

ENHANCING THE EUROPEAN DIMENSION IN UPPER SECONDARY SCHOOLS — USING ICT TO BRIDGE SCHOOL SUBJECTS AND DISTANCES

J. Ola Lindberg and Susanne Sahlin
Department of Education
Mid Sweden University
Sweden

Abstract

In this paper, one project within the European Union Life-Long Learning Program sets the scene — Bridging Insula Europea. Students in upper secondary schools in seven European countries collaborated through the use of ICT on content intended to enhance their understanding of each other and of common issues. The project intertwined curriculum integration of subjects with international collaboration and use of ICT. The empirical part consists of the Swedish upper secondary school involved in the project. The school is described as a case in which aspects of subject integration and collaborative ambitions are intertwined with the use of ICT.

Introduction

One of the important aims of the European Union program for life-long learning is to enhance the European dimension. The aim is twofold, both to improve mobility between European countries, and to enhance the understanding of the common European heritage. In this paper, one project within the life-long learning program sets the scene — Bridging Insula Europea. In the project, students in upper secondary schools in seven European countries collaborated through the use of ICT on content that was intended to enhance their understanding of each other and of common issues related to life, history, and culture and such. The project intertwined curriculum integration of different subjects with international collaboration and use of ICT. In this paper, the project will be considered as a case (Stake, 1995; Yin, 2003) that has the possibility of revealing previously inaccessible knowledge about subject integration, international collaboration and use of ICT in upper secondary schools. But first, before going into details about the case as such, or about its potential, we will present some already known aspects of subject integration and the use of ICT.

Integration of Subjects

Boyd et al. (2007) conclude that research evidence on inter-disciplinary as opposed to subject-based approaches is not conclusive. They report on work on “rich tasks” as promising in terms of pedagogy and pupil engagement, and that inter-disciplinary approaches are put forth as a means of allowing learners to transfer skills and to make

connections. But they also acknowledge the barriers that might come from subject-based interests. From their review they suggest that inter-disciplinary approaches that are based on a convincing rationale can offer opportunities for 'joined-up' learning which is not always offered in individual subjects.

Reporting on teachers perceptions on teaching integrated subjects in Hong Kong, Leung (2004) identifies contexts that effect the introduction of curriculum integration. He discusses the extent to which respondents recognized the need to enhance the implementation of curriculum integration in schools. Leung states that integrated learning restores meaning and relevance to the student's experience of schooling. He points towards a potential of transforming the students' experience of subjects as disjointed series, into a meaningfully integrated, holistic education which applies to real life the content of education. Listening to the students' voices regarding subjects' integration, and looking at the way the students relate their own learning through drama pedagogy to their learning in subjects, Chan (2008) points to the importance of including the students' perspectives.

In a comparative case study on curriculum integration, Rennie, Sheffield, Venville, and Wallace (2005) address the issue of disciplinary boundaries. Their conclusion is that curriculum integration does not necessarily have to mean completely dissolving disciplinary boundaries. Rather, it is a question of the degree of integration that fits the needs in the local context, that is both major and minor forms of subject integration can be successful in the right context.

Regarding subject integration, it seems that the above mentioned research implies that both teachers' and students' views are important, but not necessarily univocal. The issue of boundaries needs to be considered, as well as the degree to which integration is driven. A normative approach towards full integration might not be necessary, and cases in which subject integration is included in a minor way might also be considered as successful.

Using ICT in Teaching

The impact of ICT on education can be questioned. Cox and Marshall (2007) claim that up to today, the lack of large-scale longitudinal studies of ICT's impact in education and the few comprehensive studies of the complex interactions between various types of ICT implementation along with questions concerning the design and procedures of the research conducted give us little knowledge to start from. In the short review below, an attempt to summarize issues concerning implementation and use of ICT in education is made.

