EUN Working Group (EUN-WG) on ICT in education Indicators ("ICT@School")

Comparative analysis of the European surveys on ICT at school

16 May 2017

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Executive summary

This report presents the findings of the research carried out within STEP 2 of the EUN Working Group on ICT in Education Indicators (hereafter also “ICT@School”). The report provides a systematic and comparative analysis of the surveys carried out in the countries participating in the ICT@School project.

This analysis is aimed at assessing the main methodological features and the contents covered by the national surveys as well as assessing their comparability across countries. The research shows that in each country participating in ICT@School at least one survey on the topic of ICT at school is available. This can be taken as a sign that the topic is considered relevant within all national education policy frameworks.

According to our analysis, however, the national surveys are barely comparable from a content or a methodological point of view. One possible reason for this is that the surveys were designed for different purposes, and that countries often take up very different approaches when studying ICT in schools. The following reasons have been identified as main sources for non-comparability of surveys across countries:

- National surveys do not always cover the same ISCED levels nor the same target populations (i.e., principals, teachers, students and parents). Particularly, the national surveys happen to be quite developed in covering teachers and principals, but less so when it comes to students and parents.
- The sampling procedures implemented largely differ: some countries conducted studies with large and representative samples. However, in other countries the only relevant data happen to be related to specific projects, which are non-representative of the country.
- National surveys cover a wide spectrum of content dimensions, which are definitely a positive indicator of the richness of the surveys carried out across Europe. However, this does not always allow comparability across countries. Moreover, even when the surveys focus on the same content, the specific questions included in the questionnaires differ with respect to the wording and the answer modalities, a characteristic which severely hampers the comparison.

In the attempt to identify a subset of cross-nationally comparable indicators, part of the analysis presented in this report is restricted to surveys covering teachers and principals at ISCED 1 and 2 only (the combination that maximises the number of countries covered) and that share a basic set of methodological criteria. However, even within this subgroup, the specific questions used in the questionnaires are most of the time different from one another, so that comparing information is not feasible. Hence, the national surveys are particularly useful sources for country analysis and can a useful starting point to identify a core of fundamental topics that should be included in future surveys. However, comparing the national indicators across countries resting on existing surveys remains an open challenge.

In addition to the comparability issue, the report also takes a closer look at some ‘frontier’ research topics concerning the inclusion of ICT in school processes. Namely, we focused on:

- ICT inclusion in teaching practices (i.e., types of activities done with the support of ICT, student-centred approaches, ICT and space organisation);
- teacher training in ICT;
- schools’ ICT implementation strategy.

This focus revealed the existence of a rich set of questions in the different countries that could be used as a basis to harmonise existing national surveys as well as to draft new ones at the European level.

The findings summarised in this report will serve as a basis for drafting a comprehensive proposal to enhance the quality of European and national surveys on the topic of ICT at school and increase the comparability of data across countries (see STEP 3 of the project). Building on the results reported in this report, the final proposal will be articulated around three main axes:

- focusing on principals and teachers in the ISCED levels 1 and 2;
- adopting representative sampling designs and validated protocols for the field operations;
- including ‘frontier’ topics (i.e., schools’ approaches to include ICT in teaching and learning) and standard indicators (e.g., indicators on schools’ equipment, which are relevant to gain a proper understanding and interpretation of more sophisticated indicators).
1. Introduction

This report provides a systematic description of the surveys carried out in the countries participating in the EUN Working Group on ICT in Education Indicators (hereafter also “ICT@School”). The description of the surveys concerns both their main methodological features and the contents covered.

The analysis is aimed at providing a methodological basis to: (i) assess the extent to which surveys are comparable across countries; (ii) identify a set of indicators that are comparable across countries and already available in the existing national surveys; (iii) identify the existing ‘gaps’ in national surveys. The analysis will serve as a basis for drafting a comprehensive proposal to enhance the quality of European and national surveys on these topics and increase the comparability of data across countries (see STEP 3 of the project).

Information on these surveys was collected during STEP 1 of the project through a web-survey to all national partners, and through direct examination of the original questionnaires of the national surveys. As further detailed in section 2, the data collection took place between August and October 2016.

A general description of the national surveys signalled by the EUN-WG partners is provided in section 3. The surveys are classified by education level in which they were conducted and their target population (schools, principals, teachers, students).

The main methodological features of the surveys – such as the geographical coverage, sampling designs, field operations, and questionnaire administration procedures – are presented in section 4. Section 5 provides an overall picture of the contents covered by the surveys. Section 6 describes the comparability of the information across countries, on the basis of basic methodological criteria and contents.

