeting experience at a per-school or per-region level) offered these related lessons learned:

- Reallocating existing funds (e.g. those previously allocated for face-to-face professional development, physical textbooks and travel expenses) is the most common way to cover expenses associated with virtual learning initiatives.
- Virtual professional development courses can be considerably more cost-effective.

- Charging teachers to take courses online and students for optional (supplemental) classes can create a new revenue stream.
- Districts or allied schools that sell their course materials to other districts generate additional funding for their own virtual learning programmes.
- When new facilities are built, schools no longer pay for wired classrooms – everything is wireless.

Of course, this is but a brief glimpse of a very diverse topic: to draw specific conclusions, a separate study of the costing and funding of online schools would be required.

CASE STUDY: FLORIDA VIRTUAL SCHOOL (FLVS)

The Florida Virtual School (FLVS) is the world's largest and, by most measures, most successful virtual school. Some might find it useful to know how this unusual entity – which served 303,329 course enrolments in the school year 2011-12 (*Keeping Pace* 2012) – is structured and operated.

Florida TaxWatch (2007) examines FLVS closely, asserting that "programs that work must be identified, replicated, and enhanced; those that do not must be eliminated."

- School Funding is tied directly to student performance.
- FLVS students recently outperformed their state-wide counterparts on two independent assessments, accomplished with less money than typically spent on traditional instruction.
- FLVS views parents as "partners in student success", and they are provided with a Guardian Account with full access to assignments and grade-book.
- Teachers are available from 8:00 a.m. – 8:00 p.m. weekdays and additional hours on weekends. Parents receive one additional telephone call per month, monthly progress reports and regular email updates.

- FLVS teachers are Florida-certified in their content area. Not all are Florida residents, though, and they actually reside all over the country.
- Teachers are brought in at least once a year for state-wide training.
- Faculty members function in learning communities; an instructional leader provides guidance and administrative oversight to approximately 55 teachers.
- Teachers have access to instructional assistants on a part-time basis.

Florida Virtual School has been built on many of the same principles of good practice endorsed by the Blackboard panel cited earlier in this chapter. Florida TaxWatch (2007) finds that elements that have enabled FLVS to succeed include:

- Steadfast support by the Florida Legislature;
- Stability of leadership;
- Sustained interest by the (regional) business community;
- Powerful networking throughout the country;
- Consistent focus on its core mission: "To deliver a high quality, technology-based, education that provides the skills and knowledge students need for success in the 21st century".

Advice for Teachers and Teacher Training

While little research exists to address existing best practices of virtual school teaching in the K-12 context, the roles and responsibilities of today's teachers within online learning are frequently and exhaustively examined. Many agree that effectiveness in distance education appears to have more to do with who is teaching, who is learning, and how that learning is accomplished, and less to do with the medium. Indeed, the traits that make a successful online instructor may be the same as those for any successful instructor: namely, good communication and classroom organisation skills. In any event, teachers hold the key to virtual learning success; the elements of excellent teaching that are

most difficult for technology to replace will increasingly differentiate student outcomes.

The issue of teacher training (or professional development) has been set aside as a topic for another research team under the VISCED project, and is therefore not treated in detail in this chapter. The issue is such a broad one that a separate literature search is entirely appropriate.

From this good practice literature search, however, we will state briefly that teachers must be prepared by targeted education programmes to serve the rapidly escalating number of online students. Studies find a direct correlation between a) a teacher's own level of experience with technology, b) their enthusiasm for deploying technology among their students, and c) successful classroom technology integration and student uptake. Teachers, principals and administrators who have taken online classes generally think of them more favourably; and those who frequently use mobile devices themselves, value the benefits of using mobile devices in the classroom more highly. Familiarity can, it would seem, make all the difference. Yet one recent study finds that only just over 1% of teacher education programmes are addressing the need to prepare educators for settings other than the traditional. The critical need for high-quality teacher training is addressed further by numerous researchers over the past eight years.

Pedagogy and Learning Styles

It is primarily for the purposes of organising this literature base that pedagogy has been set aside for separate treatment, considered separately from both teachers and technology. In the virtual schools context, these topics are not always clearly separated. We draw on a meagre evidence base in drafting this section, presenting more of a literature review than guidance in good practice.

The very nature of delivering K-12 course content via a web-based medium implies the need to re-conceptualise school pedagogy. Online curriculum cannot just “be the electronic equivalent of the old snail-mail correspondence course”, nor does technology “suddenly improve

teaching" without a modern pedagogy to complement the new equipment.

Teachers' decisions related to pedagogical activities play an important role in effective use of the tools, and online teachers need to have not only an excellent grasp of their given content area, but also an appreciation of how technology and the online environment affect the content and the pedagogy of what they are attempting to teach. In many cases pedagogy emerges as more important than media in online teaching.

There is a wide range of other publications addressing pedagogy in virtual programmes. Key points from these include:

- Instances in which the pedagogical opportunities presented by virtual schooling are not fully realised;
- Assessments of the development of Technological Pedagogical Content Knowledge (TPCK) in educational technology;
- Reviews of methods of adapting online education to different learning styles;
- Various constructivist, collaborative and inquiry-based learning models which demand that students be active and engaged and that this engagement leads to significant improvements in learning and attitudes towards learning;
- Analyses of reading pedagogy in the K-12 context, as dedicated devices have led to changes in reading literacy instruction;
- Debate between the pros and cons of the 'flipped classroom', a pedagogy currently the subject of substantial activity and enjoying much popularity at present.

Brill and Park (2008) examine the specific emerging technologies laid out in the *2008 NMC Horizon Report*, relating them to 'engaged learning' and the features and students of the 'Interaction Age' in seeking best practice in improved teaching and learning. They explore the intersection of these three areas in examples which connect engaged learning with emergent technologies and the 'digital native' learner as follows:

Common indicator of engaged learning	Emerging digital technologies supporting engagement indicator	Alignment with the Digital Native student
Ownership of and responsibility for learning goals	Mobile learning devices with unique, individual scaffolding designed for and built in	Capitalizes on their early access to and frequent use of mobile devices to achieve personal goals
Interactive, collaborative, and generative approach to learning within the context of solving authentic problems	Virtual worlds and game-based learning designed as realistic learning spaces which enable learners to manipulate a variety of variables	Connects with their pervasive habits to interact and stay in touch via digital means – e.g. mobile phones, web spaces, email, etc.
Facilitative role of experts, teachers, and 'expert' resources	Mobile device or pervasive learning space where expert learning content is designed for and embedded	Speaks to their use of widely available digital information resources to move through the world and achieve personal goals

Anderson and Dron (2011) present a thorough analysis of general online pedagogy (including schools), defining and examining three past generations of distance education pedagogy: cognitive-behaviourist, social constructivist, and connectivist. These are outlined in the following table:

	Cognitive - behaviourism	Constructivism	Connectivism
Technology	Mass media; print; TV; one-to-one communication	Conferencing (audio, video and web), many-to-many communication	Web 2.0: social networks, aggregation and recommender systems
Learning activities	Read and watch	Discuss, create, construct	Explore, connect, create and evaluate
Learner granularity	Individual	Group	Network
Content granularity	Fine: scripted and designed from the ground up	Medium: scaffolded and arranged, teacher guided	Coarse: mainly at object and person level, self-created
Evaluation	Recall	Synthesise essays	Artefact creation
Teacher role	Content creator, sage on the stage	Discussion leader, guide on the side	Critical friend, co-traveller
Scalability	High	Low	Medium

They conclude that learning modes do not replace but rather complement each other over time, and that high-quality distance education must exploit all three generations as determined by the learning content, context, and learning expectations. They consider fourth- and even fifth-generation distance technologies as difficult to define, except for their predictable use of intelligent databases that incorporate Web 2.0 or semantic web technologies. CloudWorks is identified as an example of the new trends.

Other researchers identify a need for further research into the pedagogy of K-12 virtual school teaching in order to understand the coordination of content, pedagogy, and technology underlying the delivery of a virtual school course. We agree with this assessment and

are pleased to include a selection of the use of Web 2.0 pedagogy in this chapter in the section on *Other Technologies of Note* further on.

Content Development and Instructional Design

Researchers have thoroughly examined the state of course development and instructional design in the schools context. How schools obtain course content varies widely, with some organisations opting to create it, others purchasing it and still others pursuing a hybrid buy/build strategy (e.g. purchasing content initially before transitioning to in-house development). Content may be developed by teams or individuals, by teachers and/or technologists.

Many agree that the more clearly expectations and processes are laid out, the better the outcome. US virtual schools often develop a rubric for course quality, facilitator rules for what they can and cannot change in a course, course templates to maintain the same look and feel across courses, and a selection of extra resources.

Some schools allow teachers great freedom in course design, while others have found that this does not reflect long-term thinking. Members of the Blackboard expert panel differ widely on the amount of control required over content development, but all support a consistently applied process to make that determination. One commented:

> *When virtual learning programs start out small, it's tempting to allow people the freedom to do whatever they want. However, when freedom can't scale, fragmentation is the result.*

Others advise that online instructional strategies should include collaborative project-based design, clear expectations/requirements, concrete yet flexible deadlines with some flexibility, timesheets, study guides, and rich interactive collaboration among students and teachers. Courses must be straightforward and consistent in their design, providing clear instructions and expectations, and making use of appropriate media. A 2007 study finds that when a simplified and minimalist approach to instructional design is adopted, students

contribute significantly more information to online discussions, faster, and demonstrate higher levels of learning.

Control over course content – or lack thereof – can be a major area of concern for teachers. When teachers do not have control over the content, this can become a source of frustration; content providers may want to consider allowing greater access for teachers to incorporate their own lesson ideas, as well as the ability to make corrections or revisions to curriculum directly, allowing the medium to capitalise on teachers' knowledge and experience.