Mueller, Wood, Willoughby, Ross, and Specht (2008) researched discriminating variables between teachers who integrate computers in their teaching and those with limited integration. The variables they found were positive teaching experiences with computers, teacher's comfort with computers, beliefs supporting the use of computers as an instructional tool, training, motivation, support, and teaching efficacy. In an international study of technology and classroom practices, Kozma (2003) concludes that

teachers in many countries are beginning to use ICT to help change classroom teaching and learning, and to integrate technology into the curriculum. He reports that students are working together in teams and using computer tools and resources to search for information, publishing results, and creating products. As for the teachers, he reports that they are using ICT to change their role. He describes a move from being a teacher who is the primary source of information, towards a teacher who provides students with structure and advice, monitors their progress, and assesses their accomplishments. In a comparative case study, Law, Kankaanranta, and Chow (2005) report on how teachers in Hong Kong and Finland create innovative ICT-supported pedagogical practices. In their paper, they try to answer whether there are systemic differences in the nature of the educational innovations across countries, and if there are systemic differences in the change mechanisms and factors influencing change across countries.

Looking at factors that contribute to successful IT implementation, Granger, Morbey, Lotherington, Owston, and Wideman (2002) found that informal ICT education, such as 'just-in-time' learning, is most influential. Supportive and collaborative relationships among teachers, as well as a commitment to new technologies implemented in a pedagogically sound way, and principals who encourage teachers to engage in their own learning were also highly useful factors. In identifying barriers to integrating technology in K–12 classrooms, Foon Hew and Brush (2007) gives examples of strategies for overcoming the barriers. Strategies they name are having a shared vision and Technology Integration Plan, overcoming the scarcity of resources, changing attitudes and beliefs, conducting professional development, and reconsidering assessments.

In their review, Boyd et al. (2007) found that studies on the role of ICT in learning suggest that the hardware is less important than the pedagogy. Interestingly for this paper they also conclude that teacher continuous professional development and collaborative working are more likely to ensure effective use of the technology. Varying pedagogy and aiming for 'deep' learning, the timetable is important to enable longer episodes of learning when required. In a study of 12 cases of innovative pedagogical practices using ICT, Schultz-Zander, Büchter, and Dalmer (2002) identified a common theme in eleven of the cases of student collaboration. They discuss a pattern in which ICT was used in different ways as a cognitive tool for gaining information, producing and presenting their outcomes, and as communication tool. The students communicated through e-mails with students in other schools, expanding the cultural horizon of experience of the students. Learning from multiple perspectives, the outside world was allowed into the classroom. ICT was often used as an additional medium to acquire knowledge alongside traditional media and tools. In the cases they investigated, the working methods and also the media used increased in variety.

In a study of how Norwegian teachers characterized as digitally competent teach in technology-rich classrooms, Almås and Krumsvik (2008) show that teachers need to feel comfortable with changes, otherwise teaching practices will stay the same. A bit paradoxical, they also report that the teachers have developed a digital pedagogical content knowledge which they claim seems to be necessary in the digitised school of today. From a Cyprus perspective Pouyioutas and Solomou (2008) report adequate use of

ICT both in state and private schools, not only for teaching and learning purposes, but also for providing administrative support and on-line educational services. In a Norwegian study on how teachers use ICT in relation to students project work, Postholm (2006) found that teachers needed training in how to decide when and why ICT should be used. Looking into technology use and young learners use of Web 2.0, Clarke, Logan, Luckin, Mee, and Oliver (2009) claim that many learners routinely cross boundaries in their use, but the implications of this activity are not well understood by institutions or indeed by learners themselves. They state that more needs to be understood about the transferability of Web 2.0 skills to support formal learning.

If an attempt was made to summarize the issue of ICT in education, as it appears in the above mentioned research, it seems that one theme is the issue of why ICT is not used as much or as often as expected. Formulated as factors, variables, barriers, uncomfortable feelings as well as systemic differences are discussed in relation to the use of ICT. Another theme is the importance of pedagogy, and how a technology enhanced practice might be characterized. One important issue is also the assumption that students use of ICT, Web 2.0 and other digital devices, make them already prepared for working with ICT in formal learning settings, an assumption that might be important to question (or challenge, at least).

