

Comenius Network
EcoMedia Europe

*The use of
Information and Communication Technologies (ICT)
in European Schools*

A survey report

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Introduction

This questionnaire-based survey was carried out within the Comenius EcoMedia Europe Network. It aims at assessing current standards and developments of the use of Information and Communication Technologies (ICT) in schools throughout the network's European partner countries.

The target group comprises primary, secondary and vocational schools with at least a minimum ICT infrastructure, as well as teachers who are already using ICT in their language or non-language classes. This implies that our survey cannot be a representative one. Our intention is not to determine to what extent ICT is used in European schools at large. We are rather interested in finding out how schools and teachers already familiar with ICT make best use of it for their teaching.

The survey thus focuses on the following questions:

- Which ICT infrastructures are available in schools that are involved in ICT practice?
- How is ICT in these schools used for language and non-language subjects? Particular attention was given to four different types of ICT:
 - o Learning software
 - o Open web contents
 - o Online communication
 - o Testing tools
- Which learning objectives and pedagogical aims do the teachers in these schools pursue by means of ICT?
- How do the teachers evaluate the pedagogical use of ICT?

The questionnaire was made available in English and German both as an online version created with PHPSurveyor and as a paper version. It was accessible between January and June 2007 via registration at the questionnaire's site. During that time, about 2800 teachers and ICT administrators registered for the questionnaire. A total of 750 questionnaires (online and paper version) were eventually submitted; the number of schools involved was 574.

ICT-related responses came from schools and teachers in the following countries:

Albania – Austria – Belgium - Bulgaria – Denmark – Estonia - Germany – Italy - Latvia - Poland – Spain - Slovenia – Sweden

When reading the figures, please note that in the case of multiple answers the sum of percentages may exceed 100%; if the sum is below 100%, some respondents chose not to reply to the particular question.

Summary of Results

In the following, a short summary of the responses to the main survey questions will be presented across all three school types and school subjects.

Learning software

- ✗ 68% of the teachers use learning software in and outside the classroom.
- ✗ The in-school use of learning software preponderates.
- ✗ More offline than online software is being used.
- ✗ Most teachers report positive effects of using learning software and associated benefits for teaching with employing it. This was particularly so in regard to motivation and individualised learning.

Open web contents

- ✗ 75% of the teachers make use of open web contents.
- ✗ The in-school use is dominant, but a large increase of use outside the classroom can be noted between primary and secondary schools.
- ✗ The use of open web contents is mainly related to web search and authentic materials.
- ✗ Students are asked to carry out web searches and many of the teachers use the web for preparing lessons and finding authentic or up-to-date materials.
- ✗ Most teachers find using the web or open web contents beneficial to teaching and learning, especially for developing general methodological skills and individual learning and media competencies.

Online communication

- ✗ Only 41% of all teachers make use of online communication tools in their classes.
- ✗ In-school use is slightly higher than use outside the classroom.
- ✗ The main communication tool is email.
- ✗ Other forms of online interaction are only marginally used.
- ✗ Language teachers make some additional use of wikis and forums.
- ✗ Whenever it is used, web communication is rated highly beneficial and supportive for teaching and learning, in terms of class management as well as collaboration.

Testing tools

- ✗ With 15% across all teachers, testing tools are used only very marginally.
- ✗ If testing applications are used at all, online tools or a combination of both offline and online tools are preferred.
- ✗ Teachers who use testing applications are very satisfied with the benefits of easy evaluations, quick testing, and the opportunity to supply students with individual feedback.

ICT Infrastructure

The results presented on this page are based on the responses from 574 schools with at least a minimum involvement in ICT practice.

Fast fact summary

ICT Infrastructure	Available	Projected	Not available
<i>Multimedia PC</i>	83%	4%	6%
<ul style="list-style-type: none"> ○ the average number of PCs in schools is 41 ○ 77% of all schools use IBM-compatible computers, 4% Macs ○ Windows is the main operating system (99%), 9% use Linux, 2% Mac OS ○ MS Office is the main office application in use (96%), followed by Open Office (17%) and Star Office (2%) 			
<i>School administration software</i>	95%	2%	3%
<i>Authoring software</i>	37%	5%	58%
<i>Corpus or concordancing software</i>	4%	1%	95%
<i>Learning software (non-language)</i>	75%	6%	20%
<i>Language learning software</i>	63%	6%	31%
<i>PC network / LAN</i>	96%	1%	3%
<i>Wireless LAN</i>	52%	9%	39%
<i>Internet access via broadband</i>	95%	3%	1%
<i>Internet access via modem</i>	21%	1%	78%
<i>Learning platform</i>	81%	15%	3%
<ul style="list-style-type: none"> ○ Moodle is the most commonly used platform (56% of the responding schools use it, as opposed to 5% Ilias and 2% e-lisa users) 			
<i>Data projectors</i>	84%	4%	12%
<i>Virtual whiteboards</i>	14%	11%	75%
<ul style="list-style-type: none"> ○ 77% of the schools offer ICT training to their staff ○ 59% offer ICT training or special ICT courses to their students 			

ICT for Non-Language Subjects

In this part of the EcoMedia ICT survey, teacher responses concerning their use of ICT for non-language subjects will be analysed and commented on. The results relate to four sub-categories: learning software, open web contents, online communication and testing tools. The teachers were also asked to elaborate on which learning objectives and pedagogical aims they hoped to reach by means of using ICT for their non-language subjects.

The questionnaire results show that the aim to support more **successful learning** through individualisation, autonomy and information retrieval ranks highest. Computer and internet are regarded as tools that allow both weaker and stronger students to focus on their own learning needs. While learning software is judged to facilitate individual progress and detailed focus on special topics and skills, the internet is regarded as an important source for finding materials of one's individual special interest.

The second highest aim is to foster ICT-related **media competencies**. Students are expected to improve their general computer and internet skills and become familiar with the technologies and applications involved. It is regarded as highly important that students practise finding information and learn how to decide on the quality of materials found.