Sections 7 and 8 rely on in-depth analyses of the questionnaires sent by the national partners. Particularly, section 7 investigates the contents covered by national surveys in detail, with the aim of identifying comparable indicators across surveys. Section 8 zooms in on some frontier topics in educational research concerning the inclusion of ICT in school processes; e.g., schools’ strategies, teaching approaches, and teachers’ training.

In addition to the national surveys, the research has also included a comparative analysis of international surveys that are relevant on the topic of ICT in education (section 9).

Finally, section 10 concludes by summarising the main findings of the research and outlining the next activities to be undertaken in STEP3.

2. The ICT@School data collection

The research is based on information that has been collected with the valuable support of the national partners involved in ICT@School between August and October 2016. Specifically, information comes from two distinct sources:

- **ICT@School web-survey.** This survey was meant to collect relevant and comparable information across countries and surveys on the main methodological aspects and contents concerning the surveys. The survey was successfully closed on October 3rd 2016. ¹ The questionnaire used in the online survey can be found in Appendix I.b.

- **Collection of original national questionnaires.** On October 27th 2016, all countries also sent the ‘available’ questionnaires, which have then been translated into English, when needed, by EUN.

The analyses presented in the first part of the report (sections 3 to 6) rely on the information that was provided by the national partners. Thus, completeness and accuracy of the data crucially depend on the extent to which the partners were effectively capable of retrieving them. The analyses presented in sections 7 and 8 are based on the original national questionnaires provided by the partners.

¹ The data collection was extended to March 2017 to include very recent developments in Estonia.
3. Overview of the national surveys

Sixteen national partners participate in ICT@School: Austria, Belgium FR (Wallonia), Belgium NL (Flanders), Denmark, Estonia, Finland, France, Ireland, Italy, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, and Turkey. Table 1 shows the overview of the 28 surveys and the 6 administrative datasets carried out in the 16 countries participating in ICT@School. For 21 of the 28 surveys the original questionnaires have been made available for the analysis.

Table 1 Administrative and survey data sources in the EUN-WG countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Administrative data</th>
<th>Surveys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>questionnaire not received</td>
<td>questionnaire received</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Austria</td>
<td>- Education Survey</td>
<td>- Children And Media Study</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>- ICT Infrastructure</td>
<td>- Youth And Media Study</td>
<td></td>
</tr>
<tr>
<td>Belgium FR</td>
<td></td>
<td>- MICTIVO</td>
<td>1</td>
</tr>
<tr>
<td>Belgium NL</td>
<td></td>
<td>- Survey On Digital Learning Material</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td>- Register Estonian Education Information System</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>- Annual Survey Of School Quality Indicators</td>
<td>- ICT in Education Survey</td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>- Opeká</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td>- Etic</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>- Opinee</td>
<td>- Evaluent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Profetic</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>- Teaching And Learning In Second-Level Schools At The Advent Of High Speed Broadband</td>
<td>- ICT In School Census</td>
<td>2</td>
</tr>
<tr>
<td>Italy</td>
<td>- Classroom One To One</td>
<td>- Principals/Frequency Of ICT Use</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>- One To One In Teaching Process</td>
<td>- PON 'surveys'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Use Of Video In Italian Schools</td>
<td></td>
</tr>
<tr>
<td>Malta</td>
<td></td>
<td>- Learning Self-Review (Gap Analysis)</td>
<td>1</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>- Four In Balance Monitor</td>
<td>1</td>
</tr>
<tr>
<td>Norway</td>
<td>- Kartleggingsprøve I Digitale Ferdigheter 4. Trinn</td>
<td>- Monitor Skole</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>- Læringsstøttende Prøve I Digital Dømmekraft For 8. Trinn</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Osloprove</td>
<td></td>
</tr>
</tbody>
</table>

Because information concerning this survey was collected only in March 2017, the original questionnaire was not included in the in-depth analysis of school approaches for ICT inclusion in teaching and learning (Section 8).
The majority of the collected surveys (24 out of 34) primarily aims at measuring/monitoring the inclusion of ICT in the educational processes. Some of those surveys (6) have a ‘proactive’ function, as their main goal consists of providing relevant actors (e.g., teachers and principals) with useful data for their work. Finally, 4 surveys have been realised within a broader project or have the specific goal of assessing the implementation of an educational programme or intervention.

