

## eMAPPS.com Recommendations to Policy-Makers

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The eMapps.com project, funded under the European Commission's 6th Framework programme has produced some significant breakthroughs related to innovative ways of learning, computer games and mobile learning in schools. They are of particular relevance to countries in the expanded Europe.

**Key aims** of the project were initially to:

- Build communities of creative, networking children in the new member states (NMS), generating their own cultural content and communicating with peer groups in other countries;
- Contribute to the growth of a community of teachers who are aware of the potential for change through 'schools without walls' and who exchange knowledge and experience through communication with counterparts in other NMS countries;
- Develop adaptable interactive tools (primarily games played on a mobile platform) with which to deliver learning objectives and which help to integrate the use of ICT in the delivery of the school curriculum;
- Establish processes and facilities for teachers and children to access relevant digital content available through a variety of sources while playing the eMapps.com games and to enable content created to be shared and repurposed

These aims have underpinned the strategic objectives of eMapps.com at policy level, namely:

- to have a significant impact on validating new learning paradigms for children in both school and informal settings and;
- to contribute to strategic thinking about school and curriculum reform processes in the expanded Europe

The work of eMapps.com is closely aligned with 'constructivist' concepts of learning, whereby learners actively develop their own understanding of the world, rather than traditional didactic approaches. It incorporates the idea that people learn best when they are motivated and entertained and will therefore benefit from the 'flow' experience provided by games which enables playful experimentation to help children gain an understanding of the world and their place in it. eMapps.com has sought to demonstrate what can be achieved by equipping learners with powerful ICT tools for access, creation and use of richer learning content, drawing on the ever-increasing sophistication of mobile devices.

By working directly with teachers and children in 17 schools in the 8 mainland New Member States of the EU, eMapps.com has gained significant evidence of the learning outcomes which can be supported by using a games platform in the school environment, including;

- investigation of the 'real world' through access, analysis and interpretation of information sources;
- problem-solving, goal-related behaviour;
- improved achievement and depth of learning in specific curriculum areas;

- increased technology capability and skill;
- communicative skills;
- collaborative skills;
- softer skills: e.g. resilience and persistence;
- the emergence of mentoring and teaching skills among children

eMapps.com has evaluated the impact of games designed and implemented by individual schools to make use of its technical platform for computers and mobile devices, from the perspectives of both teachers and children and from a technical point of view. The teachers involved have told us that the children who played learned new facts across a range of (cross-) curriculum subjects, new technology skills and Improved generic skills such as teamwork and cooperation, analytical appraisal, collaborative decision-making, negotiating, independent decision-making, planning and navigating.

Children who participated demonstrated increased self confidence and self-reliance and quite often showed leadership and high achievement in cases where this was not expected. When playing games, the relationship between teacher and children was more relaxed and less formal than that in the classroom. Where children were involved in developing games, they were enthusiastic, creative and hardworking. In several cases, game playing stimulated other learning activities such as artwork, acting, writing and video making.

Successful games can teach large amounts of learning content. Players resolve challenges and problems. There is a high degree of learner autonomy, answering to a constructivist rather than didactic model. Players are required to use scientific method, gathering data before developing, testing and revising a hypothesis. Well-designed games incorporate motivational factors such as challenge, fantasy and curiosity. Players are able to affect the outcome of the game positively or negatively, depending upon their actions requiring mental or physical skill and to develop strategies in order to succeed.

Beyond the eMapps.com approach, where teachers and children are involved in and responsible for the design of the games, using a common platform, there remain variant approaches to the implementation of games in school-based learning. It remains a possibility that commercial 'off-the-shelf' games can be successfully packaged and integrated into the curriculum in a cost-effective way which capitalises on the investment made in the quality of game 'design' and 'flow'. However, it appears more likely that the eMapps.com approach will produce games which are closely aligned with curriculum course content frameworks and syllabus.