Using ICT in schools for raising students' **motivation** was mentioned in the third place.

Following this is the aim of enhancing **general language skills** such as reading and writing as well as analysing or summarising search results.

Only few teachers mention using ICT for **collaborative work** among students.

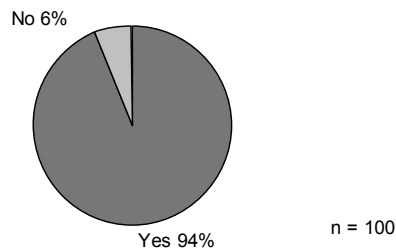
Some teachers use computer animations of special natural science software for **illustration purposes** and improved visualisation.

Learning Software in Non-Language Subjects

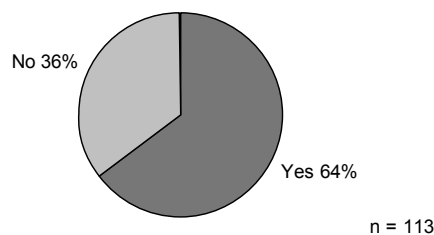
Non-language teachers were asked about their use of learning software (offline or online) in their teaching.

Use of learning software across school types

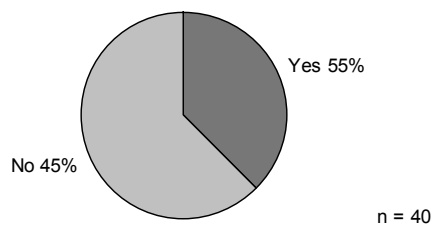
Primary schools: learning software in non-language subjects



Secondary Schools: learning software in non-language subjects



Vocational schools: learning software in non-language subjects



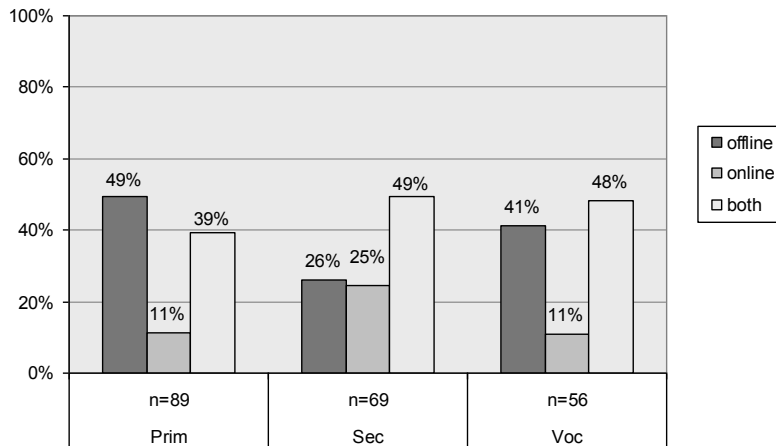
Learning software is broadly used among teachers of all three school types for non-language subjects.

Taking **all teachers** together, almost 71% of them make use of learning software in their teaching.

The learning software is used most widely among **primary** school teachers (94%) and also to a great extent among **secondary** school teachers (64%).

In **vocational** schools, just over half (55%) of the teachers employ learning software for their non-language subjects.

Learning software: online vs. offline use

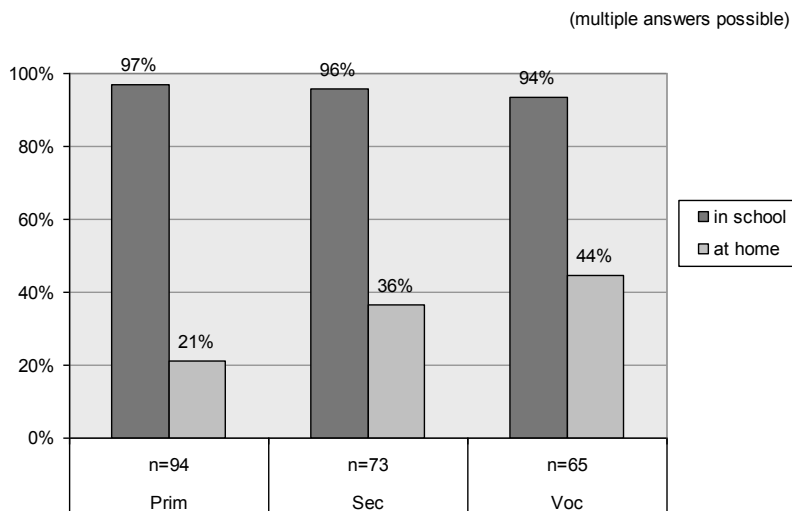


When asked whether learning software is mostly used online or offline, teachers across all three school types tend to a combined use (41%).

Preference for the exclusive use of **offline** learning software decreases from primary schools (49%) to vocational schools (41%) and secondary schools (26%).

While the gap between the exclusive use of either **offline or online** learning software is quite noticeable for primary and vocational schools, it is almost non-existent in the case of secondary schools.

Learning software: in-school vs. at-home use



Almost all teachers show a clear preference for employing learning software **in school**.

The use of learning software **at home** increases from 21% in primary schools to 36% in secondary and 44% in vocational schools.

Learning software for non-language subjects: trends across school types
(order reflects ranking or number of mentions)

- ✗ Specialised learning software (e.g. for maths, geography, physics, biology or history);
- ✗ Software (CDs and online) provided by school book publishers;
- ✗ Software programmed by teachers or students (including exercises in Moodle, Excel sheets, activity sheets for Microsoft Office applications);
- ✗ Materials and activities found online (work sheets, interactive exercises, materials provided by education servers, freeware software);
- ✗ Technical software or general software (e.g. CAD, multimedia encyclopaedias).