Table 2 shows the administrative datasets and surveys’ distribution across the different education levels (ISCED classification). As shown in Table 2, the 28 surveys and 6 administrative data sources are very similarly distributed across the different education levels. Because a single survey or administrative archive can comprise multiple education levels, the numbers reported in table 2 are higher than those reported in Table 1. For example, if a survey is carried out at ISCED levels 1, 2, and 3, it is counted 3 times. This gives us a total of 79 observations (i.e., data source times ISCED level), of which 61 stem from surveys (i.e., non-administrative data). Out of the 61 surveys, 51 came with their accompanying questionnaire(s).

Table 2 Administrative and survey data sources by ISCED level

<table>
<thead>
<tr>
<th>ISCED level</th>
<th>Administrative data</th>
<th>Surveys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>ISCED 1 primary ed.</td>
<td>6</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>ISCED 2 lower secondary ed.</td>
<td>6</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>ISCED 3 upper secondary ed.</td>
<td>6</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>10</td>
<td>51</td>
</tr>
</tbody>
</table>

Table 3 shows the national survey distribution across the different ‘target populations’. Data sources that refer to administrative data have been deleted, since administrative data refer by definition to schools as aggregated entities. Because a single survey can be targeted to multiple populations, the number of observations rises to 97, of which 81 are those with ‘available’ questionnaire. Table 3 also shows that the surveys cover principals, teachers, and students almost equally. However, when considering only surveys for which the original

3 In this research, we focus on levels 1 to 3 to cover at least compulsory education in all countries.
questionnaire has been made available, about forty percent of the collected surveys are addressed to teachers, about one third to principals, and only one fifth to students.\footnote{We could not get access to the original questionnaires of 9 surveys targeted to students: 4 Norwegian surveys, whose questionnaires are not available (they are on a commission basis); 3 Slovakian surveys (“Inspection”); the Italian “Classroom One to One” - covering only 110 students; and the Irish “Teaching and learning in second-level schools at the advent of high speed broadband”.
} Five questionnaires targeted to parents are available, while no available questionnaire addresses ICT coordinators. It should also be stressed that in nearly all cases in which principals are interviewed, they provide information on the school (e.g. on school’s ICT equipment, as we will show below), and in some cases on teachers and students.

**Table 3 Distribution of surveys by target population**

<table>
<thead>
<tr>
<th>Target population</th>
<th>Administrative data</th>
<th>Surveys without questionnaire</th>
<th>Surveys with questionnaire</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Principals</td>
<td>-</td>
<td>3</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>ICT coordinators</td>
<td>-</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Teachers</td>
<td>-</td>
<td>9</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>Students</td>
<td>-</td>
<td>0</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>Parents</td>
<td>-</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td><strong>16</strong></td>
<td><strong>81</strong></td>
<td><strong>97</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.

From now on, we will analyse only surveys for which we have received the original questionnaire. Hence, table 4 is based on the 81 observations identified in column 3 of Table 3. It presents an overview of the target population and ISCED level coverage in each participating country. Only one country (France) covers the entire set of ISCED levels and target populations. The highest coverage of target groups by ISCED level is reached for teachers in ISCED level 1 (which is covered by 12 countries) as well as principals in ISCED 1 (which is covered by 10 countries). The coverage of students appears particularly poor, and parents are considered only in two countries. In general, no ISCED-target combination happens to be covered by all countries, hampering the possibility to compare information across all the countries.
Table 4 Target population and ISCED coverage in the participating countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Principals</th>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ISCED 1</td>
<td>ISCED 2</td>
<td>ISCED 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISCED 1</td>
<td>ISCED 2</td>
<td>ISCED 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISCED 1</td>
<td>ISCED 2</td>
<td>ISCED 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISCED 1</td>
<td>ISCED 2</td>
<td>ISCED 3</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>10</td>
<td>12</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Belgium (NL)</td>
<td>9</td>
<td>11</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Denmark</td>
<td>7</td>
<td>8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Estonia</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Ireland</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Italy</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Malta</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Netherlands</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Norway</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Portugal</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Slovakia</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Spain</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Turkey</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

N. of countries | 10 | 9 | 7 | 12 | 11 | 8 | 6 | 5 | 4 | 2 | 2 | 1

Source: ICT@School web survey.