It is clear from the results of the eMapps.com research that a number of challenges remain to be addressed before the potential of game plus mobile technology in learning can be realised. The remains a general lack of alignment between the world of education and the games industry based on previous false starts and misunderstandings. It is important that we learn from these experiences. Designers of "edutainment" games have not always understood how and why games are effective in learning. Those in school education have not always seen how to align the curriculum with games without taking away the fun and therefore the motivation. A guiding principle of the eMapps.com approach is that games can succeed BECAUSE sound pedagogical approaches are innate in their design and that this makes it possible to create effective blended game-based learning.

Such challenges need to be resolved before any perceived mismatch between the skills and knowledge obtained from games and those recognised in education can be successfully resolved. On one level, this involves quite simply more effective dissemination of the results of innovative projects such as eMapps.com across Europe so

that a wider understanding of the potential impact of games-based approaches on learning access and outcomes is achieved by policy makers.

But it is also vitally important to explain to parents and to train teachers, before and after they enter work, as to how games fit in schools, why they are effective and how to plan carefully the integration of games and how they will work in the school environment. Teachers and school directors need to believe that it is all worthwhile and that the amount of potential learning is justified by the work and time needed to implement the game: good games can take 100 hours to plan, manage and play. The creation and management of extension activities and possible collaborations with local organisations in the informal learning sector such as libraries and museums appears to have significant potential in the management of challenges of finding time within the school day.

eMapps.com has also identified issues of equipment cost, personal security and platform ease of use, which require fine tuning in individual contexts in order for games-based learning in schools to be successful. It is not necessarily proven that the establishment or use of 'repository-style' content structures is of major benefit in the playing or design of games in schools. Teachers may well prefer to avail themselves of the powerful discovery features of standard search tools such as Google.

In summary, children had fun playing eMapps.com games and wanted to play again. The teachers enjoyed the experience and there was positive feedback from parents. eMapps.com 'exploitation planning' is underway and it is expected that a version of its platform will be made available under an open source licence. eMapps.com is now actively seeking exploitation partners at national and European level and assessing the prospects for service based exploitation (for example with a TELCO or mobile service supplier). It is very much hoped that these results will assist the mainstreaming of games in school education in order that the evident potential to enhance the competences and knowledge of Europe's citizens can be realised through the formative education provided through its schools.

## **Recommendations**

As a result of the project we offer 14 recommended actions for policy-makers to be discussed at dissemination events in spring 2008. They emerge from the findings of the project evaluation report (available on the project web site), observations in the field and extensive interviews with project participants, teachers, officials and young people. They should be read in conjunction with other public documents about the project (at [www.emapps.com](http://www.emapps.com)), and are grouped under six headings related to key drivers of change in schools.

### ***System level: education 5-19***

1. Support and endorse pedagogies and a curriculum that support active learning and project-based learning, as exemplified in eMAPPS.com.

- Ensure that such exploratory and active pedagogies form part of teachers' initial and continuing professional development, and that teachers are e-skilled. This may call for some e-skills updating for those who work in pedagogical universities and teacher training centres.
- Recognise that the better the fit of games to the curriculum and age, the higher the chances of their use.

- Consider how to open up the school and to link it to other places where informal learning can take place, thanks to technology, e.g. museums, nature centres, leisure centres.

2. Explore how assessment systems can better take into account individual and social skills and knowledge developed through games-based learning as in eMAPPS.com.

- Teachers prioritise that which is assessed. If “traditional results are easier with traditional methods,” then how are social skills, team work, leadership, responsibility for others, politeness developed in eMAPPS.com valued if they are not assessed?

### ***Institutional level: the school***

3. Communicate the results of the project to school leaders and enable them to act on them.

- In most countries head teachers are very influential in the success or failure of ICT projects.
- Help school leaders explain to parents and employers that games and play are in fact serious learning.