Barbour (2007) develops guidelines that future course developers might utilise, examining a combination of synchronous instruction using Elluminate Live and asynchronous instruction using WebCT. These are broken down as follows:

- *Preparing to Develop*. Significant advance planning is required.
- *Simple Navigation, but Diverse Content Presentation*. Every lesson should feel different to learners.
- *Summarise and Personalise.* Course developers should provide a summary which includes examples personalised to the students' own context.
- *Clear Instructions and Expectations*. Course developers should ensure students are given clear instructions which model expectations of the style and level of work required.
- *Use of Text and Visuals*. Course developers should use minimal text and use visuals to replace or supplement text when applicable.
- *Smart Use of Multimedia and Interactive Elements*. Course developers should use multimedia to enhance the content, and not simply because it is available.
- *Who to Target*. Course developers should develop their content for average or below average students, while including enrichment activities for above average students. (Barbour 2007)

In 2011, iNACOL released its *National Standards for Quality Online Courses*, version 2, the results of a refreshed research review and survey of online course quality criteria. iNACOL endorses previously published higher-education focused standards for online courses and reiterates, enforces and enhances the views seen elsewhere in this review. High-quality online courses require:

- *Content development*. The course provides online learners with multiple ways of engaging with learning experiences that promote their mastery of content and are aligned with state or national content standards.
- *Instructional design*. The course uses learning activities that engage students in active learning and provides students with multiple learning paths; the content is based on student needs and provides ample opportunities for interaction and communication (student to student, student to instructor and instructor to student).
- *Student assessment*. The course uses multiple strategies and activities to assess student readiness for and progress in course content and provides students with feedback on their progress.
- *Technology*. The course takes full advantage of a variety of technology tools, has a user-friendly interface and meets accessibility standards for interoperability and access for learners with special need.
- *Course evaluation and support*. The course is evaluated regularly for effectiveness, using a variety of assessment strategies, and the findings are used for improvement. The course is kept up to date in content, course design and technologies. Instructors and students are prepared to teach and learn in an online environment and are provided on-going support.

A scoring rubric is also included for use by educators in their own programmes.

Non-traditional course designers, e.g. traditional teachers, may share common needs during course development efforts. Findings suggest virtual schools can better support these designers via technological leadership, regular feedback, and clear expectations. Ideally, designers need professional development in replicating model courses, using course management systems, assessing learners online, designing with copyright and safety issues in mind, integrating Web tools, and developing course documentation.

Technological Innovation

Numerous technologies are being used to great effect in today's virtual schools, and in our literature review we found proponents of many tools and systems. We examine many of these below.

However, the Elluminate Live! tool emerges in our research as a top candidate for use in any school piloting virtual programmes, due to its wide-ranging success in virtual schools. Its synchronous collaboration model, or 'virtual classroom', allows for real-time interaction between students and instructors through its integrated VoIP and teleconferencing, application and desktop sharing, polling and quizzing, and session recording – as well as technologies such as multipoint videos, shared whiteboards, web tours, and breakout rooms, adding what one author describes as "the value of real-time interaction rather than just static content".

Synchronous versus Asynchronous Tools

An on-going comparison of the respective merits and constraints of synchronous and asynchronous learning tools exists in the literature reviewed. Many successful virtual schools use a synthesis of both to best effect, and their ability to complement each other is addressed directly. Most authors favour synchronous tools like Elluminate and Videoconferencing for their immediacy and sense of presence, but many learning technologists would prefer to see these deployed in a broader teaching context – i.e. one using both synchronous and asynchronous tools together.

In a 2011 study, students found asynchronous coursework (e.g. over WebCT) routine and unchallenging, and lacked the internal motivation to complete asynchronous assignments. Conversely, they were engaged during their Elluminate Live! sessions, during which they communicated actively with their teacher and each other (Barbour & Hill 2011). Similarly, Berge and Clark (2009) acknowledge problems with asynchronous online teaching; there are many conveniences afforded by anytime, anyplace teaching and learning, but it can lead to problems for students with poor time-management skills or a tendency to procrastinate. Hastie et al. agree (2007), stating that "The online synchronous cyber classroom provides learners with more authentic and engaging learning activities enabling higher levels of learning compared to purely asynchronous modes of self-paced learning".

Barbour (2007) examines the effective use of a combination synchronous/asynchronous system in remote regions of Canada, in which Elluminate lectures and chats are complemented by WebCT. He concludes that, regrettably, as recently as 2007, isolation in remote and rural communities may still cut students off from the affordances of online learning, due to slow uptake in broadband speeds, mobile technologies/networks, etc.

Other research finds that forums offer a significant contribution to overall educational impact (when considered within a more eclectic live 3D learning experience). A 2011 study also finds both learning modes beneficial; asynchronous online teaching provides support for self-paced, independent forms of secondary distance education, supplemented by synchronous online teaching for answering questions and troubleshooting and this is echoed in earlier research which demonstrates that synchronous and asynchronous formats can be equally effective and motivational to students.

Mobile Learning

Mobile learning has become vastly popular in recent years, with classroom/home-based deployment at an all-time high. As handheld devices gain ubiquity, instructors assign tasks that make the most of

them (via the Bring Your Own Device – BYOD – model). Publishers move textbooks online as well; many students have used at least one eBook or its equivalent in their studies. Devices used include inexpensive Android phones, laptops, iPads, iPods, Kindles, Nooks and other eReaders.

The advent of digital OERs may be another driver for use of mobile devices, as more resources become free. However, we note that usage does not necessarily translate into comfort. In 2010 it was reported that 25 percent of American students aged 6–17 had read a book on a digital device; yet in one pilot programme, one quarter of students returned Nook readers provided by librarians "almost immediately" to exchange them for hard copies – this echoes the findings of the Swedish pilot at Ross Tensta Gymnasium described in Volume 1 of this handbook.

Earlier explorations of mobile learning (m-learning), hailed it as "the gateway to e-learning for most learners in Africa". However, our research into connectivity and infrastructure, described in Volume 1 of this handbook casts some doubt on the present practicality of this.

VIRTUAL WORLDS

Many researchers have evaluated the use of 3D learning environments such as Second Life in schools – and US high schools in particular. They find virtual reality helps create a vivid sense of community, in part because it allows users a 3D avatar whose gestures, moods, and customisable appearance to project a 'cognitive presence' unavailable in other remote learning tools. One recent (2012) article, compares learning outcomes in Second Life to those obtained via Blackboard.

VIDEOCONFERENCING

Videoconferencing is quite popular in remote communities. However, it is not always seen as presenting a sufficiently rich learning experience on its own.

A 2008 study of five schools reveals the effective use of videoconferencing for enrichment, professional development, and administration – with less successful application as the primary tool for distance education delivery; it simply does not provide the level of student engagement with teachers, other students or content needed. However, it can be effectively used as part of a broader range of networking tools, and in particular those which provide students access to internet-based resources (e.g. Learning Management Systems, blogs, wikis, polling, quizzes, web safaris, and applications sharing) which allow students to interact with each other and the content, rather than simply listening to "teacher talk". Interestingly, the European virtual schools described in the Case Studies chapter of Volume 1 of this handbook made only sporadic use of videoconferencing for professional development.

Research shows that the educational use of videoconferencing technology is not a uniform phenomenon; teachers exposed to its potential quickly find new ways of exploiting its pedagogical possibilities. One successful implementation in Cape Elizabeth Middle School in Maine, USA allowed students to engage in interactive communications with experts outside of the region, e.g. at the Bronx Zoo in New York. Benefits include cost savings, enhanced interaction in language learning, and improved motivation, participation and performance, but other studies point to constraints and implementation barriers.

Other Technologies of Note

By 2012, stakeholders in the educational process have embraced a wide range of technologies. Facebook, Twitter and LinkedIn are cited as having educational use, as social learning tools increasingly connect students, parents and educators and are enthusiastically used by some of the European case study schools described in Volume 1.

Some researchers focus on the popularity of podcasting in US K-12, though European case study schools make relatively little use of this. There is also evidence from the research literature of the potential of

wikis: blogs, wikis, podcasts, and other powerful web tools such as Mashable, Ning, Second Life are also suggested as being of potentially significant value.

A 2008 study of the use of instant messaging (IM) in a context of virtual schooling, finds that e-teachers are embracing the technology in recognition of high-school students' proficiency and comfort with it. The benefits of IM in promoting social presence and a 'sense of community' seem to outweigh the challenges it poses, even allowing e-teachers to establish individual rapport with students during non-instructional times.

The 2011 Horizon Report embraces cloud computing, mobile learning, game-based learning, and open content as emerging to prominence in K-12 education (be it blended or otherwise) within the next few years. Regardless of the nature of the tools, one author adds, school systems require "leverage-able (private) partnerships that can get them higher on the food chain of innovation".

Conclusions and Recommendations

Conclusions

Although a preliminary base of research into good practices in virtual schools has now been established, more research into this area is still required.

Within this context we have done our best to extrapolate practices which – if not yet seen as best practices, per se – might at least be seen as good and innovative within the broader educational community. Guidance in policy and planning, advice for teachers, pedagogy and learning styles, content development and instructional design, and technological innovation have all been explored. Where available, we have reviewed emerging US standards in the hope that these will transfer to a broader European context.

Preliminary Recommendations

Recurring themes in our readings suggest that educators piloting virtual programmes in their schools consider the following strategies:

- Secure advance and on-going support from the educational community, e.g. school board, department leads, parents, community groups, technical support staff and others.
- Establish clear policies spelling out how virtual courses will be created and delivered.
- Use a combination of synchronous and asynchronous learning tools in online courses (e.g. both Elluminate broadcasts and learning management system discussion boards).
- Train teachers well in all technologies they must utilise – deploying virtual, rather than face-to-face, professional development courses.
- Ensure direct and frequent communication between teachers and students/parents – be it through instant messaging, asynchronous discussion boards, telephone or other means.
- Provide adequate technical support for both teachers and students/parents.
- Engage parents or guardians directly in the learning process.
- Have quality assurance and evaluation procedures in place.

Where we have felt it practicable, these preliminary recommendations have been embedded into our final policy recommendations.

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3. TEACHER TRAINING

Introduction to Teacher Training

VISCED has produced a transnational appraisal of virtual school and college provision with a typology of virtual school and college services that shows an enormous variation in organisational models and practices. A co-evolutionary perspective of digital technologies and education suggests that this wide variation is related to the interlinked ecologies from where the school or college emerges. Perhaps the only common feature is that all have both teachers and learners that are connected via digital technologies using the concept of an e-campus that includes some young people in the age range of 14–21 years old.

Extensive research of factors that impact the quality of education for such learners have clearly identified the major impact of the quality of the teacher and that teacher quality is improved with teacher training (also known as teacher education and continuing professional development).

The European Commission (2010) in its *Common European Principles for Teacher Competencies and Qualifications* recommends that "the teaching profession should be seen as a continuum which includes initial teacher education, induction and continuing professional development". Teacher training is a career-long process that begins for public school teachers in most countries with initial teacher training (also known as pre-service teacher preparation).