Learning software for **non-language subjects**: summary of experiences and additional pedagogical benefits across school types
(order reflects ranking or number of mentions)

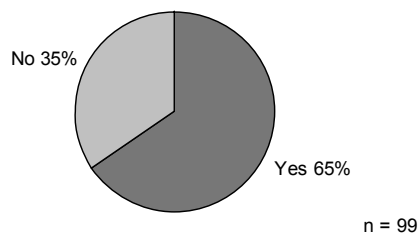
- ✗ Computer use as motivation and for introduction of topics;
- ✗ Playful ways of learning and testing;
- ✗ Individualised learning / learning at own pace and for individual needs;
- ✗ Software (esp. in sciences) can aid visualisation; animations support understanding of (technical or scientific) processes;
- ✗ Integration of up-to-date materials into software (as opposed to course books);
- ✗ Technological knowledge needed in the future; methodological (research) skills fostered.

Open Web Contents in Non-Language Subjects

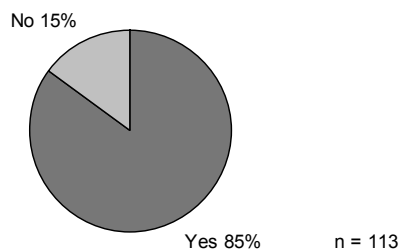
Non-language teachers were asked about their use of open web contents in their teaching. This category included authentic and public materials available on the internet in particular.

Use of open web contents across school types

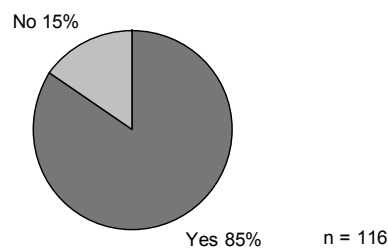
Primary schools: open web contents in non-language subjects



Secondary schools: open web contents in non-language subjects



Vocational schools: open web contents in non-language subjects

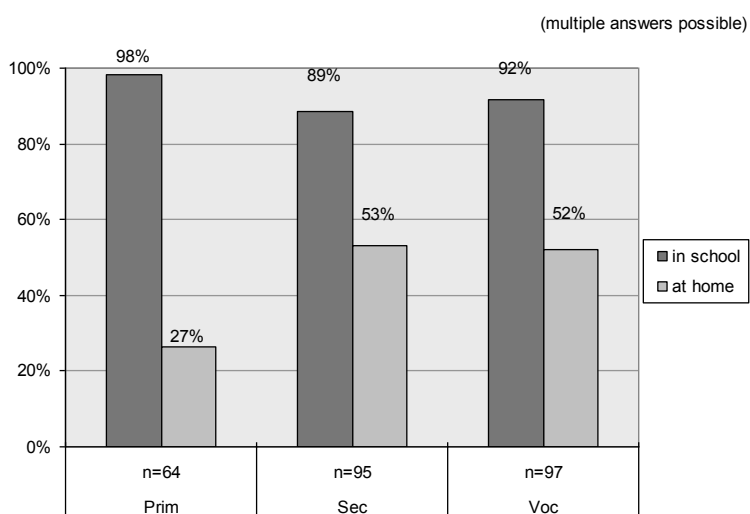


Open web contents are used widely in and outside the classroom for non-language teaching.

79% of **all teachers** across school types make use of web materials in their teaching.

In **primary** schools, 65% of the teachers integrate web materials in their teaching. In **secondary** schools and **vocational** schools, the percentage goes up to 85%.

Open web contents: in-school vs. at-home use



As in the case of learning software, a large percentage (92%) of all teachers across school types show a clear preference for employing open web contents **in school**.

'At-home' use of open web contents increases from 27% in primary schools to 52% in vocational schools and 53% in secondary schools.

Open web contents for non-language subjects: trends across school types (order reflects ranking or amount of mentions)

- ✗ Web research for (additional) information / research tasks on the topic;
- ✗ The web as a source of authentic materials (for teachers and students);
- ✗ Online encyclopaedias, lexicons, web portals (classifieds), blogs;
- ✗ Internet magazines, web pages of news agencies or TV stations (e.g. BBC), classified web pages on the topic to be taught, web pages of research institutes, companies, ministries or organisations;
- ✗ Search for media (students and teachers): images, animations, audio, videos, texts;
- ✗ Online exercises and work sheets; the web as a resource for teacher materials and suggestions for teaching and lesson design;
- ✗ Games.

Open web contents for non-language subjects: summary of experiences and additional pedagogical benefits across school types

(order reflects ranking or number of mentions)

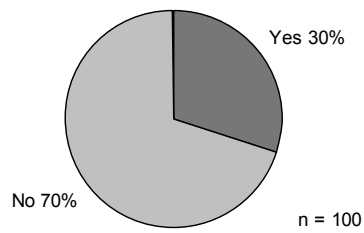
- ✗ In general, positive experiences with regard to searching for up-to-date and authentic materials (texts, images, sound, video, animations) for teaching purposes (lesson preparation) and student activities (as compared to printing materials in course books);
 - ✗ Development of autonomous and responsible learning competences (quality, awareness and strategies);
 - ✗ Practice of media skills;
 - ✗ Raised motivation due to students being able to follow their own interests and needs, and their interest in the topic being increased by the use of authentic materials in lessons.
-
- ⇒ Students do not know how to deal with masses of information or just copy-and-paste and print;
 - ⇒ Students collect masses of information without reflection;
 - ⇒ A lot of material can be found but needs a lot of adaptation before being suitable for a lesson;
 - ⇒ Materials found online are not always trustworthy.

Online Communication in Non-Language Subjects

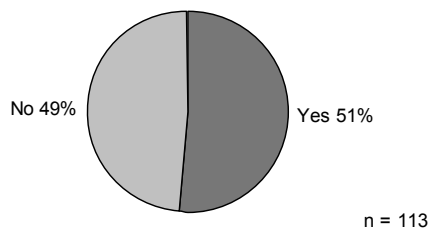
Non-language teachers were asked about their use of online communication tools in their teaching.