4. Remove the barriers to change and technology adoption.

- Empower schools to act autonomously and invest time and money in educational reform.
- Encourage rethinking of traditional school timetables and groupings to optimise the opportunities of ICT, for example using eMAPPS.com at the end of the school year, for revision and reinforcement.
- Provide e-safety guidelines for young people using mobile telephones and the internet in and out of school.
- Provide guidance to school leaders on optimum use of game-based mobile learning.

### ***Pedagogical level: teaching and learning***

5. Communicate the results of the project to classroom teachers in a way that presents the benefits to them and learners and that enables them to make it happen in their own school.

- For example using eMAPPS.com teacher champions to talk about the project.
- Encourage teachers to develop and share more game-based learning tasks using the eMAPPS.com platform.
- Tasks should have a competitive element, mix appropriately on- and off-screen activities, be varied and differentiated according to ability, age and interests, and include token rewards.
- Consider short 15 minutes games that can take place in classrooms.
- However, not all teachers should be expected to participate. Recognise that participation in game-based learning calls for e-mature teachers with quite high ICT skills.

***Students too need e-skills development before embarking on games.***

6. Exploit the fact that eMAPPS.com can be an incentive for teachers' promotion and professional development:

- Participation in European projects and using educational technology innovatively.

***Technology: ICT tools and services***

7. Monitor developments and best practice in mobile and game-based learning in other countries.

- For example, through EUN's Insight knowledge base (<http://insight.eun.org>) which carries regular updates for decision-makers.

8. Aim to ensure that schools and the local area have the basic infrastructure for innovative learning to take place.

- In particular a reliable broadband connection and possibly wireless internet inside the school.

9. The eMAPPS.com approach is successful and gives participating countries – even if in some ways behind in ICT in schools – an advantage over other countries in Europe.

- However there is a need to be realistic about the actual eMAPPS.com platform as it is; it is not as sophisticated as those that young people are familiar with, and is rather difficult to use.
- Consider translating the eMAPPS.com games platform; it aims to enable games to be created in two hours.
- Base new activities on the eMAPPS.com approach and on satellite navigation technology (GPS), but without the mobile phone-cameras (for reasons of cost and possible school bans).

***Economic: funding change***

10. Seek to fund for further game-based projects, building on the experience of teachers in eMAPPS.com

- Seek support from industry and suppliers through a public-private partnership.
- Seek partnership with businesses and organisations involved in locations featured in eMAPPS.com games for further exploitation.
- Recognise that eMAPPS.com took place only because funding was provided (for mobile phones, teacher preparation time, costs of internet access from teachers' homes) and design future activities that take this into account.
- Build up a repository of games that schools can adapt and use. The actual cost of organising a game in eMAPPS.com worked out at €1000 (travel, teacher time, meals).
- Consider how to set up a scheme in which the centres featuring in games host school visits to play the game, and improve it over time and experience. They have much to gain financially from offering games-based activities for visitors.

11. Consider negotiating favourable mobile phone tariffs for young people to learn with their phone.

- The cost of sending photos for example was a deterrent in the eMAPPS.com project. Students can upload photos to a laptop on the spot for later transfer, thus avoiding MMS charges.
- Consider students' mobile phones as educational resources to be harnessed. They are powerful learning tools when used appropriately.

### ***Cultural and linguistic aspects***

12. Identify other places that could be interested in the eMAPPS.com project approach and systematically develop game-based ICT activities for visitors of all ages.

- For example folk museums, heritage centres, nature conservation areas, zoos, historic towns, etc.

13. Consider adapting and translating some of the successful eMAPPS.com games that are not country-specific.

- For example water, weather or cookery, the 1980s.

14. Exploit an advantage that most countries in the project have over other EU countries: a tradition of out-of-school activities, summer hikes and camps, cultural days, school in nature days, research camps, and use game-based learning to enrich them.

- The tradition of helping children get out of school to get to know and love their country is precious and not found to such an extent elsewhere in Europe.