In contrast, many college teachers begin their training on the job and this is also not uncommon for some teachers in private schools in some EU countries.

Following initial teacher education, state school teachers begin to teach with a period of induction and become fully licensed to teach only after a period of successful practice, which is commonly around two years.

Teachers continue their professional development (CPD) career-long in order to update and improve their practice.

Calls for high quality teachers and higher quality outcomes for learners in schools have arisen from the variety of reports on teaching, teacher training and the profession. A central tenet is that standards are essential to the successful professionalisation of teaching, and several studies have demonstrated that standards can serve as a powerful tool to stimulate teachers to learn more about teaching and learning and develop their practice, including the opportunity for teachers to play an active role in self-directed enquiry with relevant standards to frame their formative development.

In the 21st century there have been major developments in learning and teaching that have been or are being incorporated into teacher training, which include revised understanding of how people learn and which have been accompanied by many changes in curriculum and assessment practices. Perhaps most relevant to this chapter is the embedding of information and communication technologies (ICT) in teacher training. There have also been important developments in relation to 21st century skills to be incorporated into the teaching and practice of teachers of students in secondary schools and colleges, as well as a very recent move back towards more austere traditional modes of study in countries such as the UK and Sweden.

This provides a challenging background to our chapter on teacher training. In it, apart from the next subsection, we focus on teacher training for virtual schools in Europe.

The chapter draws mainly on experience from institutions and project partners, interpreted in the light of conclusions from an extensive literature search carried out by Professor Niki Davis and published as a separate project deliverable.

The Situation in North America

Virtual Schools in North America

As noted in detail in Volume 1, online education in the US has gained considerable traction over the last 15 years – seemingly more so than in any other country. Over 1.5 million American students from kindergarten to twelfth grade (K-12) were engaged in online and blended learning for the 2009–2010 school year (out of approximately 55.2 million students enrolled). This represents roughly 3% of the US K-12 population. As of 2010, supplemental or full-time online learning opportunities were available to students in 48 of the 50 US states. 38 states had state virtual schools or state-led online initiatives; 27 states plus Washington, DC had full-time online schools serving students state-wide; and 20 states were providing both supplemental and full-time online learning options state-wide.

State virtual schools have course enrolment numbers ranging up to 16,000 for 2009–10. They exceed 10,000 for 2009–10 in eight states.

In Canada, distance learning is a feature (to a variable degree) of the education systems in all thirteen territories and provinces. In 2011 it was estimated that just over 200,000 students were enrolled in distance learning courses and/or programmes. This constitutes between 2.8% and 3.4% of the total K-12 student population. The highest level of activity appears to be in British Columbia, which also has the most comprehensive legislative and regulatory regime.

Teacher Training in North America

Thus it can be seen that in North America, there is likely to be systematic and highly organised teacher training activity to service these institutions, many of them large and having existed for 10 years or more. This is indeed the case and the relevant deliverable goes into more detail on this.

Virtual Schools in Europe

In contrast, in Europe there are less than 80 virtual schools (excluding virtual primary schools and virtual colleges) in the whole continent. The smallest school has 25 students and the largest has 1,400 – although there are a few virtual schooling initiatives/networks (not virtual schools) which are much larger than this in Finland and Russia. Removing the outliers leaves an average school size of 470. In addition, around half of the schools are private and many are less than 10 years old. This is likely to imply that (formal) teacher training is not given the same priority as in North America.

Input from Case Studies

Europe

The case studies from European virtual schools provide details and context to the above bald observations. In general terms, training is linked very much to recruitment and most training is informal and on the job.

Bednet (Belgium) has a very specific recruitment policy related to the sensitivity of the context in which staff work: most come from human sciences backgrounds and include former teachers and nurses. This focus on sensitivity and maturity extends to the IT support staff. Staff development is a core concern, with a full day staff meeting for training and peer support each month.

Ensino a Distância (Portugal) relies on 23 teachers and a project coordinator, with each teacher responsible for tutoring 3–5 students and establishing close relationships with their families. Currently teachers are assigned to the project on the national criteria, *for just a year at a time* (though some may stay longer). They do not have any specific profile or preparation, but working together from the same space in the host school, there is a continuous dialogue and peer support providing all the necessary training. Teachers may stay with

the project for one or more years and new teachers are supported and mentored by experienced staff.

InterHigh (Wales) has recruited highly qualified experienced teachers who have worked in both the state and private sectors. Staff turnover is low.

At *iScoil* (Ireland), staff members are recruited on the basis of recruitment policies typical of the schools sector and are also required to have appropriate ICT skills. They are supported through a continuous programme of staff development, including a significant amount of training and support in IT.

At *Nettilukio* in Otava Folk High School (Finland), there are no school-specific staff recruitment policies; there is, however, a particularly strong emphasis on continuous staff development.

Sofia Distans (Sweden) looks first, when recruiting staff, for flexibility and ICT skills, across all categories of staff. Extensive in-service training is provided. Staff turnover is very low.

Wereldschool (Netherlands) does not specifically recruit teachers for their ICT skills, but seeks good teachers who are willing and capable to adapt to new techniques. They then receive support in developing ICT and online teaching skills and are closely monitored. Every month the school checks the pace and quality of the feedback supplied by the teaching staff. Most teachers work primarily from home but get daily support from the head office, twice-yearly catch-up meetings, professional development workshops and an annual official appraisal.

Australia

Outside Europe, similar situations are found in Australia and New Zealand. In particular in Australia there is close integration between the teachers in virtual schools and the teachers in the mainstream school sector.

At *Brisbane School Of Distance Education* (BSDE) in Queensland, there are 300 staff members, 215 of whom are teachers. In common with other Australian states, Queensland has a system of rotating staff around its schools and all teachers are appointed to schools by the state, resulting in no 'cherry-picking' of staff by the school. Because of this, BSDE has had to prioritise staff development and is now recognised for its expertise in this area.

Similarly, at *Open High School Sydney* (New South Wales), staff are allocated to schools by the Department of Education and Communities – Open High School does not recruit its own teaching staff. The school operates in-school CPD support for all of its teachers and this is supplemented with support from the Department of Education and Communities.

Specific Input from Pilots and Case Studies

To complement the above general information, a specific questionnaire was sent to virtual schools and colleges who attended the Virtual Schools Colloquium in Sheffield in May 2012. Two submissions were of particular relevance.

INTERHIGH

Interhigh first observes that "Teaching in this environment does appear to require a very special set of attributes and we seem to have reached a good position to see this more clearly now – our pupils and parents too". They made four specific points:

- An initial barrier in 2004 in relation to teacher competencies was that of general IT experience. The solution to this was specific in-house advice and training. Another solution was fostering positive attitude to technology and supporting 'early adopters'.
- The actual formal training of teachers has been limited to the use of the internet, the platform and the classrooms. The training is now given *prior to appointment* and forms part of the appraisal/selection process as well as induction.

- There have been no specific issues with teachers from a traditional teaching background. Specific issues have occurred though with teachers with less competency in computer and software use generally – their fear of technology can restrict the tools available to them, leading to pupil comparisons and then a reduction in respect for their perceived teaching ability. Interhigh has been very conscious of the teacher propensity for feelings of isolation in the virtual teaching environment and much was done from the beginning to ensure that teachers working from home did not feel that transition issue.
- Skills and competencies are challenged daily in the process of making any physical equivalent work in the virtual classroom, e.g. science experiments, art, games, plays. The school platform is to a large extent developed around teacher use, and therefore is intuitive. System upgrades and developments are demonstrated to teachers when rolled out. The use of extremely effective application-sharing and remote login software has made support very accessible. Sharing of practice and discoveries has also avoided issues arising.

SHEFFIELD COLLEGE

Sheffield College operates both as a virtual college (for post-secondary subjects) and virtual school (for school-leaving qualifications) so has a particularly valuable perspective.

A major barrier to virtual schooling in the UK is the way classes are funded. Online courses are funded in the same way as face-to-face classes and by this crude measure they often appear to be more expensive because they tend to be more time-consuming, demanding 1-on-1 attention for the students rather than dealing with a large group at once. What is not usually taken into account are the huge savings in terms of classrooms, buildings, facilities, heating, etc.

Online courses also tend to look worse in terms of retention rates when compared to full-time, face-to-face classes, but this fails to take into account the different kinds of students that are attracted to online

learning: part-time adult learners are always more likely to drop out of courses than 16–18 year-olds in full-time education. The Sheffield College experience is that although retention rates may be lower, the success rates of those students who complete courses is far higher than they are for conventional students. The courses are also more accessible for students with special needs.

One of the biggest barriers to teachers developing a competence in online teaching is that blended learning is not properly acknowledged in funding. So teachers in face-to-face classes who provide online tuition or learning materials are doing so without being paid for it. Class contact time is only recognised when it is face-to-face, which makes it difficult for teachers to make a gradual transition to online delivery, developing the requisite new skills on the way. This also makes it difficult for teachers to know if they might be suited to online teaching, so they are reluctant to take a leap into the unknown of online teaching.

One solution to this barrier is *LeTTOL* (Learning to Teach Online), an online course that has been delivered by Sheffield College since 1997 to almost 3000 learners. Because it is delivered online, teachers are able to experience first-hand what it is like to be a student on an online course, developing empathy for learners' needs. Students learn how to communicate online and manage forums, with an emphasis on making students feel that they belong to a vibrant community which rewards online activity. To tackle the problem of retention, there has to be a particular emphasis on maintaining student motivation, promoting interactions and providing explicit instructions to guide the studying and learning process, taking account of the fact that the kind of instant clarification available to face-to-face students may not be available. Formative feedback is also critical to reassure students that they are on the right track.

This focus on online learning for teachers will recur in this chapter.

Teacher Training in Europe

Specifically for Teachers in Schools

There is a considerable amount of teacher training delivered online in Europe, arising from EU-funded projects, national programmes and specific providers. There is space here to give just a few examples. Since the vast majority of teachers in the EU will not teach in a virtual school, the focus of such courses is inevitably teaching in a classroom or at best in blended mode.

As long ago as the 1990s, a project was funded by the EC within the Telematics Programme called *Telematics for Teacher Training* (T3). (The production of a core Curriculum for Telematics for Teacher training was an objective within the EU Framework IV research agenda of the time.) A framework was developed to assist policy makers, course developers, teacher trainers and other professionals who were considering the use of ICT in teacher training. It was embedded into national and local infrastructures, cultures and contexts, providing a base upon which detailed curricula could be built (Davis 1999).