Table 4 depicts a situation characterised by a very low coverage of students and parents and a comparably higher coverage of teachers and principals (especially in ISCED 1 and 2). The potential for harmonisation of the available national surveys is higher for teachers and principals than for students or parents. Hence, in the first place, our advice is to focus our attention primarily on teachers and principals at ISCED levels 1 and 2. This does not mean that future analyses and surveys should leave out students or parents, but that the goal of harmonising national surveys on students seems out of reach given the actual state of national surveys. Therefore, henceforth only results for teachers and principals at ISCED 1 and 2 are reported, while the complete tables including also students and parents and ISCED 3 are available in Appendix II.

4. The designs of the national surveys

The majority of the surveys that we consider (i.e., those targeted to principals and teachers; carried out in ISCED 1 and 2; and for which the original questionnaire was made available) have a nation-wide scope (36 out of 44), while only 8 have a sub-national scope (Table 5).
Table 5 Survey geographical scope, by target population

<table>
<thead>
<tr>
<th></th>
<th>Principals</th>
<th>Teachers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire country</td>
<td>16</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>One or more regions</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>26</strong></td>
<td><strong>44</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For other populations (students and parents) and ISCED level 3 see Table A1 in Appendix II.

Table 6 shows the type of sampling designs employed in the different surveys. The relative majority (20, i.e. 45%) is based on representative samples and employs precise sampling designs (e.g. probabilistic, stratified, etc.). Fewer surveys (12) are instead based on ‘convenience’ samples, i.e. sample designs that do not follow a precisely regulated protocol (e.g. snowball sampling) or project-based surveys. It shall be stressed that even if they may respond to specific contextual needs, convenience samples do not provide an adequate empirical basis to infer information about the population studied, and to compare that information across countries. Hence, future surveys should prioritise the implementation of scientifically validated sampling designs. Finally, a minority of sources refer to census studies, i.e. they address all units in the target population. More specifically, census is the most common option to collect information about schools (target: principals). On the other hand, only 2 of the surveys targeted to teachers are based on a census. For 2 other surveys, no information is available on the sampling design adopted.

Table 6 Survey sampling designs, by target population

<table>
<thead>
<tr>
<th></th>
<th>Principals</th>
<th>Teachers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census</td>
<td>8</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Representative sample</td>
<td>5</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Convenience/project sample</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Missing information</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>26</strong></td>
<td><strong>44</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For other populations (students and parents) and ISCED level 3 see Table A2 in Appendix II.

Concerning surveys based on representative samples, in three quarter of the cases (15 out of 20), interviewees were contacted multiple times in case of no answer, while for the remaining 5 surveys information has not been made available at this point. Concerning the existence of ‘following’ procedures protocols, 8 had precise protocols for replacing those individuals not answering, 8 surveys did not implement any ‘replacement procedure’. In 4 other cases, the information was not available. With our online survey we also collected information on the coverage and response rates, but unfortunately the quality of the information collected does not allow us to analyse these issues in detail.5

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5 In some cases, information was not directly accessible to the national partner; in some other cases the information was not available.
Table 7 Field operations in surveys based on representative samples

<table>
<thead>
<tr>
<th>Multiple contacts if not answering?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15</td>
</tr>
<tr>
<td>Information not available</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Replacement procedures adopted?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
</tr>
<tr>
<td>Information not available</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For the total including other populations (students and parents) and ISCED level 3 see Table A3 in Appendix II.

Table 8 shows that the large majority of the surveys implements online questionnaires. No survey was based on telephonic interviews.

Table 8 Questionnaire administration procedures by target population

<table>
<thead>
<tr>
<th></th>
<th>Principals</th>
<th>Teachers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephonic interviews</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Computer interviews</td>
<td>15</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>NA/ Don’t Know/ Missing</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>26</strong></td>
<td><strong>44</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For other populations (students and parents) and ISCED level 3 see Table A4 in Appendix II.

Table 9 shows the types of questions that were predominantly used in each national survey. The most common options are multiple choice questions – which allow the respondents to select one or more options from a defined list of answers – and Likert scales, i.e. questions where the respondent should declare how much he agrees/disagrees with a given statement. Less used are ranking scores (i.e. 1, 2, 3, ...) and open answers. Only one survey relied on standardised tests to evaluate the level of ICT competences: the Norwegian School Monitor. The tests are targeted to principals, teachers, and students, but unfortunately they are not available to us.

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As multiple answers are possible, the total does not sum up to 44.
Table 9 Type of questions by target population

<table>
<thead>
<tr>
<th></th>
<th>Principals</th>
<th>Teachers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple choice</td>
<td>14</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>Likert</td>
<td>12</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>Ranking scores</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Open answers</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Standardised Tests</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>NA/don't know</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For other populations (students and parents) and ISCED level 3 see Table A5 in Appendix II.