Use of online communication across school types

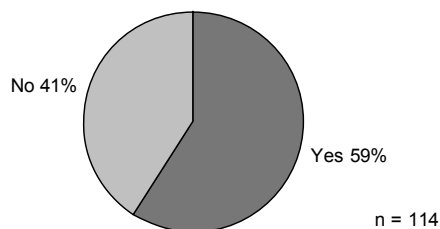
Primary schools: online communication in non-language subjects



Secondary schools: online communication in non-language subjects



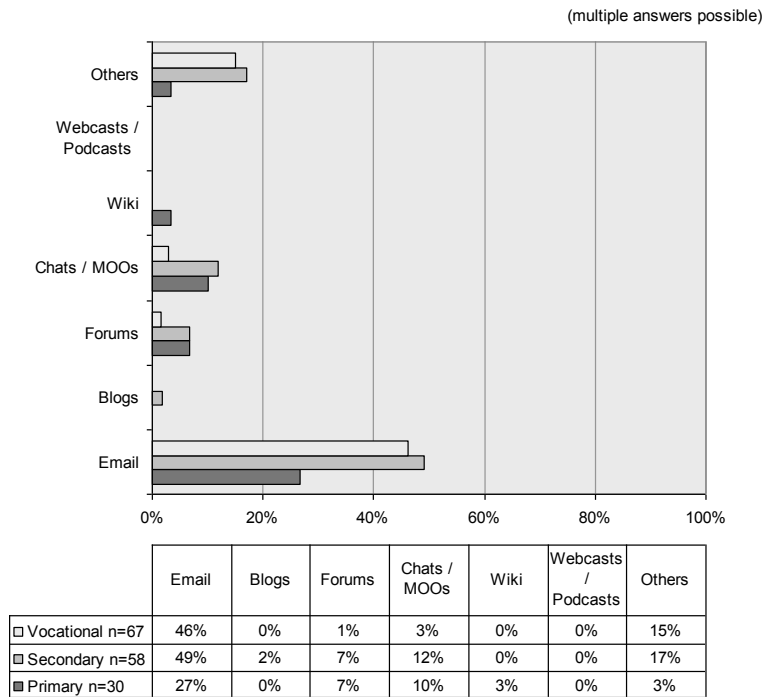
Vocational schools: online communication in non-language subjects



47% of **all teachers** across the three school types make use of online communication in their teaching.

There is a clear increase from **primary** (30%) to **secondary** (51%) and **vocational** schools (59%).

Online communication tools in non-language subjects



Email is the only online communication tool widely used across all three school types for non-language subjects.

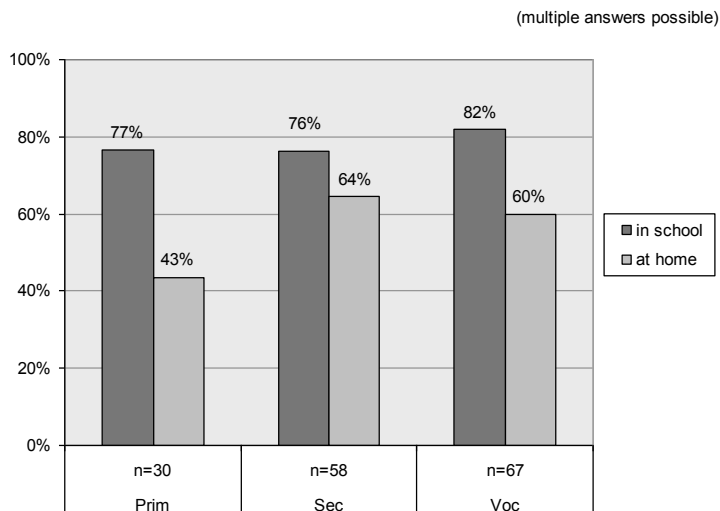
Chat/MOO facilities and **forums** are of some importance to primary and secondary school teachers, but hardly used in vocational schools.

All the other tools are only marginally used in all three school types.

Other online communication tools mentioned:

- Short messages
- Newsletter

Online communication: in-school vs. at-home use



As in the case of learning software and web content, a large percentage (79%) of all teachers across school types show a clear preference for employing online communication tools **in school**.

'At-home' use increases from 43% in primary schools to 60% in vocational schools and 64% in secondary schools.

Online communication in non-language subjects: summary of experiences and pedagogical benefits across school types
(order reflects ranking or number of mentions)

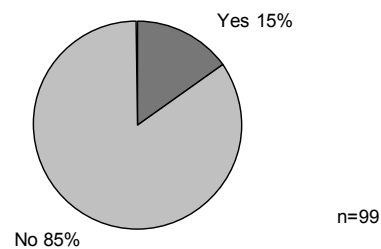
- ✘ Facilitation of information exchange and distribution of materials and solutions between students and teachers;
 - ✘ Students learn how to deal with communication tools (email programs, chat tools) and improve general language skills (writing, communicating, being precise);
 - ✘ Teachers can get in contact with students at all times to provide administrative and pedagogical support;
 - ✘ Smoother process of collection and evaluation of assignments (feedback);
 - ✘ Students get into contact with other learners or experts to get additional information from them or engage in knowledge and thought exchanges.
- ⇒ Increased work load for teachers (constant availability, need for immediate replies, more materials to correct).

Testing Tools in Non-Language Subjects

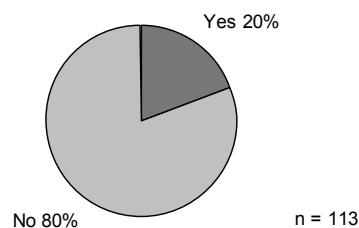
Non-language teachers were asked whether they employ testing tools in order to evaluate students' competencies or to provide opportunities for self-assessment.