The *UK Open University* offers a range of online courses for continuing professional development, including courses in the area of use of ICT for teaching. The MA in Online and Distance Education is a key offering in this portfolio. Similar MA courses are offered by many other universities across Europe, campus-based and open.

There are also many shorter courses focussed on this area, of which LeTTOL (described earlier in this chapter) is an early but also a leading example. Similar short courses were developed by the UK Open University and the University of London. In addition to courses, there are also portfolio-based certification schemes of which the best known in the UK is CMALT.

Increasingly, even the courses for initial teacher training are being delivered online. This is true for the UK Open University but also for other providers. Particularly interesting examples are the eLearnITT

and iTeach courses in initial teacher training delivered by *Hibernia College* (Ireland) in partnership with a number of schools and universities in England. Trainees successfully completing all elements within the programme will be awarded Qualified Teacher Status (QTS) and a Post Graduate Certificate in Education (PGCE). Such courses, even if they have no focus on ICT for teaching (and many now do have some focus on that), inevitably socialise the teachers into grasping the relevance of ICT for teaching because of their use of ICT for learning.

Insights from Other Sectors

VISCED project partners (and other universities the project collaborates with) report that the lecturer training courses offered in UK, Denmark, Sweden and other European countries, especially those where initial training of university lecturers is now mandatory, are both suitable for and taken by school and college teachers, not only by university lecturers.

Standards for Teacher Training

In Europe, the T3 project developed an early framework for teacher training and there are some other developments at a national level. However, the main developments in this area are in the US. Key ones, in particular the last, are:

- The International Society for Technology in Education's *National Educational Technology Standards for Teachers* (NETS•T) (ISTE 2008);
- Southern Regional Education Board's *Guidelines for Professional Development of Online Teachers* (SREB 2009);
- National Education Association's (NEA) *Guide to Teaching Online Courses* (NEA 2002);
- International Association for K-12 Online Learning's *National Standards for Quality Online Teaching* (iNACOL 2011).

It seems to us that it is best for Europe to leverage on the work done on the US and adapt (linguistically and culturally) these guidelines to

Europe rather than develop guidelines *ab initio*. This should be done in the context of the European Commission's *Common European Principles for Teacher Competencies and Qualifications* (European Commission 2010).

Recommendations

The earlier analysis leads us to make two key recommendations – both important enough to be repeated in the chapter on policy recommendations.

- The Commission and individual education departments should consider introducing a voluntary common set of standards for online teaching – and individual nations should be supported when integrating these into their teacher training programmes and teacher assessment regimes. As we have already shown through our research, several thousand European students are already studying online across borders (outside of their home country) – a common set of standards would help ensure quality and consistency. The iNACOL *National Standards for Quality Online Teaching* (iNACOL 2011) form a valuable foundation.
- All Member States are committed to engaging parents, carers, guardians and family members – for some this is an explicit strand of national education policy. The Commission and individual education departments should encourage schools (virtual, blended and traditional) to embrace the model applied by some Australian virtual schools whereby these individuals are supported to provide high-quality, home-teaching support and to achieve a recognised vocational qualification which can then improve their own employment prospects and broaden their life-chances. The Commission should consider making this area a subject for future Calls for Funding.

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4. CRITICAL SUCCESS FACTORS

Introduction

If e-learning initiatives in schools and colleges are to be sustainable and cost-effective, it is of the utmost importance to identify those factors which are contributing to that sustainability and which will enable the setting up of successful virtual schools in the future. The more that online education and virtual schooling are shifting from small-scale experiments to large-scale, mainstream operation, the more important these factors will become.

In Volume 1 of this handbook we have given an overview of current operational examples of virtual schools and colleges across the world. Within the VISCED project, the outputs of this review have been analysed and compared to identify relevant parameters and success factors for classifying and comparing these initiatives. The aim was to create a set of critical and key success factors to cover activities in the area of strongly ICT-imbued schools and colleges – in particular virtual schools and virtual colleges.

This chapter lays out the procedure for isolating, elucidating and defining critical and key success factors, through a process of reflection, research and consultation. It clarifies the definition of success factors, outlines the source material, and describes in detail the process that was followed. In this chapter we present the critical success factors that were finally selected and we refer back to the case studies to give readers a concrete idea of what those factors mean in the daily practice of virtual schools and colleges.

Defining Key and Critical Success Factors

Theories and Research

While a simplistic division may lead one to define critical success factors as factors vital for success, and key success factors as factors simply desirable for success, literature actually makes a sharp distinction between the two concepts. Success factors focus on key areas of operation which must be performed exceedingly well for an organisation to sustain success. Taken in this sense, critical success factors might be considered to be a generic mix of factors required by any organisation to achieve sustainability and effectiveness.

In more detail, within any organisation, management planning and control systems need both to reflect a company's strategic objectives and encompass the roles of its managers if the organisation is to develop and sustain success. Thus, the concept of critical success factors has aspects which are *manager-specific* and based on four prime sources:

- Structure of the particular industry;
- Competitive strategy, industry position and geographic logic;
- Environmental factors;
- Temporal factors.

Re.ViCa – *Reviewing (traces of) European Virtual Campuses* – the predecessor project of VISCED that ran from October 2007 until September 2009 – worked towards producing a list of critical success factors in this sense, with the explicit purpose of being short enough to be useful for strategic management functions within virtual campuses in higher education. A critical success factor is defined in Re.ViCa as "an element that is necessary for an organisation or project to achieve its mission". This differentiates it from other factors, which are important or nice to have but not *necessary*. Benchmarking in e-learning typically looks at a wider range of factors than success factors, and quality systems for e-learning at an even wider range. This is sometimes represented as a "pyramid of factors" (Bacsich 2009).

In the end, Re.ViCa research led to a list of 17 *critical* success factors, deemed relevant to success of e-learning in *all types of virtual campus*, and a list of 14 *key* success factors, relevant to success in e-learning in one or more *subsets* (categories) of virtual campus (such as private for-profit providers, consortia, etc.)

VISCED Success Factor Definition

Based on a thorough overview of the literature including the predecessor project Re.ViCa, the VISCED project considered both types of success factors, namely:

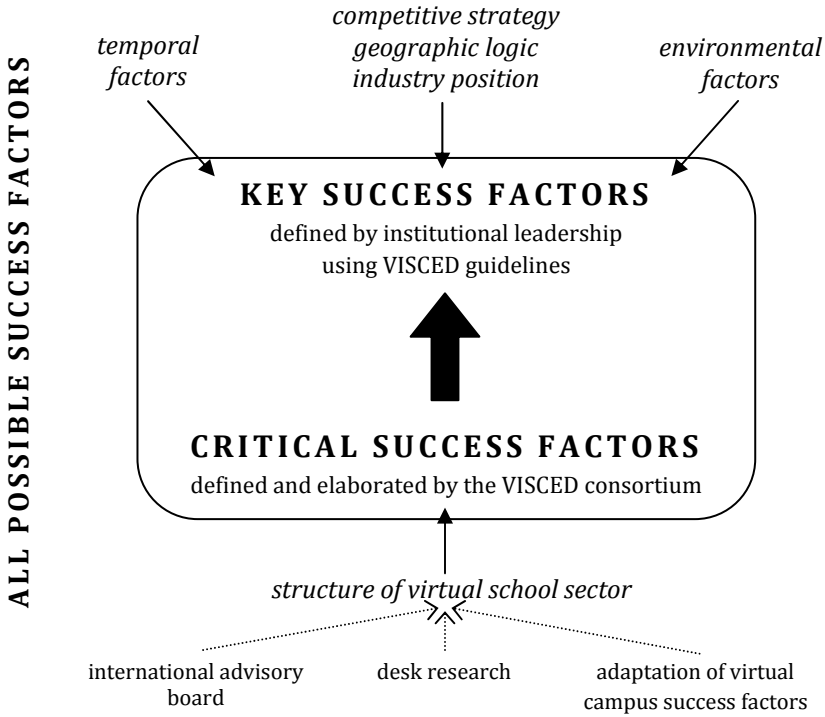
- Industry-specific (and wide) critical success factors;
- Institution and manager-specific key success factors.

Sources and Methodology

Sources

As the critical success factors are implicitly dependent on the structure of the virtual school sector, they are initially based on a research overview of the sector, work that is presented in Volume 1 of this handbook.

Key and critical success factors are represented in the following diagram:



RE.VICA CRITICAL SUCCESS FACTORS

Since the virtual schools sector demonstrates considerable similarities with virtual campuses in higher education, the work on critical success factors for VISCED started using the Re.ViCa critical success factors as a basis. The applicability of each factor was considered, as well as any requirements for new ones, in consultation with an International Advisory Committee, made up of experts in virtual schooling research and management from around Europe and beyond. As a starting point for defining a list of potential success factors for virtual schools and colleges the set of Re.ViCa critical success factors was thus used.

The Re.ViCa list was focussed on virtual campuses in higher education. In the following, the critical success factors have been adapted and reworded to provide a better fit with the schools and colleges sectors. All success factors were taken from the Pick&Mix scheme (Bacsich 2010) where each factor has a name, concise description, three-letter code and two-digit number (01 to 99). Earlier work over several years made it clear that despite their apparent lack of meaning, the *numbers* were the identifiers for factors that audiences found most useful. We have therefore retained them, but prefixed with R for Re.ViCa.

No.	**Factor name**	**Critical Success Factor (highest level statement)**
R04	Usability	All systems usable, with internal evidence to back this up.
R06	e-Learning Strategy	Regularly updated e-Learning Strategy, integrated with Learning and Teaching Strategy and all related strategies
R07	Decisions on Projects	Effective decision-making for e-learning projects across the whole school, including variations when justified.
R10	Training	All staff trained in virtual school system use, appropriate to job type – and retrained when needed.

No.	Factor name	Critical Success Factor (highest level statement)
R12	Costs	A fit for purpose costing system is used in all departments for costs of schooling both face to face and virtual.
R13	Planning Annually	Integrated annual planning process for the virtual school department integrated with overall school and course planning.
R16	Technical Support to Staff	All staff engaged in the virtual school process have 'nearby' fast-response technical support.
R19	Decisions on Programmes	There is effective decision-making for new virtual school courses across the whole school.
R22	Leadership in e-Learning	The capability of leaders to make decisions regarding virtual schooling is fully developed at departmental and school level.
R29	Management Style	The overall school management style is appropriate to manage its mix of educational and business activities
R35	Relationship Management Upwards	The school has effective processes designed to achieve high formal and informal credibility with relevant government and public agencies overseeing it.
R53	Reliability	The virtual school e-learning system is as reliable as the main systems students and staff are used to from their wider experience as students and citizens.
R58	Market Research	Market research (to assess demand for virtual schooling) done centrally and in or on behalf of all departments, and aware of e-learning aspects; updated annually or prior to major programme planning.
R60	Security	A virtual school system where security breaches are known not to occur yet which allows staff and students to carry out their authorised duties easily and efficiently.