Aim

From the above, there are many different aspects of subject integration, collaboration and use of ICT that might be considered in a case such as this. Teachers' and students' previous knowledge, use, attitudes, and school culture concerning independent and autonomous work may influence the outcomes of a project such as this. Also important is the teachers' willingness and preparedness to integrate subjects in the teaching, the curricula of the national programs, the teachers' assessment practice as well as the students' ambitions to be successful within the limits of the program they study. Given all the aspects that might be considered, an aim of this paper is broadly defined.

The aim of this paper is to analyse the use of ICT in upper secondary schools involved in a European Union financed collaborative project with a focus on subject integration, internationalisation and ICT use.

Methodological Considerations

The empirical part of this paper consists of a study involving the Swedish upper secondary school involved in the project. In this paper, the Swedish part of the project is understood as a case (Stake, 1995; Yin, 2003) in which aspects of subject integration and international collaborative ambitions are intertwined with the use of ICT. As Stake (1995) puts it, the real business of case studies is particularisations, not generalisations. In accordance with Yin (2003), the rationale for treating the project as a case lies in its

possibilities of revealing something that was previously inaccessible. A single case can contribute with the kind of understanding Stake (1995) implies when stating that “The function of research is not necessarily to map and conquer the world, but to sophisticate the beholding of it” (p. 43). Generalising from a single case may not be possible; however, case studies can have general importance. Data consists of texts concerning the project collected from website of the project, concerning the participating school, and concerning the Swedish upper secondary schools system regulations, as well as interviews with participants. The work with adjusting curricula and preparations for the project have been conducted and documented through contacts via e-mail and videoconferences, complemented by interviews which have been conducted with the school-leaders and teacher at the participating school. The interviews were semi-structured and included among others the following questions:

- What has been done in relation to the project?
- What kind of didactical issues have been addressed in the project
- Have your experiences of ICT in education been affected by Bridging Insula Europea?
- Has your work in the project varied depending on different groups of students?
- What is your experience of the students’ abilities to participate in a project such as Bridging Insula Europea regarding such things as technical competence or attitudes?
- Related to Bridging Insula Europea, is it your experience that some kind of instrument to make priorities in the work has been missing
- What kind of priorities have been undertaken in order to facilitate for the project?
- Given your other cooperative projects (India, Ecuador), what would you consider important for your ambitions regarding ICT, subject-didactics and internationalization?
- Have you in the Bridging Insula Europea project experienced a lack of resources (such as material, localities, money, contacts, interests etc.)?
- What, in your opinion, would have made your work in the Bridging Insula Europea to have reached further?
- Do international development projects, such as Bridging Insula Europea, demand any special kind of pedagogical/didactical or leadership competence that is different from your everyday work?

Describing the Context of the Case

In the preparation for the Swedish project, two upper secondary schools were involved. At one school (an upper secondary school in a small town which is part of a medium-sized municipality on the coastline in the northern part of Sweden) one teacher was involved. At the second school (an upper secondary school in a sparsely populated municipality in the inlands of northern Sweden), two teachers were involved. In the coastal city, preparations were done together with one of the teachers teaching civics. This school, which is more than 50 years old, is an upper secondary school that gives eight different national programs. The school attracts students from all parts of Sweden to

different kinds of sports-related programs. The school has about 1000 students, and about 120 teachers are employed at the school. The school describes itself as a modern upper secondary school where teachers work in teams in the different programs. Due to personal circumstances within this school, and due to the fact that not enough details could be worked out concerning the adaptation of the curricula to the experiment, the school could not participate in the project when it was launched. Despite not being able to participate in the study, preparations were made for one group of students studying during the final semester to participate in the experiment.