Use of testing tools across school types

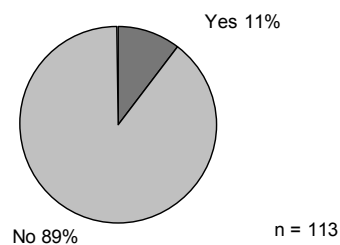
Primary schools: testing tools in non-language subjects



Secondary schools: testing tools in non-language subjects



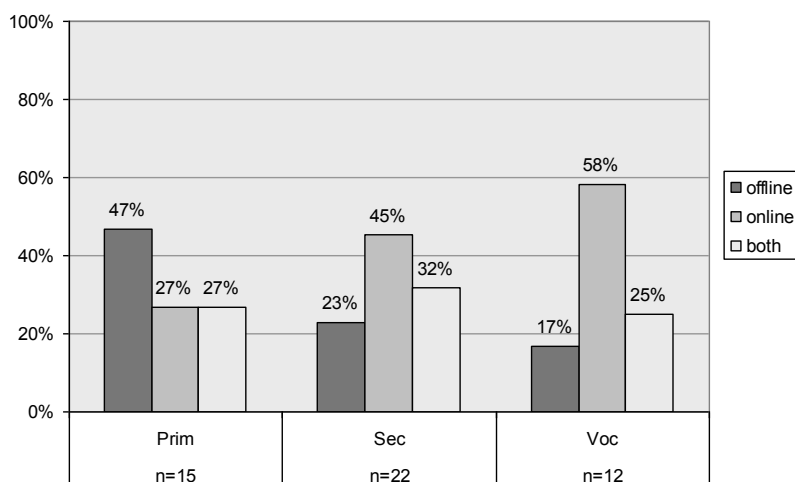
Vocational schools: testing tools in non-language subjects



Testing tools are only **marginally** used by teachers across all three school types (15%).

The percentage of teachers who apply testing tools amounts to 15% in **primary** schools, 20% in **secondary** schools and 11% in **vocational** schools.

Testing tools: offline vs. online use



There is a tendency for primary school teachers to employ **offline** testing tools (47%)

Secondary and vocational school teachers have a stronger preference for **online** testing (45% and 58%, respectively).

About a third of all teachers use **both** online and offline testing tools.

Testing tools used in non-language subjects: trends across school types

(order reflects ranking or number of mentions)

- ✘ Specialised subject software (esp. maths or physics);
- ✘ Specialised software provided by course book publishers;
- ✘ Moodle or other learning platform testing or quiz functions;
- ✘ Own tests provided online.

Testing tools used in non-language subjects: summary of experiences and additional pedagogical benefits across school types

(order reflects ranking or number of mentions)

- ✘ Helps the teacher create quizzes or other tests quickly and without much effort;
 - ✘ Students can control themselves (supports independent and autonomous learning);
 - ✘ Testing tools give feedback and provides teachers (and students) with insights into the current competence level of an individual student.
- ⇒ Too much effort to create online tests or quizzes;
 - ⇒ Useful only for factual knowledge or basic facts.

ICT for Language Subjects

In this part of the EcoMedia ICT survey, teacher responses concerning their use of ICT for language subjects will be analysed and commented on. The results relate to four sub-categories of ICT: learning software, open web contents, online communication and testing tools. The teachers were also asked to elaborate on which learning objectives and pedagogical aims they hoped to reach by means of using ICT for their language subjects.

The questionnaire results show that the aim to support the development of **language competencies and skills successful learning** ranks highest. Teachers ask their students to research materials or information on the internet and continue working with them from a language point of view (e.g. vocabulary practice or writing summaries). In this category, all of the four key language skills (reading, writing, speaking and listening) are mentioned as learning objectives, often in connection with authentic web materials or authentic peer-to-peer communication. Repetition work and supplementary exercises are also considered relevant, especially relating to grammar or vocabulary.

The second highest rank is taken by promoting **individualised and autonomous learning**. Teachers emphasise that they aim at enabling students to continue learning with the help of ICT beyond their school careers ('life long learning'). In particular, they wish to show their students how they can search the web for information or materials that match their own interests or learning needs. They also mention the suitability of ICT (especially software and assessment tools with automatic feedback) for supporting both weaker and more advanced students in their individual learning processes.

ICT-related **media competences** are mentioned next. Computer and internet are regarded as common everyday tools that students must be able to handle, both on a technological and a content level, in school and in their future jobs. In connection with general skills or media skills, students should improve their knowledge of doing careful and critical quality research on the internet and processing materials found conscientiously.

Teachers also see the web as a source for **authentic and realistic contents**, in particular in regard to the integration of language and culture. The web enables students to immerse more profoundly into the fields of culture, history or politics of the foreign country. Up-to-date texts or (multimedia) resources on current issues become available to both students and teachers and facilitate research activities motivated by individual needs and purposes. What is mentioned as well is the web's potential for improving students' language and culture skills through contact with native speakers.

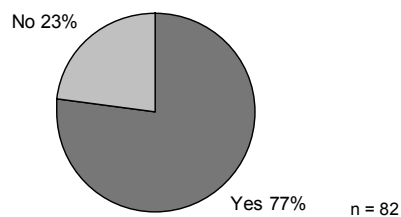
Finally, using ICT is seen as promoting **student motivation** by turning learning into something that can also create pleasure, providing richer or more attractive materials and allowing a wider range of teaching methods.

Learning Software in Language Subjects

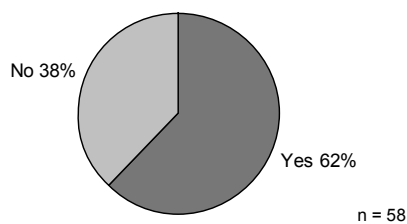
Language teachers were asked about their use of learning software (offline or online) in their teaching.