No.	Factor name	Critical Success Factor (highest level statement)
R91	Pupil Understanding of System	School pupils have good understanding of the rules governing assignment submission, feedback, plagiarism, costs, attendance, etc. and always act on them.
R92	Pupil Help Desk	Help Desk is deemed as best practice.
R94	Pupil Satisfaction	Frequent (ideally annual) Pupil Satisfaction survey which explicitly addresses the main e-learning issues of relevance to pupils and their parents.

PICK&MIX MASTER LIST

The Pick&Mix criteria were a main source for the Re.ViCa critical success factors, and for VISCED this scheme was re-analysed. Pick&Mix consists of a set of around 90 performance criteria, scored on a scale of 1 (lowest) to 5 (highest) for application in Higher Education Institutions, and tailored towards institutional benchmarking.

INACOL NATIONAL STANDARDS

Schemes and methodologies addressing virtual schools and colleges are scarce. One important exception that was looked at in VISCED is the iNACOL National Standards. iNACOL, the International Association for K-12 Online Learning is a US-based non-profit membership association facilitating collaboration, advocacy and research to enhance quality K-12 online teaching and learning. They have issued *National Standards for Quality Online Courses, Teaching and Programs* which provide quality standards for evaluating online courses, teachers and programmes with common benchmarks.

ADDITIONAL SOURCES

In general, there is a substantial corpus of literature on success factors for e-learning, together with a number of benchmarking and quality schemes which contain relevant information.

A number of those e-learning quality, certification and benchmarking schemes and methodologies were reviewed, in order to compare the list drawn from Re.ViCa and Pick&Mix with the success factors elucidated in those other schemes, so as to (a) ensure consistency of style, (b) harmonise similar factors and (c) identify lacunae in the coverage of the original set of critical success factors.

Descriptions of the schemes that were examined for VISCED are available on the VISCED wiki, brought together under the Methodologies category.

Each scheme has its own particular approach and focus, some more relevant than others in view of the VISCED work. The majority of benchmarking or quality schemes are focussing on post-secondary education, e.g. the above-mentioned Pick&Mix. Other such schemes include:

- *ACODE benchmarks for e-learning in* universities – offering benchmarks for the use of technology in teaching and learning in order to support continuous quality improvement;
- *e-Learning Maturity Model* – a tool for institutions by which they can assess and compare their capability to develop, deploy and support e-learning;
- *UNIQUe* – aimed at the institutional certification of universities for outstanding work in the use of ICT-based learning, with a quality label articulated in three areas: resources, processes and context;
- *Open ECBCheck* – a programme-level certification design to measure how successful their e-learning programmes are and allows for continuous improvement though peer collaboration and benchmarking of e-learning;
- *eprobate* – an international quality label for e-learning courseware.

As mentioned above schemes addressing virtual schools are scarce. Apart from the iNACOL National Standards one other worthy of mention is:

- *Quality Matters* – a peer review process to certify quality of online and blended courses, mainly in higher education but also secondary education.

For the school sector, other interesting tools include:

- *MIICE (Measurement of the Impact of ICT on Children's Education)* – a tool developed by the University of Edinburgh, by which schools can measure their progress in the quality of learning and teaching incorporating the use of ICT.
- *NCTE e-learning Planning* – a tool developed by the National Centre for Technology in Education in Ireland to assist schools in developing their e-learning plan.

INTERNATIONAL ADVISORY COMMITTEE INPUT

At various points in the project, consultations were organised with the VISCED International Advisory Committee. Outcomes from the various meetings were recorded and success factors mentioned during those gatherings were considered strongly in the final selection of success factors.

Methodology

Based on the Pick&Mix scheme elaborated with comments from the Re.ViCa success factors list, feedback from the International Advisory Committee and the input from the extensive desk research, a master list of success factors was composed as a first step in the process. Each of the success factors was then checked by a group of experts against the SMART checklist, i.e. refining each criterion to ensure it was Specific, Measurable, Attainable, Realistic and Time-bound. Following this evaluation, a short list of critical success factors was composed, consisting of success factors which could, as far as possible, be assessed using SMART principles.

In a second step, the short list was circulated among project partners in consultation with the International Advisory Committee for commenting and for refining the contributing factors, which more specifically define the measurement of the success factors and the level of achievement within the success factors. The applicability of each factor was considered, as well as any requirements for new ones.

This process led to a refined list of eight critical success factors which are considered specific to the virtual schools sector, and which can be used in defining monitoring indicators and performance benchmarks within institutions. It should be noted that the critical success factors created are Europe-oriented, rather than reflecting the different situation in the USA, and that they are better suited to European virtual schools, which are generally relatively small organisations recently established, rather than colleges, which are often longer established and more akin to higher education in their structures and size. They are expected to be useful both in monitoring internal processes as well as benchmarking institutional performance against other actors in the field.

VISCED Critical Success Factors

The process described above leads to the following list of eight critical success factors:

	Critical Success Factor	Description (highest level)
1	Leadership in e-learning	The capability of leaders to make decisions regarding staffing, student issues, and virtual school administration is fully developed at all levels of management.
2	Market research	Market research (to assess demand for virtual schooling) done centrally and updated annually or prior to major programme planning.
3	Relationship management	Effective processes designed to achieve high credibility with relevant government and public agencies.
4	Technical infrastructure	The technical infrastructure is reliable and fault tolerant (in terms of availability and backup) and support is readily available to the system users.
5	Usability	All systems (for supporting students, teachers, and others involved) usable, with internal evidence to back this up.
6	Professional development	Appropriate professional development available to staff (subject matter, pedagogical principles, teaching tools which they are utilising for instruction, as well as in understanding the specific nature of students involved).
7	Learning outcomes	All teaching has clearly defined learning outcomes, which are assessed for purposes of certification and progression. Learning outcomes and their assessment are uniform for equivalent units throughout the institution.
8	Understanding the regulations	Students have a clear understanding of the school/college regulations.

Evidence from the Case Studies

In Chapter 3 of Volume 1 of this handbook, eight case studies of European virtual schools are presented and described in detail and we have examined the evidence from these in both compiling and testing our list of critical success factors. The text below illustrates this approach, through reference to the case study material; since the focus of VISCED is on Europe, we have only used material from the European case studies, all of which appear to be of schools that are both successful and demonstrate sustainability.

1. Leadership in e-learning

The capability of leaders to make decisions regarding staffing, student issues, and virtual school administration is fully developed at all levels of management.

Many of those involved in virtual schools and colleges are pioneers, comfortable with overcoming challenges and breaking down barriers. Most have strong beliefs when it comes to topics like equity in education and the importance of lifelong learning and it is clear that strong leadership skills and beliefs and a value-system that enjoys overcoming challenges are vital components when it comes to creating successful virtual schools and colleges. These leaders also need to be able to make clear decisions regarding staffing, student issues, and virtual school administration which command support across the organisation.

All of the European case studies show significant evidence of strong leadership, which has clearly contributed to their sustainability. This is effectively illustrated in *iScoil*, which grew from the UK online learning model notschool.net, the brainchild of Prof. Stephen Heppell. There have been two clear phases in its development so far. In the first phase, 2007 – 2009, the model was developed and implemented in partnership with Notschool.net UK and was known as Notschool.net Ireland. Then in 2009, following a period of reflection and consultation, an independent model was established known as iScoil which continues to this day. At the moment iScoil is managed directly under the auspices of the Presentation Sisters in Ireland. However, there are advanced plans in place to set up iScoil as a separate company with registered charitable status. This means that while the Presentation Sisters will still play an important role, iScoil will have more autonomy and independence. To this end, a business plan and a fund-raising strategy are being prepared.

2. Market research

Market research (to assess demand for virtual schooling) done centrally and updated annually or prior to major programme planning.

Often, there is still too little systematic tracking of potential students for virtual schools and colleges though several schools already make their own projections of pupils' numbers and demographics. The demand for virtual schooling is obviously there and doing more market research can be vital in order for schools to expand significantly.

Ensino a Distância para a Itinerância (ED) is already well known within the circus and fairs communities and therefore families usually autonomously ask for their enrolment in the project. However, children who could participate in the project are also directly involved by the Ministry of Education and Science through a general register which permits the identification of itinerant students and drop outs.

Advertising and promotion are important for *InterHigh*. Word of mouth and recommendations, as well as advertising and online marketing, have seen InterHigh increase the number of children on its roll every year since it opened.

In Finland, competition to get students is tough and each school has to market their own school and courses. Constant development and new ways of studying also need to be promoted towards potential students. In Nettilukio (*Otava Folk High School*) students are attracted through different channels: events and seminars, Google marketing, Facebook, Twitter, blogs (opeblogi), newsletters, action reports, videos and other recordings.

3. Relationship management

Effective processes designed to achieve high credibility with relevant government and public agencies.

For virtual schools and colleges, it remains necessary to identify and build relationships with influential players, e.g. local councils, government ministries, etc., but also to manage relationships with (public and private) investors and to seek networking and collaboration possibilities with other actors in the field.

After years of steady growth, *InterHigh* leaders felt they had reached a "crossroads" in early 2010. They wanted to build on their success but decided to limit pupil numbers to 300, believing significant further expansion would have a detrimental effect on the quality of personalised education they could offer each child. Instead, they took the decision to grow laterally by launching three new business divisions, the aim of which were to form joint ventures with local authorities and individual schools in the public sector, independent

schools and tuition businesses. Under this new policy, local authorities are now able to use InterHigh's unique online teaching platform under licence to develop a supplementary or 'top-up/catch-up' education service to cater for children in need of additional support.