In the Swedish part of the project, the upper secondary school from the smaller inland municipality participated. This upper secondary school is rather new — it gives six different national programs and has its own specialization of technical college in programming. The school has about 150 students and about 30 teachers. The school describes itself as a school like no other. Students borrow laptops and work through the wireless network. Students' work is conducted very much under their own responsibility towards the goals of the curricula. The school is certified in health and describes itself as a small school where students' work close to their teachers in smaller groups. Students are also given opportunities to study some parts at a distance — the school has their own server and manages their LMS platform by themselves. Because one teacher took a maternity leave during the project, it was conducted with only one of the teachers. The number of students participating was 13, all studying the same program with two different specializations. The Swedish educational system in upper secondary school regulates the subjects divided into courses, and courses may vary in length. The experimentation phase curricula was integrated into two regular courses in the program, Swedish C and Civics B. Grades and syllabus are regulated and given for every course stating the objectives to be achieved. There are also grading criteria for every course stating the required level of achievement for the grades of Pass, Pass with Distinction and Pass with Special Distinction. The content of the three different curricula in the project were integrated into the work, and the school followed the structure for sharing their work that was in the guidelines for experimentation with minor adjustments.

Describing the Case — Subject Integration, International Collaboration and Use of ICT in Upper Secondary School

From the interviews and the preparation work, the experimentation seems to have resulted in a project where students find the theme of Europe interesting and related to their own situation. The methodological and didactical approach adopted in the project was addressed by the teacher in the interviews, and it seems that students were satisfied with the didactical approach. Didactically, the project was built on group work and discussions, with clear objectives related to the Swedish upper secondary school course syllabus. The students seem to have appreciated the possibility of setting up their own learning goals within the framework of the objectives. Concerning the content of the work, from the teachers' view it seems that the students enjoyed working on the theme of Europe, even though they seem to have felt it to be rather too much Europe from time to

time. The students are reported to have found the content of the three curricula rather static; they seem to be used to more dynamic and less linear materials on the Net. It seems that the students enjoyed making presentations and reading and looking at the work of other students from various parts of the world. According to the teacher, the students appreciated the fact that there were real persons logged into the platforms, and the level of learning benefited from that motivational aspect. The teacher expressed a concern for scheduling the work since the students at the school are used to working autonomously. It seems that the students have come to appreciate the ability to schedule and structure their own work, rather than having the teachers control their work. But considering the project, the students seem to have enjoyed the whole experience. According to the teacher, in the end of the project they expressed that they felt it to be a pity that the experiment ended, just when they found that they could go on and when they felt they just got started.

Concerning the didactical methodology and the level of understanding the method and the goals, the teacher found the structure and disposition of the work to be a help to keep focus. The disposition helped her to relate the work to the Swedish syllabus and to the objectives and gave a structure that allowed the students to work rather independently in groups. Regarding the efficacy of the teaching method, the teacher expressed that without the method of working towards a European perspective from the local level and individual perspective, the students would probably not have reached the objectives in the same way. Commenting on the contents, the teacher stated that having the possibility to work with the local perspective in relation to a European reference material which was authentic, consisting of real people, helped in making the content relevant and interesting for the students. The content of the three curricula was dealt with as reference materials for positioning themselves within a European context. Regarding the schedule of the work, the Swedish teacher and students had to start the work on the content of the experiment before they had their logins to the platforms, which according to the teacher made it a bit difficult. The students had to assume what kind of reference material from the others schools in Europe they might find later on in the project, and they would have benefited from being more in line with the experimentation in the other schools. As it turned out, they also missed out in opportunities to be part of videoconferences with the other students due to the Swedish course structure and syllabus. The teacher expressed a general satisfaction with the experience. She felt they had done as much as they could with the help of the material and possibilities within the project, but she also expressed that they could have come further, had she had not been alone with her students and had they have had perhaps one or two schools assigned to them as more direct partners.

Considering the usability of the platform, the teacher noted that the students had no problems with navigating and using the platforms. They found their way around the possibilities built in and helped each other to explore the affordances and constraint of those environments rather independently. They used their profiles without any problems, and according to the teacher they used them the first thing they did. The graphics and layout were not mentioned as being a problem for the students. The students used the three curricula present in the platform, primarily as reference materials for positioning themselves as Europeans, and they worked with those both in class as a whole group and

in smaller groups using it as starting points for discussions. The student found some parts of the curricula to be static and they seem to have wanted to have the possibility of having further interaction and to be able to manipulate the material more. For instance, when they were studying movies, they would have liked to have the ability to stop the movies and go back and talk about different parts more in depth. The material and the platform were experienced as more static than dynamic, lacking in interactivity. The teacher found the platforms, the graphics and the layout of the platforms usable, but it seems that there were rather too many possibilities presented to take advantage of for practical pedagogical/ didactical purposes. The teacher used the curricula materials as reference materials, and let the students read and discuss the materials. The use was therefore mainly to pull materials from the platforms rather than to push materials onto the platforms. The profiles personalized the environment, and students used other student profiles to learn more about the other countries. The possibility to see who was online and who was not was also used a lot, but unfortunately not too many other students were online at the same time.