Use of learning software across school types

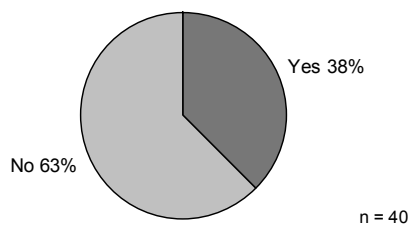
Primary schools: learning software in language subjects



Secondary schools: learning software in language subjects



Vocational schools: learning software in language subjects

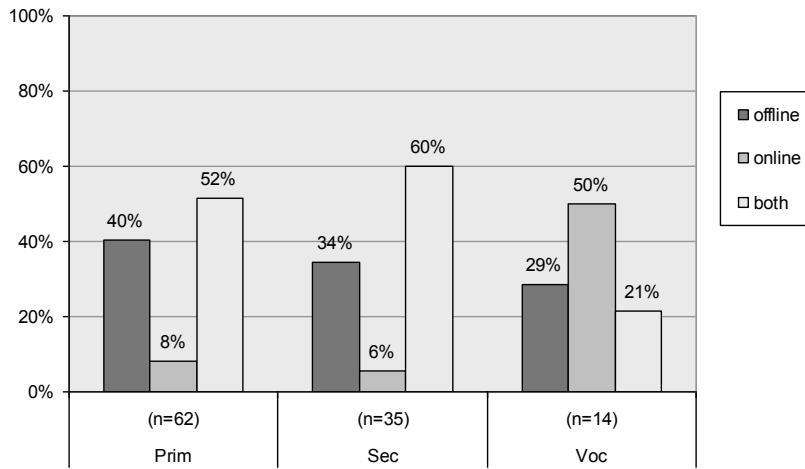


Compared with non-language subjects, the use of learning software in language classes is somewhat lower.

Across the three school types, 63% of **all teachers** use learning software for language, literature and culture teaching.

Among **primary** school teachers learning software is used most widely (77%) compared to 62% of teachers in **secondary** schools and 38% in **vocational** schools.

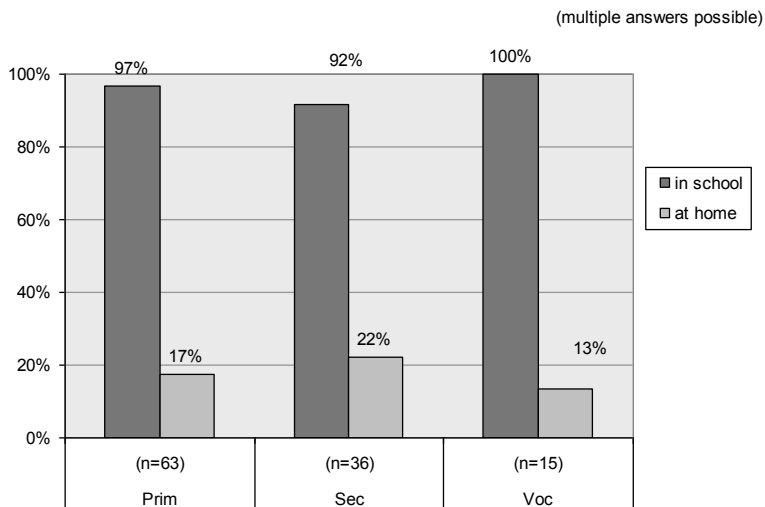
Learning software: offline vs. online use



In primary and secondary schools, learning software is mainly used **both offline and online** (52 and 60%); in vocational schools, the combined use is 21%.

Preference for the **exclusive use of offline** learning software decreases from primary schools (40%) to secondary schools (34%) and vocational schools (29%).

Learning software: in-school vs. at-home use



Exclusive online use is noticeable for vocational schools (50%), but not so for primary (8%) and secondary schools (6%).

Nearly all teachers show a strong preference for **'in school'** use.

At-home use is lower than for non-language subjects.

Learning software for language subjects: trends across school types

(order reflects ranking or number of mentions)

- ✗ Specialised learning software by learning software publishers (e.g. for improving writing, reading or concentration skills, for grammar and vocabulary practice);
- ✗ Software (CDs and online) provided by school book publishers;
- ✗ Software programmed by teachers or students (including exercises in Moodle, Hot Potatoes, activity sheets for Microsoft Office applications);
- ✗ Materials and activities found online (work sheets, interactive exercises, materials provided by education servers, freeware software);
- ✗ General software (e.g. multimedia encyclopaedias).

Learning software for language subjects: summary of experiences and additional pedagogical benefits across school types

(order reflects ranking or number of mentions)

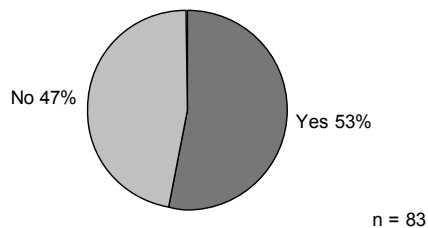
- ✗ High(er) motivation for students;
- ✗ Individualised and autonomous learning; students can focus on their own interests and on areas which still need improvement;
- ✗ Native speaker role model for listening and speaking practice;
- ✗ Students learn how to deal with a computer and the internet.
 - ☐ Students just play with the computer;
 - ☐ There is no real learning involved, no real connections are made.

Open Web Contents in Language Subjects

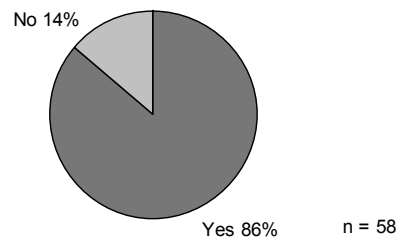
Language teachers were asked about their use of open web contents in their teaching. This category included in particular authentic and public materials available on the internet.