5. The contents covered by the national surveys

The contents covered by national surveys (those targeted to principals and teachers; carried out in ISCED 1 and 2; and for which the original questionnaire was made available) are analysed along four dimensions: availability, use, competences, and attitudes. Table 10 shows the contents’ coverage in the different countries. The large majority of countries covers most of the topics about schools and teachers: availability at schools of new technologies (i.e., hardware, software and internet connection); use of ICT by teachers; and their training in ICT; teachers’ competences and attitudes.

Table 10 makes clear that there is no topic that is covered by all countries. Most important, not all countries have survey data on the schools’ availability of new technologies (i.e., hardware, software, and internet connection). While it is possible that availability is covered by administrative data (that are not considered here), it would nonetheless be important to have some information on this dimension and to have it linked with information about teachers and principals. This would facilitate the interpretation of the information collected: e.g., teachers may not be using ICT either because they do not want to or because ICT is not available in their school. 9 countries collect information on whether schools have a defined strategy for the inclusion of ICT in the school processes and the implementation of new pedagogical solutions based on new technologies.

Concerning teachers’ digital competences, these are usually self-reported; however, in some cases teachers are asked to report whether they possess any certificate. To assess teachers’ competences and attitudes towards pedagogical use of ICT a possible source of information could be derived from MENTEP.

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7 In some other cases, respondents of our online survey mentioned the availability of competencies, even though the questions included in their surveys refer rather to attitudes regarding the expected effect of ICT on competencies or to some programme-specific competencies.

8 [http://mentep.eun.org/](http://mentep.eun.org/)
### Table 10 Content dimensions’ coverage in the participating countries

<table>
<thead>
<tr>
<th></th>
<th>Availability</th>
<th>Use</th>
<th>Competences</th>
<th>Strategy</th>
<th>Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardware</td>
<td>Software</td>
<td>Internet</td>
<td>Teachers</td>
<td>Teachers</td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium (NL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slovakia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N. of countries</strong></td>
<td><strong>9</strong></td>
<td><strong>8</strong></td>
<td><strong>10</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For content referring to other population (students and parents) and ISCED level 3 see Table A6 in Appendix II.

a) Administrative data.

### 6. Identifying a core of comparable information

One matter of interest is to identify a sub-set of surveys that share common methodological criteria and focus on the same content dimensions. With respect to the methodological comparability only, Table 11 shows the countries in which a survey meets all the following criteria: (i) share a common target population; (ii) cover a common ISCED level; (iii) cover the entire country; (iv) be based either on a census or on a representative sample. Unfortunately, the number of countries comparable on this basis is rather low. The number of countries with similar designs ranges between 5 (principals in ISCED 2) and 7 (teachers in ISCED 1).
Table 11 Countries with methodologically comparable surveys, by ISCED level and target population

<table>
<thead>
<tr>
<th>Principals</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISCED 1</td>
<td>ISCED 2</td>
</tr>
<tr>
<td>France</td>
<td>France</td>
</tr>
<tr>
<td>Ireland</td>
<td>Ireland</td>
</tr>
<tr>
<td>Italy</td>
<td>Italy</td>
</tr>
<tr>
<td>Norway</td>
<td>Portugal</td>
</tr>
<tr>
<td>Portugal</td>
<td>Spain</td>
</tr>
<tr>
<td>Spain</td>
<td>Malta</td>
</tr>
<tr>
<td></td>
<td>Norway</td>
</tr>
</tbody>
</table>

| 6          | 5        | 7        | 6        |

Source: ICT@School web survey.

However, based on the information we collected so far, it is not sure whether the comparable countries focus on common contents. Additional details on the content covered by comparable countries, broken down by ISCED level and target population, are provided in the tables below.

Table 12a Content dimensions’ coverage in the comparable countries (Principals, ISCED 1)

<table>
<thead>
<tr>
<th>Availability</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>Software</td>
</tr>
<tr>
<td>France</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
</tr>
</tbody>
</table>

| N. of countries | 5 | 3 | 4 | 3 |

Source: ICT@School web survey. For Estonia, the availability dimension is entirely covered by administrative data.
### Table 12b Content dimensions' coverage in the comparable countries (Principals, ISCED 2)

<table>
<thead>
<tr>
<th></th>
<th>Availability</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardware</td>
<td>Software</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. of countries</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For Estonia, the availability dimension is entirely covered by administrative data.