The strengths of this kind of project lie first of all in the structure which allows the project to be integrated as far as possible into the objectives of the courses of the Swedish upper secondary school. Secondly, its strengths are in the authenticity — real people are behind the profiles present in the platforms that students are supposed to collaborate with. It helps in motivating the student and making the content interesting. The main weaknesses lie in the scale — problems of coordinating the work with other schools are obvious. This makes the platform rather difficult to use for the teacher for didactical purposes, it is difficult to motivate students to engage in discussions and dialogues when the platform primarily works asynchronous. Another weakness lies with the didactical problems of integrating the content with the Swedish upper secondary schools courses structures and objective. The upper secondary school in Sweden has not a long history of working thematically, and it is not easy to integrate several subjects and different content in a structure where courses are read in different sequences and at different times. Nevertheless, the opportunities within the platform in terms of collaborations are great. Using the platform for smaller sub-collaborations could make it work easier. The threats to a project of this kind are among other things the scale. There are many possibilities for working with the content present in the project and in the platforms. Coordinating those with the same kind of ambition, from different local conditions, within different countries is not easy. This can be seen in the Swedish case where the students were unable to participate in the videoconferences planned, and in the disappointment of finding only a few other students logged in to the platforms when they themselves were interested in collaborating. The students, it seems, also found the materials presented by other schools a bit deterring. It seems they realized that their possibilities to produce work with the same quality were limited by coursework, time and other activities. It seems that the fact that the material was to be displayed on a European school level, and as part of their schools work, made them more hesitant rather than enthusiastic to post material onto the platform.

Discussion

This case can perhaps at best be called revelatory, in its particulars there seems to be issues that actually both contest previous assumptions, and confirm them. In one sense, the case adds to the ambiguous picture of ICT in education, and of the thrilling possibilities of subject integration so difficult to enact.

To begin with, the issues of pedagogical and didactical approaches to subject integration, and to the way teachers and students in this case have worked towards the objectives both in the project and in the national curricula, show how difficult and many barriers there is to overcome. As Boyd et al. (2007) mentions, subject-based interests create barriers. In this case, the curricula seem difficult to coordinate. But as the case suggest, students seem to have learnt more about the European perspective through the approach. As reported by Leung (2004), perhaps the approach has restored meaning and relevance to the student's experience of schooling. The teacher view about student motivation might point towards this, authenticity and real people logged into the platform might support the students experience holistic education which applies to real life. The student voices regarding subjects integration, (as suggested by Chan, 2008) seems to be a way of understanding the success of the integration, major or minor (Rennie et al., 2005).

When it comes to the use of ICT in the case, the view of Granger et al. (2002) that a supportive and collaborative relationships among teachers, as well as a commitment to new technologies implemented in a pedagogically sound way, and principals who encourage teachers to engage in their own learning all apply to this case. The school in this case has, as Foon Hew and Brush (2006) gave as an example of a strategy for overcoming barriers for ICT integration, a shared vision as well as developed attitudes and beliefs towards ICT that seem to work in favor of its use. In line with the practices Kozma (2003) reports on, students in this case worked together in teams in the project, using computer tools and resources to search for information, publish results, and create products. And the teacher in the case tried, as Kozma reported, to change role towards being a teacher who provides students with structure and advice, monitors their progress, and assesses their accomplishments. The difficulty of integrating collaborative use of ICT might be due to systemic differences in the nature of the educational innovations across countries such as Law et al. (2005) report on in their paper. This might explain how students in different countries adapt to ICT use in different ways and have difficulty in create spaces for collaboration. But in line with the claims of Almås and Krumsvik (2008), teachers need to feel comfortable with changes, otherwise teaching practices will stay the same. Teachers in this case were comfortable with the changes, but still reported to be struggling with the teacher role. The worries the teachers had about how students would handle the learning platform and other technologies required, became an issue that confirm what Boyd et al. (2007) found. Hardware seems less important than the pedagogy.