Use of open web contents across school types

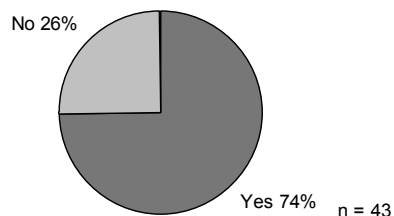
Primary schools: open web contents in language subjects



Secondary schools: open web contents in language subjects



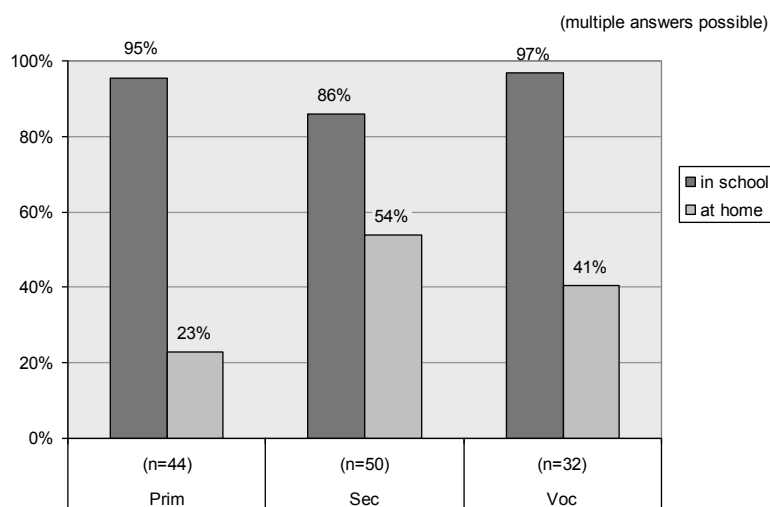
Vocational schools: open web contents in language subjects



An average of 69% of **all teachers** across school types makes use of open web contents for language teaching purposes.

In **primary** schools, 53% of the teachers integrate web materials in their teaching. The percentage is noticeably higher in **secondary** (86%) and **vocational** schools (74%).

Open web content: in-school vs. at-home use



As in the case of learning software, a large percentage (92%) of all teachers across school types show a clear preference for employing open web contents **in school**.

'At-home' use of open web contents increases from 23% in primary schools to 41% in vocational schools and 54% in secondary schools.

Open web contents for language subjects: summary of experiences and additional pedagogical benefits across school types
(order reflects ranking or number of mentions)

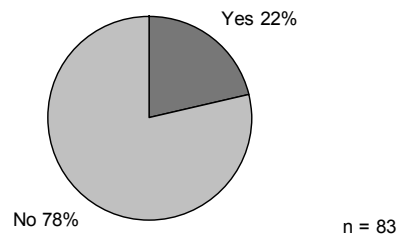
- ✘ The internet provides students and teachers with authentic and up-to-date materials and makes searching for material(s) easier;
 - ✘ Students can use the materials found to improve their language skills, especially by listening to authentic speakers; all four key skills can be improved as well (authentic materials as opposed to outdated or de-contextualised school books);
 - ✘ Helps to motivate students; working with the web is interesting;
 - ✘ Students learn how to deal with computers, internet and web search;
 - ✘ Students learn how to deal with bigger amounts of texts or other materials and how to analyse them.
- ☐ Internet search is very time consuming;
 - ☐ Instructions need to be clear ('guided internet search') or else students will surf the net without a purpose or just for fun;
 - ☐ Weaker students have might have an excuse along the lines of 'It didn't work...'

Online Communication in Language Subjects

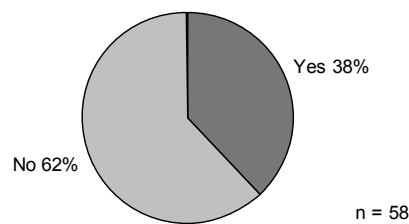
Language teachers were asked about their use of online communication tools in their teaching.

Use of online communication across school types

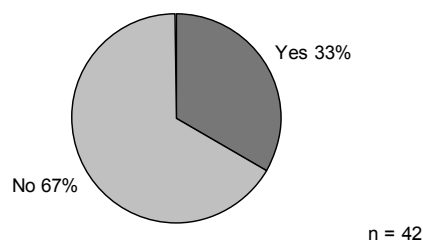
Primary schools: online communication in language subjects



Secondary schools: online communication in language subjects



Vocational schools: online communication in language subjects

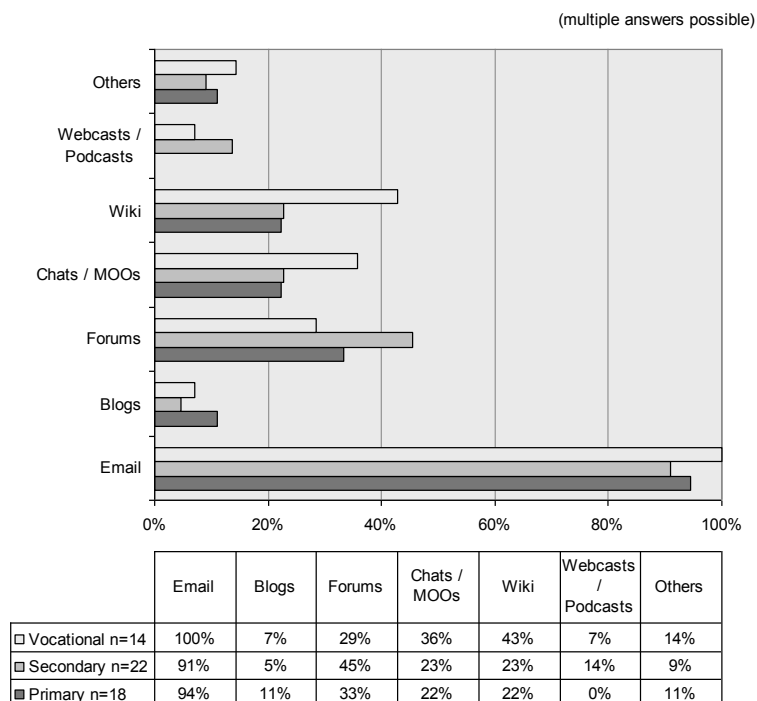


Compared with the use of web contents, the pedagogical deployment of online communication facilities is considerably lower.

Across the three school types, only 30% of **all teachers** use them in their teaching.