Riga Distance Education Secondary School (RTV) is a private school with private finances. However, the Ministry of Education and Science of the Republic of Latvia provides support for the salaries of teachers. RTV is acknowledged and accredited as a private school within the Latvian education system.

iScoil is still relatively new and does not yet officially have a status in terms of the Irish Education System. The very concept of the virtual school is new in the Irish system and so there is a lack of precedent in Ireland for this type of school. However, the school is known amongst senior officials and respected by many agencies and was specifically mentioned in the recent Programme for Government as an innovative initiative in terms of tackling the problems of early school leavers in Ireland. The closest relationship that iScoil maintains with the state is with the National Education Welfare Board (NEWB) which refers students to iScoil. The NEWB is aware of all students who are enrolled in iScoil. Efforts are being made by iScoil to be formally recognised by the NEWB as a non-recognised or private school.

Ensino a Distância para a Itinerância (ED), developed from a national initiative of the Ministry of Education and Sciences, is currently organised through partnerships with a public school. The initiative also has the support of some private institutions concerned with its social goals (e.g. foundations, editors, etc.). The initiative has established and reinforced partnerships with schools, educational organisations and institutions (i.e. Vodafone, the National Reading Programme, Live Sciences Centres).

Nettilukio (*Otava Folk High School*) reports to educational authorities like any other official upper secondary school in Finland. Official statistics are also produced and delivered annually to educational authorities. The school receives a state grant for each student (the Upper Secondary School Act). The Otava Folk High School is a Mikkeli city-owned company. The city has granted the school freedom of action and an independent role. Sustainability is ensured by continuous development and finding new potential recourses and funded projects as well as by constantly widening co-operation networks.

4. Technical infrastructure

The technical infrastructure is reliable and fault tolerant (in terms of availability and backup) and support is readily available to the system users.

To be successful, virtual schools and colleges need a robust and reliable technical infrastructure that is extremely dependable. For many the quality of the technical support needs to be particularly high when it comes to dealing with users as they are generally not technically expert and may require sensitive management when it comes to their local technology set-up.

Ensino a Distância para a Itinerância is now hosted by one school in the Lisbon Region, which provides the logistics and organisational infrastructure for the virtual school. Teachers work all together from the same space in this hosting school. This condition favours continuous exchange, dialogue and peer learning among teachers and the establishment of a support team building around the single student and the classroom. Students can study from home but in order to avoid isolation and promote interpersonal competencies, itinerant students are also encouraged to take their laptops to the resource centre in the school nearest to where their families are working at that moment and access the virtual platform from there.

While the original idea of *iScoil* was to operate entirely online, this has been broadened to include a blended learning centre-based element. Students have access through a private broadband service (which is filtered at source, as a child protection measure) to this virtual learning environment where they are introduced to their mentor online. They also have contact details for the central team and have access to forums which are available online for support and general interest. Furthermore, they can instant message each other or adults if they need help or for social contact. Telephone support, technical support and face-to-face support through home visits and workshops is also available.

Bednet is a tailor-made system with a personal approach: when a child with a long term or chronic disease is registered at Bednet, a regional Bednet employee prepares the procedure for this student together with his school, the hospital school, his/her parents and, if applicable, a charity involved. The Bednet staff includes two IT support staff who prepare and install the computer sets, who manage a help desk service for child and class, and who provide technical support to the staff.

5. Usability

All systems (being used to support students, teachers, and others involved) usable, with internal evidence to back this up.

The systems being used to support students, teachers and others involved and the technical infrastructure that virtual schools and colleges put in place, have to meet very high standards of usability, even though the technology employed may be relatively old and simple. There are many different systems in place, sometimes tailor made by the schools themselves, including a wide variety of online learning platforms and video or web conferencing systems. No one system dominates the market and practically all the schools and colleges that were investigated use a mix of synchronous and non-synchronous with a blended approach being the dominant learning model. Whatever the system, the extent to which it is user-friendly and fit for purpose is a key consideration.

In addition to its FirstClass learning platform, *Sofia Distans* also send books and DVDs (with most of the online material) to their students. Reflecting the history of the institution and the wide geographic spread of its students (with limited internet access, networking speeds and reliability issues with PCs and printers in some tropical locations), it is probably not surprising that Sofia Distans still finds it necessary to supply printed instructional texts and multimedia DVDs to each student location.

Usable and reliable IT is very important at *InterHigh*. The virtual classroom is built around an interactive whiteboard, with customised web and video conferencing software provided by Voxwire, an American reseller, which has proved to be both user-friendly and reliable from day one. Through their headsets, every child can hear what the teacher says and ask or answer questions. Teachers and pupils can also communicate by typing text messages, which everyone in the class can see. In addition, there is a separate messaging facility so that teacher and pupil can text each other privately. All that is needed to access this way of teaching and learning is a PC or laptop and an internet connection.

A key to the success of *Bednet* is the relative simplicity and ease of use of the system that is used. In terms of the Bednet service and the actual technology provided, staff members acknowledge that the current system may require some updating given that it is essentially the same service as was developed in a pilot version almost 5 years ago. However they are insistent that any further enhancements or changes must remain just as user-friendly and streamlined as the current service which works well for everyone concerned. The Bednet IT staff are expected to manage the IT support that is provided in a user-friendly way making sure that all support given is provided in a very practical way, making sure to avoid any overly technical explanations.

6. Professional development

Appropriate professional development available to staff (subject matter, pedagogical principles, teaching tools which they are utilising for instruction, as well as in understanding the specific nature of students involved).

Many of the job roles in virtual schools and colleges are multi-faceted and complex, demanding a mixed set of skills and competences as well as high levels of empathy and understanding related to the specific nature of the students involved. Virtual schools and colleges have to identify and recruit staff that bring together not only professional skills and empathetic attitudes but also strong technical skills and competences. The most successful approach used by those charged with recruitment seems to be to choose staff with the relevant professional background and experience and to provide on-the-job training and support in respect to the technical aspects. Appropriate training policies and regular updating of skills is very important for most schools and colleges who often depend on a high level of peer support amongst staff.

There are about 20 skilled teachers at *Sofia Distans* and every student also has a parent or tutor at their location. When recruiting, Sofia Distans first looks for flexibility and computer knowledge for all categories of staff. Furthermore, they use in-service training. As distance schooling is discouraged, except in special circumstances, there is no special training for virtual schooling available in Sweden. Therefore, they have to train their own staff while developing their own methods.

The *Wereldschool* has 10 primary teachers, 35 secondary teachers and 12 support staff, all working part-time. Since its main goal is to (re)integrate students into their home-nation school system, Wereldschool prefers teachers who maintain their curriculum and pedagogic knowledge through current employment at traditional Dutch schools. These teachers often thus combine their work at Wereldschool and a traditional physical school. Wereldschool does not specifically recruit teachers for their ICT skills, but seeks good teachers who are willing and capable to adapt to new techniques. All teachers receive support in developing ICT and online teaching skills and are closely monitored. Every month the school checks the pace and quality of the feedback supplied by the teaching staff: teachers have to respond to messages within 48 hours, correct every test within 5 days and send stimulating feedback to their students to keep them motivated. Most Wereldschool teachers work primarily from home but get daily support from the head-office, twice-yearly catch-up meetings, professional development workshops and an annual official appraisal.

Riga Distance Education Secondary School (RTV) teaching staff includes 29 teachers who give lectures every fourth Saturday. Twenty of them also work with students through the Internet. RTV imposes specific requirement for teachers: in addition to professional qualities, teachers have to be interested

and available to always help students whenever they have time for studies. Interestingly, students themselves are allowed and encouraged to suggest teachers from different schools across Latvia to be approached to teach in RTV. RTV financially supports professional development of their staff. For example, extra courses of study, personality development seminars, etc. In addition, extra funds are allocated monthly for recreational activities of staff.

Otava Folk High School consists of the actual Folk High School, upper secondary school, Nettilukio (virtual upper secondary school) and Nettiperuskoulu (virtual basic education). Several staff members work in different sections and their working hours are divided between these sections. There are 23 part-time teachers at Nettilukio who live around the country (or even around the world) and usually teach their subject alongside their other permanent job. Nettilukio strongly supports staff development of both teachers and other staff. Pedagogical further education at the moment is a two-year project, in which the whole work community is participating. It consists of monthly workshops, team syllabuses and development tasks to be done. Workshops (with expert lecturers) take place once a month and they are directed towards both the staff as well as outside participants. There is always both pedagogical and technical support present and when an individual needs training for a certain area, he/she can search for an appropriate course inside or outside school. Orientation of new employees is also organised, depending on the role of the new employee. Finally, the school has a FAQ wiki where concrete instructions and operation models are stored.

7. Learning outcomes

All teaching has clearly defined learning outcomes, which are assessed for purposes of certification and progression. Learning outcomes and their assessment are uniform for equivalent units throughout the institution.

Given the fact that many virtual schools and colleges provide learning opportunities for individuals who do not for various different reasons fit into the main stream, it is logical that learning outcomes are receiving considerable attention. The case study schools place strong emphasis on clearly defined learning outcomes and development goals, which can be assessed, where appropriate, for purposes of certification and progression.

Students at *Sofia Distans* follow the Swedish course plans, mark criteria and curriculum, and are assessed during their courses. Sofia Distans has fewer traditional tests than an ordinary school in Sweden. They use all kinds of media and provide assignments to test the students, but also self-checks and quick quizzes. The school also has the national tests in Swedish, English and mathematics which are sent to the tutor who ensures the student does the test.

Lessons at *InterHigh* are very similar to those taught at any typical English or Welsh secondary school. In Years 7, 8 and 9, pupils follow Key Stage 3 of the National Curriculum and sit internal exams to assess their progress. The students receive the same depth and quality of learning that they would receive anywhere else. In Years 10 and 11, students are formally assessed by International GCSEs (IGCSEs) exams, which are equivalent to GCSEs but differ in that they are 100% exam based (that is, no assessed coursework is involved) – this makes them much more suitable for use by virtual schools.

All programmes at *Riga Distance Education Secondary School* are accredited for six years. The certificate is comparable with other physical schools in the Republic of Latvia and school graduates are students of Latvian and other EU universities. Examinations are the same as in any other secondary school in Latvia.

The main goal of the *Wereldschool* is to (re)integrate students into their home-nation school system. The Wereldschool is recognised as a school by the Ministry of Education. Every year, Wereldschool has to provide its learning outcomes to officials and every three or four years they visit the school to inspect all learning materials, policies and practice.

8. Understanding the regulations

Students have a clear understanding of the school/college regulations.

Everyone involved in virtual schools and colleges needs to have a clear idea of the rules governing the school, the different progression options offered by different learning pathways and of the relationship of the curricula to national or state requirements, especially as many do not cater for what can be considered main stream students. Clarity of the organisational system underpinning the operation of the virtual school or college is important. All of the successful schools and colleges investigated make very explicit what students can expect in terms of achievement and progression and set meaningful goals based on these projects on an individual basis.