Concluding Remarks

From the above, the following four conclusions about the case are made:

- The scale of the project at large and the possibilities build in the platform were too complex.
- The problems of integrating the content and the structure with the national syllabus cannot be underestimated.
- The students have little difficulties in working in different platforms or with different digital media.
- The teacher needs support from other teachers on a national or local level to be able to work with all aspects that are intertwined in a project of this size, at least in Sweden.

From these conclusions the following four suggestions are made:

- Careful planning is needed when it comes to what forms of communication should be used and when.
- The content of the curricula parts should preferably be presented as topics for discussion, and not as materials to be assessed.
- Assignments should be more open in character so that students do not view the product as the most important part, giving weight to the process.
- At the local school level, aspirations should be to include teachers working in teams in order to manage the scale of the project and the possibilities of communication and collaboration

References

- Almås, A. G., & Krumsvik, R. (2008). Teaching in technology-rich classrooms: Is there a gap between teachers' intentions and ICT practices? *Research in Comparative and International Education*, 3(2), 102–121.
- Boyd, B., Dunlop, A., Mitchell, J., Logue, J., Gavienas, E., Seagraves, L., Clinton, C., & Deuchar, R. (2007). *Curriculum architecture – A literature review*. Report for the Scottish Executive Education Department to Inform the Implementation of a Curriculum for Excellence.
- Chan, Y. P. (2009). In their own words: How do students relate drama pedagogy to their learning in curriculum subjects? *Research in Drama Education: The Journal of Applied Theatre and Performance*, 14(2), 191–209.

- Clark, W., Logan, K., Luckin, R., Mee A., & Oliver, M. (2009). Beyond Web 2.0: Mapping the technology landscapes of young learners. *Journal of Computer Assisted Learning*, 25, 56–69.
- Cox, M. J., & Marshall, G. (2007). Effects of ICT: Do we know what we should know? *Education and Information Technologies*, 12, 59–70.
- Foon Hew, K., & Brush, T. (2007). Integrating technology into K–12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research Development*, 55, 223–252.
- Granger, C. A., Morbey, M. L., Lotherington, H., Owston, R. D., & Wideman, H. H. (2002). Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning*, 18, 480–488.
- Kozma, R. B. (2003). Technology and classroom practices: An international study. *Journal of Research on Computers in Education*, 36, 1–14.
- Law, N., Kankaanranta, M., & Chow, A. (2005). Technology-supported educational innovations in Finland and Hong Kong: A tale of two systems. *Human Technology*, 1(2), 176–201.
- Leung, W. L. A. (2004). *Teaching integrated curriculum: Teachers' challenges*. Paper presented at the Pacific Circle Consortium 28th Annual Conference, April 21–23.
- Mueller, J., Wood, E., Willoughby, T., Ross, C., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computers & Education*, 51, 1523–1537.
- Postholm, M. B. (2006). The teacher's role when pupils work on task using ICT in project work. *Educational Research*, 48(2), 155–175.
- Pouyioutas, P., & Solomou, E. (2008). *ICT in Secondary Education in Cyprus*. National Report. Intercollege/University of Nicosia.
- Rennie, L., Sheffield, R., Venville G., & Wallace, J. (2005). *Ripples and tsunamis to curriculum integration: A comparative case study*. A paper presented at the annual meeting of the Australasian Association for Research in Education (AARE), Parramatta, NSW, November 27–December 1, 2005.
- Schulz-Zander, R., Büchter, A., & Dalmer, R. (2002). The role of ICT as a promoter of students' cooperation. *Journal of Computer Assisted Learning*, 18, 438–448.
- Stake, R. E. (1995). *The art of doing case study research*. London: Sage.
- Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.