Deployment increases from **primary** (22%) to **vocational** (33%) and **secondary** schools (38%).

Online communication tools in language subjects



Online communication tools are much more widely used for language teaching than for non-language teaching.

Email is again the predominant application with 94% of primary, 91% of secondary and 100% of vocational school teachers.

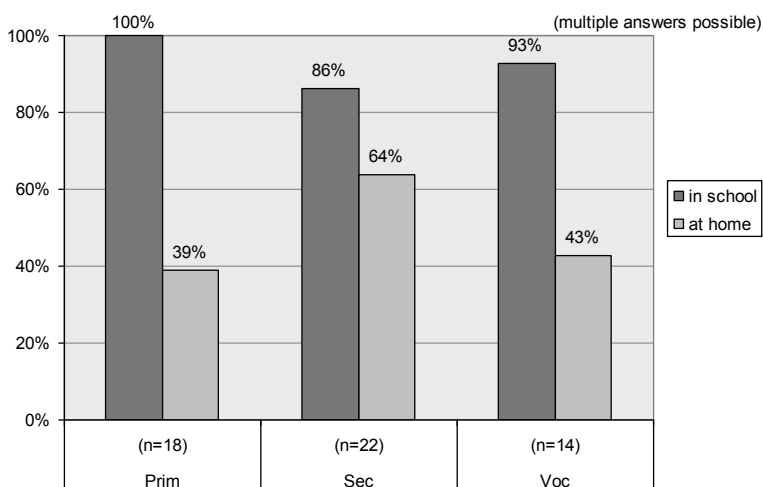
With figures between 22% and 45% across school types, **wiki**, **forum** and **chat/MOO** facilities are clearly much stronger than for non-language subjects.

Webcasts, **podcasts** and **blogs** are also used more than for non-language subjects; but they still do not receive much attention.

Other online communication tools mentioned:

- Learning platforms and integrated tools
- Cell phones, short messages

Online communication: in-school vs. at-home use



As in the case of learning software and web content, a large percentage (93%) of all teachers across school types show a clear preference for employing online communication tools **in school**.

At-home use increases from 39% in primary schools to 43% in vocational schools and 64% in secondary schools.

Online communication in language subjects: summary of experiences and additional pedagogical benefits across school types
(order reflects ranking or number of mentions)

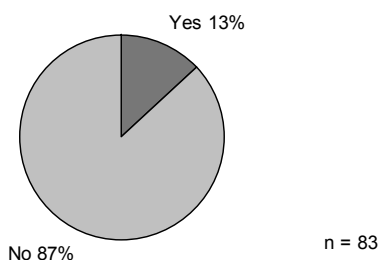
- ✘ Fast and effortless exchange of information between students and teachers;
- ✘ Problem-oriented tasks and project planning (between students);
- ✘ Tele-collaboration and cultural exchange between students of different countries;
- ✘ New communication tools motivate students.

Testing Tools in Language Subjects

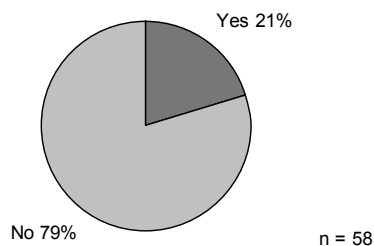
Language teachers were asked whether they employ testing tools in order to evaluate students' competencies or to provide opportunities for self-assessment.

Use of testing tools across school types

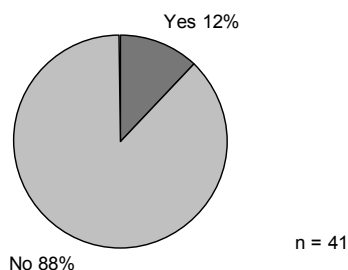
Primary schools: testing tools in language subjects



Secondary schools: testing tools in language subjects



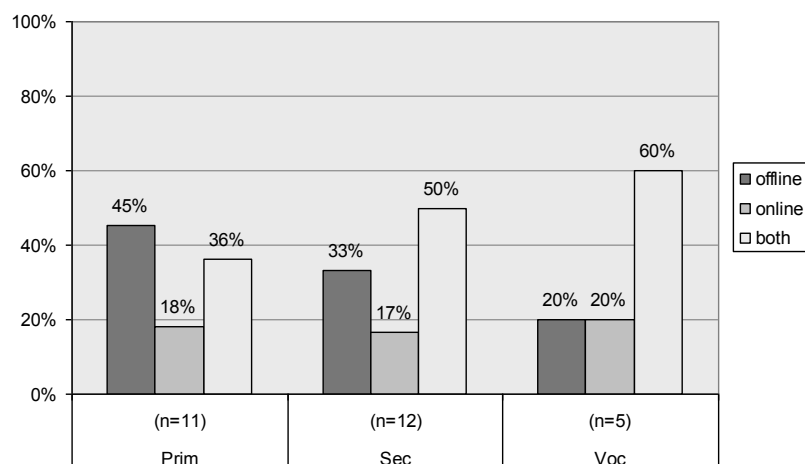
Vocational schools: testing tools in language subjects



Testing tools are only **very rarely** used in language subjects.

Only 15% of **all teachers** across school types use them for assessing and evaluating students' performance or for students' self-evaluation purposes.

Testing tools: offline vs. online use



There is a tendency for primary school teachers to employ **offline** testing tools (45%)

Secondary and vocational school teachers have a stronger preference for **online** testing (50% and 60%, respectively).

46% of all teachers across school types use **both** online and offline testing tools.

Testing tools for language subjects: trends across school types (order reflects ranking or number of mentions)

- ✗ self-created quizzes (e.g. multiple choice or quiz in Moodle);
- ✗ software as provided by the course book publishers.

Testing tools for language subjects: summary of experiences and additional pedagogical benefits across school types (order reflects ranking or number of mentions)

- ✗ easy assessment of the pupils' current stage of development;
- ✗ self-evaluation and autonomous learning control.