Distance learning is the core teaching method at *Sofia Distans*. The school sends the planning, paper books and material needed for the course via mail and then the teacher and the student have contact through the platform. Interaction can be synchronous but is usually asynchronous. The school guarantees answers within 24 hours. Despite the pedagogy being fundamentally asynchronous (thus no fixed timetabled virtual classes), students still have study cards and elements of a timetable, in order for them to plan their study patterns. Every student has a tutor assigned to them who helps them to structure the day and to follow the study plan. However, students are responsible for managing their studies on time. They can choose to follow the timetable or organise their study

themselves in their own time and when they want during the school year.

Students of the *Wereldschool* are supplied with a comprehensive manual and package of learning materials (books, CD-ROMs, etc). The manuals contain a lesson planner and all lesson materials. For primary students the manual is written for the parents whilst for secondary students the manual is written for the students. Parents of primary school children are expected to work with their children. Secondary school students are expected to work independently with the materials and use web technologies to contact their teachers for support. There are clear agreements on how and when the teaching staff should give feedback (e.g. respond to messages within 48 hours, correct tests within 5 days, give stimulating feedback, etc.) The parents are encouraged to act as mentors. The students periodically have to take online tests, which are supervised by the parents. The student or parent then sends the answers to the teacher. In the final year of secondary school the students have to return to the Netherlands to take the official finals which are administered by an independent, national institute responsible for all official school exams that do not take place at a school.

One of the keys to success in the *Bednet* service is to have good and explicit agreements between everyone concerned. These agreements need to cover aspects such as what subjects the student will follow. Agreements can be either verbal or agreed in simple written contracts drawn up between everyone involved.

iScoil offers an individualised online-learning programme. Whilst learners agree upon a learning plan with their mentor, they are also encouraged to be self-directed and pursue topics that interest them.

At *RTV*, the academic year is divided into 2 terms. Every term students have to do an end-of-term test in every subject. Students are grouped into classes by grade and programme. Every class has a schedule appointed by RTV. Every month students have to do 3 tests in 3 different subjects. In case a student does not feel ready to do the test or because of personal reasons, it is possible to change the date. Many of the students however are professionals meaning that they have their personal schedule that is accepted by RTV.

VISCED Key Success Factors

To qualify as a critical success factor, a criterion needed to be essential to the effectiveness and sustainability of a virtual school or college. Those factors which are of great but not of critical importance can be regarded as Key Success Factors (KSFs). Key success factors can be thought of as management- and school-specific critical success factors, built upon the sector-wide ones outlined above. They are factors that might be critical but only to some types of virtual schools and not all.

Key success factors allow the institutional management to coordinate the definition of additional success factors with their institutional goals taking into account:

- *Temporal factors*: this can include items such as the overall current political-economic situation (austerity!), addressing specific short-term needs within the institution (lack of staff or materials in a specific area), or addressing social challenges set by public authorities;
- *Environmental factors*: these may include taking note of the socio-economic makeup of the student population, or technical matters regarding personal learning environments due to new technological developments (e.g. adapting to mobile provision);
- *Competitive strategy/geographic logic/industry position*: this essentially involves taking note and adapting to the market fundamentals and the positioning of the institution within such a context.

Examples of key success factors are the following. Though these are factors that cannot be regarded as being critical to all virtual schools and colleges they can be regarded as good practices.

E-learning strategy

Regularly updated distance e-learning strategy in place, integrated with all teaching and learning strategies, and subject to a clear implementation (and budgeting) plan.

A complete commitment to e-learning is core to the rationale of the virtual school or college and not only does it define the school or college as being different, but it is also fundamental to how it operates. Arguably without the e-learning aspect, many of the virtual schools and colleges we investigated simply would not exist. E-learning provides the means and the basis for the success of the school; the strategy may be implicit, rather than explicit and frequently operates on a pragmatic basis – the strategic elements relate to usability and accessibility.

Quality assurance & evaluation

Regular evaluation of all processes, particularly learning/teaching processes and curricula, using a variety of measurement techniques including feedback from all stakeholders, and involving outside agencies where appropriate. Clear implementation procedures for QA feedback to be acted on in place.

Given the highly innovative nature of the virtual schools and colleges that were encountered, it is hardly surprising to note that most of them are engaged in the regular evaluation of all their processes, particularly learning/teaching processes and curricula. They tend to use a variety of different approaches, including feedback from stakeholders and involving outside agencies where appropriate; often evaluation is conducted implicitly and informally, completely unlike the formal processes in universities and large colleges.

Digital learning resources

All students have available digital learning resources which are appropriately embedded within their curriculum.

Some virtual schools and colleges create their own digital learning resources while a few either buy in commercial materials or use a mix of both. What is core to all is the accessibility of the material and the extent to which it meets the curriculum needs. There is an increased interest (from a very low base) amongst this sector in Open Educational Resources (OER) and some are now implementing systems based on OER principles.

Conclusion

This chapter has outlined the approach and working methodology that was applied for creating a set of critical and key success factors to cover activities in the area of strongly ICT-imbued schools and colleges and virtual schools and colleges in particular. The defined success factors can serve as a basis for such institutions to benchmark their achievements and identify areas for improvement. The examples drawn from the case studies allow virtual schools and colleges to compare their own status against the critical success factors.

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5. POLICY RECOMMENDATIONS

Introduction

All European Union nations are understandably protective of their sovereignty with regards to national education policies. It is accepted that it is not the role of the Commission to direct national education policies. However the Commission does have an important role (some would say a *unique* position and a responsibility) to advise, guide and support the Member States with respect to the development of virtual schooling.

In individual nations the issues are greatly complicated by Europe's diverse schooling systems, curricula and qualifications (with few reciprocal arrangements).

Nevertheless, the policy challenges and policy opportunities outlined in Chapter 5 of Volume 1 of this handbook can be distilled into a number of policy recommendations, where the Commission can guide and individual nations can take responsibility. We have kept these recommendations to a small number; our research has made it very tempting to make recommendations which are not largely specific to virtual schooling but we have attempted to resist this.

Our recommendations can be grouped into three broad areas:

- Consolidating and clarifying the policy and legislative landscape in which virtual schooling in Europe currently exists;
- Advising and supporting countries to understand where virtual schooling can help meet national and Commission education and social policies;
- Making the best use of limited resources.

The following section discusses each of these in turn, with our recommendations at the end of each sub-section.

Alongside all our recommendations, we would like to stress the value that the virtual schooling community represents in terms of research for educational technology and wider education spheres in Europe (including industry).

Policy Recommendations

The Policy and Legislative Landscape

We believe that the Commission should take steps to ensure that it, and its agencies, representatives and researchers include the European virtual schools and colleges community in EU funded education programmes and initiatives, and that they are given equal opportunity to bid for EU funding.

With oversight and co-ordination from the Commission, individual countries' education departments should review the interface between the virtual schools' and colleges' modes of operation and their own existing regulatory frameworks to ensure that where virtual schools and colleges help the nation achieve its educational, economic and social goals there are no unnecessary bureaucratic impediments which might inhibit their development and sustainability. Virtual schools and colleges should be subject to the same degrees of intellectual rigour and challenge as physical schools and receive the same levels of support.

The Commission and individual education departments should consider how they might bring virtual schools and colleges within a regulatory and accountability framework which protects but does not disadvantage learners – or the schools. This need not be overly bureaucratic but should simply ensure equivalence with the national accountability frameworks which underpin 'traditional' or 'physical' schools.

The Commission should decide and articulate clearly its position with regard to the validation of online courses and qualifications across Member States and offer guidance to them. Should an online provider

be required to validate its courses and qualifications in *each individual Member State* in which it operates? Or would it be preferable for there to be an agreed reciprocal arrangement (possibly brokered and monitored at EC level) whereby the Member State *in which the virtual provider operates* validates provision and this is recognised throughout the EU? Thought should be given to the role of non-EU providers who are operating from outside of the EU and whether it is preferable for these to have a recognised EU base and agree common procedures and protocols.

Notwithstanding the additional challenges faced particularly by virtual schools, higher education (in particular, but not exclusively, the open universities) would seem to offer a valuable precedent for these issues.

There is a need for clarity with regard to the 'ownership' of qualifications achieved by students who have a physical host-school but who undertake supplementary studies at a virtual institution. The first 'owner' of any qualification is the student. However, virtual schools sometimes struggle to justify their value and their funding because they are not counted in 'official' censuses of qualifications. Equally, host schools have been known to claim credit for qualifications achieved by their students at these 'invisible' virtual schools. VISCED already has evidence of several thousand European students studying online across borders (outside of their home country). The Commission and individual education departments should clarify their positions in order to preserve the integrity of qualifications data.

These issues can be summarised in a single over-arching recommendation:

1. **The Commission should remove any unnecessary bureaucratic impediments which inhibit the development and sustainability of virtual schools and colleges.**

Supporting Education and Social Policies

Individual nations should look to their education and inclusion strategies and seek to identify areas where virtual schooling may provide a valuable component. The Commission should look to the Council's 2012 Recommendations for *Tackling early school leaving* and *The education of children from a migrant background* and make sure that, where appropriate, virtual schooling is considered.

Potential target beneficiaries in both of these priority areas include:

- Students who are school-phobic;
- Students who are excluded/at risk of exclusion;
- Students who are geographically isolated;
- Students who are sick;
- Students who are travelling or transient;
- Students unable to access all the subjects they require (curriculum gaps);
- Migrant students with English language needs;
- Students requiring credit recovery;
- Students requiring revision/acceleration;
- Students requiring support and encouragement for entrance and transition to higher education (particularly those from backgrounds with little history of higher education);
- Young offenders – particularly those in custody who can then continue education on release;
- Students with common language/cultural needs/connections;
- Young women wishing to continue or return to education but who currently have childcare responsibilities.

Individual education departments should identify, advise and collaborate with other government departments, agencies and organisations who have responsibility for the education of children and young people in the above groups e.g. Ministry of Justice for prisoners and Ministry of Health for hospital education groups and networks.

Individual education departments should be encouraged to develop policies to offer *roll-on-roll-off* provision for students struggling with the pace and content of their current curriculum – rather than waiting for them to fail and then hoping that they remain in education to recover credits.

Individual education departments should be encouraged to develop policies which might improve the chances (particularly of those where there is no history or tradition of continuing education) of transition to further and/or higher education by seeking to reduce early school-leaving.

The Commission and individual education departments should develop strategies which ensure that the growth of virtual schools and colleges does not further disadvantage the digitally excluded or other groups.

It is not only in the field of inclusion where virtual schooling can support core Commission and national priorities. Science, Technology, Engineering and Mathematics (STEM) are widely held as drivers of economic growth and have received additional funding from the Commission and governments in efforts to spur innovation. Policymakers should now explore how virtual schooling can expand, accelerate and enhance the high-quality provision of the STEM curriculum.

These issues can be distilled into four recommendations:

1. **The Commission and individual governments should raise awareness as to the value and impact of virtual schooling in meeting education and social policies.**

2. **The Commission and individual governments should raise awareness of the potential of virtual schooling in helping students maintain timely progression through the curriculum and in supporting students who require additional revision, acceleration or have special educational needs.**

3. **The Commission and individual governments should encourage virtual schooling options in traditional schools and colleges as a strategy for reducing early leaving.**

4. **The Commission and individual governments should encourage virtual schooling options as a means of increasing the uptake of Science, Technology, Engineering and Mathematics subjects (STEM).**

Value for Money

Individual education departments should formally collate the figures for the numbers of students taking online/distance courses in their own countries – whether they are full-time virtual students or taking supplementary courses. Virtual schools and colleges are a potential source of rich data, which should be mined to support strategy development and identify where virtual schooling offers best value.

The Commission and individual education departments should consider introducing a (voluntary) common set of standards for online teaching – and individual nations should be supported when integrating these into their teacher training programmes and teacher assessment regimes. As we have already shown through our research, several thousand European students are already studying online across borders (outside of their home country) – a common set of standards would help ensure quality and consistency. The iNACOL *National Standards for Quality Online Teaching* form a valuable foundation.

Similarly, the Commission and individual education departments should consider a (voluntary) common set of standards for courses – again, the iNACOL *National Standards for Quality Online Courses* form a valuable foundation.

All Member States are committed to engaging parents, carers, guardians and family members – for some this is an explicit strand of national education policy. The Commission and individual education departments should encourage schools (virtual, blended *and* traditional) to embrace the model applied by some Australian virtual

schools whereby these individuals are supported to provide high-quality home-teaching support and to achieve a recognised vocational qualification which can then improve their own employment prospects and broaden their life-chances. The Commission should consider making this area a subject for future Calls for Funding.

The Commission should encourage and advise virtual schools and colleges, directly or indirectly (where individual student places may be purchased by the state),) funded from the public purse, to seek best value for money through exploiting Open Educational Resources (OERs) and allowing any teacher/institution-created content to be published under Creative Commons licences.

Similarly, the Commission should encourage and advise virtual schools and colleges, directly or indirectly funded from the public purse, to collaborate where possible in order that they seek out economies of scale in terms of hardware, software and support. Impediments, whether cultural or technical (firewalls etc.), should be identified and remedied where possible.

The EC and individual governments should take note of the potential for virtual schooling to drive internet take-up, promote the information society, e-government services and improve students' (and parents') ICT skills.

Where domestic internet access is limited and libraries, telecentres, etc. are the main resource for off-campus learning, individual education departments should be encouraged to develop strategies to ensure that neither existing community users, nor virtual school students, are disadvantaged.

We summarise these issues in three recommendations:

1. **The Commission and individual governments should support schools and teachers to develop the skills essential for the delivery of high-quality virtual schooling.**

2. **The Commission and individual governments should encourage and advise schools and colleges to exploit Open Educational Resources (OERs).**

3. **The Commission and individual governments should exploit the potential for virtual schooling to drive internet take-up, promote the information society, e-government services and improve student (and parent) ICT skills.**

6. CONCLUSIONS

As far as possible we list our conclusions by chapter across both volumes.

Volume 1

The Virtual School Phenomenon Across the World

Virtual schools are becoming more and more prevalent all over the world. They are plentiful in North America (both USA – over 500 – and Canada – over 50), and significant in Australia and New Zealand, Asia and Latin America. They are surprisingly prevalent in Europe despite restrictions – around 100 on current estimates when virtual primary schools are included. They are much less prevalent in Africa (which is understandable from the requirement for good online access from home), but more surprisingly they are not common in island regions (such as Oceania and the Caribbean) even where communications are effective.

There are far fewer virtual colleges in the world than virtual schools (or virtual universities) and they seem to be much more likely to be struggling. Reasons were identified which are not specifically to do with IT.

Case Studies of Virtual Schools and Colleges

The project produced eleven case studies of virtual schools and one of a virtual college. Eight are virtual schools within the European Union. These created a wealth of material for our analysts to draw on.

Innovative Pilots

The four pilots performed a useful reality check on what was feasible in specific educational systems.

Policy Challenges and Opportunities

The main policy dilemmas were outlined.

Volume 2

Good Practice in Online Learning

On the whole, virtual schools make a more conservative use of technology than in universities or even classroom-based uses. The difference is that virtual schools make systematic and sustained use of the technology – it is not an experiment to them or their students.

Teacher Training

Unlike in the US, virtual schools in Europe are not growing fast, either in absolute numbers or the enrolment per school. Thus there is no Europe-wide need for many more virtual school teachers each year. Furthermore, virtual school teachers tend to stay longer at their schools. As a result, there is no need to give the typical EU project recommendation of setting up a new staff training programme or an EU project for virtual school teachers.

Since virtual schools make conservative use of technology and pedagogies, there is no need for the syllabus of teacher training courses to be adjusted from those which target the classroom/blended situation – but it is useful to have some changes in the specific projects such teachers undertake. (The case studies in Stockholm and Sheffield give some ideas.)

Thus also the benchmarks for rating teacher performance in use of technology in virtual schools can be the same as those for teacher performance in use of technology in classroom-based schools. The iNACOL guidelines are felt to be a useful basis but may need revising to fit better within a European context.

Developments towards a more uniform approach to training for ICT in education across all sectors are to be encouraged.

Critical Success Factors

Unlike virtual universities, outside the US very few virtual schools have failed, so the strong driver for creating Critical Success Factors for virtual universities (i.e. reasons for failure) is absent.

Thus in the end there was no strong need to radically change the Re.ViCa list of Critical Success Factors – instead we have updated and nuanced it in the light of such new evidence as we have, and consolidated some criteria together.

For virtual colleges there was no need to make changes at all, other than a general modernisation of some criteria.

Policy Recommendations

In Europe, there is no country where even 1% of school students are undertaking virtual schooling, hence for ministries of education, this is not an important area. Recommendations should bear this in mind.

Such virtual school initiatives as there are have often come out of left field as judged by a ministry of education – other ministries, foundations, NGOs, social entrepreneurs, etc. – rarely the private for-profit sector or the established private schools.

As a result partly of budget cuts, many European countries now have very little analytic capability left in ministries of education; nor much money from which to fund studies from their usual clients of universities, research units and NGOs.

Even in the former mainstream area of ICT in education, several European countries have no policy now for ICT in schools. Several are now not members, or effective members, of European Schoolnet. There is often no inspection regime which takes ICT in education aspects into account.

Policy recommendations must take account of these facts. In particular they must be broad-spectrum and not focus only on the ministry of

schools education; nor can they leverage on a common understanding of ICT in schools.

The unanalysed prohibition on homeschooling (with its specious justification based on the UN Rights of the Child – except in a few OECD countries) needs to be challenged. Virtual schools are schools. Homeschooling should be renamed parent-led teaching. Such teaching needs to be inspected just as teacher-led teaching is.

Most countries have inspection regimes for schools. However, these often have unintended negative consequences for virtual schools. Ministries must ensure that inspection regimes do not inadvertently discriminate against virtual schools.

Interestingly (despite rhetoric on Rights of the Child) there seems in most countries in Europe to be no right for a child to have as good an education on an island or poor remote region as in a city or rich suburb. (This has particular relevance to STEM.) Ministries should introduce a right to comparable education and use this to foster virtual schooling in shortage or specialist subjects across the country – in particular Mathematics and Computer Science.

Ministries should take steps to foster a wider range of provision, especially (but not only) for the standard inclusion communities found across Europe.

Especially when reconstructing or refreshing provision for school children of school-leaving age and above, ministries should remember that such children do not need adults looking after their welfare and most are digital natives. There is a particular need for hybrid upper secondary schools more on a college basis where attendance is only a few days or half-days per week and linked to employment and home-based study.

7. GENERAL REFERENCES

Note that several chapters in Volume 2 contain chapter-specific references.

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Web sites

The following are the key sites associated with VISCED:

- VISCED web site including newsletter – http://www.virtualschoolsandcolleges.info/
- VISCED wiki (including the Re.ViCa wiki) – http://www.virtualcampuses.eu/index.php/Main_Page
- VISCED project management wiki: gives details of the project – http://visced.referata.com/wiki/Main_Page

Mendeley databases

The main database is http://www.mendeley.com/groups/1075201/virtual-schools-and-colleges/ but each topic has its own private Mendeley database also (apply to VISCED to request read access to one or more of these databases).

Practically everyone has the same understanding of a school or college as a place where students go to learn. But what about the students who find it difficult simply to go to a place of learning? What if they are scared of school, ill or unable to access the school for some other reason? What about students who want to take subjects which they cannot access in their local school or college or young people who are incarcerated and who want to find a way into further or higher education to increase their life chances?

Virtual schools and colleges are an increasingly important alternative for these students and are becoming more and more prevalent all over the world - including Europe. But little is known in Europe about how they operate or what makes them successful. Many people are suspicious of these new structures particularly when they are offered as a replacement for compulsory-level education. Yet a lot now exist and have been the subject of a recent investigation carried out by the VISCED consortium supported in part by the European Commission.

This handbook is the second of two publications in which the outcomes of the VISCED research are summarised. In these handbooks we aim to provide you with an introduction and basic understanding of virtual schools and colleges.

This second volume investigates the topic of teacher training, provides a series of success factors and puts forward a set of policy recommendations related to the further deployment of virtual schools and colleges.

The first volume contains a series of in-depth case studies and a portrayal of how virtual schools and colleges manifest themselves across the world. It also contains a description of a number of innovative pilot actions that the VISCED partners have carried out in schools and an introduction to a set of policy challenges and opportunities that need to be considered when discussing virtual schools and colleges.

VISCED
A Transnational Appraisal of
Virtual School and College Provision

Lifelong Learning