### Table 12c Content dimensions' coverage in the comparable countries (Teachers, ISCED 1)

<table>
<thead>
<tr>
<th></th>
<th>Availability</th>
<th>Use</th>
<th>Competences</th>
<th>Strategy</th>
<th>Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardware</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teachers</td>
<td></td>
<td></td>
<td>Teachers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teachers' training in ICT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Malta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. of countries</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: ICT@School web survey. For Estonia, the availability dimension is entirely covered by administrative data.
Unfortunately, once we focus on the content’s coverage in countries that are comparable according to the basic methodological standards defined above (Table 11), the number of countries comparable tend to decrease even more. When we consider questionnaires targeted to principals, ICT availability in terms of hardware and internet have been covered best.9 ICT use and competences by teachers are also well covered: all the 7 comparable countries targeting teachers in ISCED 1 and the 6 comparable countries targeting teachers in ISCED 2 collect information on teachers’ use of ICT and competences. In addition, most of them also have information on teacher’s attitudes towards ICT. That said, one should remember that even within these countries strong differences sometimes persist; in particular, even if the broad content dimension covered is the same, the specific questions and possible answers are often different, such that it is difficult to obtain a common set of comparable information.

7. Analysis of the national questionnaires

Close inspection of the questionnaires employed in the national surveys allows to identify the main content dimensions and subdimensions that are investigated in the different countries. Table 13 shows a selection of the dimensions and subdimensions that concern schools and teachers in ISCED 1 and 2. Following the line of argument already explained above, in this section we prioritise those dimensions and reference populations for which the harmonisation of national surveys appears within reasonable reach. The complete picture of the dimensions and subdimensions identified for the different reference populations is reported in Table A7 in Appendix II.

Table 13 also lists some examples of the specific indicators that are collected by the different surveys and that could represent an initial ‘core’ of topics that should be covered in all countries. It shall be stressed

9 In questionnaire targeted to principals, Ireland, Norway and Spain also collect some information about teachers’ ICT use and competences.
that, at the moment, a common set of comparable indicators does not exist in the actual surveys. A complete coverage of the countries does not exist with respect to the subdimensions and not even the dimensions. Moreover, even if a subdimension is covered in several countries, the specific indicators referring to each subdimension often differ with respect to the specific content, the wording, or the metrics used.

Table 13 Most important content dimensions and subdimensions covered by the national surveys

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Subdimension</th>
<th>Countries</th>
<th>Example of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Availability</td>
<td>1.1 Availability of ICT devices such as computers at school</td>
<td>Spain, Portugal, Ireland, France, Italy, Belgium (NL), Netherlands, Estonia^</td>
<td>1.1.1 Number of computers 1.1.2 Number of mobile devices 1.1.3 Number of White Boards 1.1.4 Others devices (printers, digital cameras, etc.)</td>
</tr>
<tr>
<td></td>
<td>1.2 Availability of internet access at school</td>
<td>Austria, Finland, Portugal, Spain, Italy, Belgium (NL), Netherlands, Norway, Estonia^</td>
<td>1.2.1 Internet connection 1.2.2 Wi-Fi connection</td>
</tr>
<tr>
<td></td>
<td>1.3 Availability of ICT software at school</td>
<td>France, Portugal, Belgium (NL), Estonia^</td>
<td>1.3.1 E-mail services available 1.3.2 Digital learning resources (e.g. Virtual Learning Environment) available</td>
</tr>
<tr>
<td>2. Use</td>
<td>2.1 Frequency of use of ICT (Teachers)</td>
<td>Austria, Denmark, Estonia, Finland, France, Ireland, Italy, Malta, Norway, Netherlands</td>
<td>2.1.1 Use of ICT (Yes/No) 2.1.2 Online tools and/or external virtual learning environments are used to support teaching and learning reported by principals 2.1.3 Frequency of use (self-reported)</td>
</tr>
<tr>
<td></td>
<td>2.2 ICT inclusion in teaching practices</td>
<td>Austria, Estonia, Finland, France, Ireland, Malta, Norway, Netherlands</td>
<td>2.2.1 Listing types of actions 2.2.2 Teachers/students centred pedagogical approach 2.2.3 Organization of the space</td>
</tr>
<tr>
<td>3. Competences</td>
<td>3.1 Teachers’ competences</td>
<td>Belgium (NL), Austria, Estonia, Finland, Ireland, France, Italy, Malta, Norway</td>
<td>3.1.1 Skill level (self-reported) 3.1.2 Level of comfort when performing certain tasks (self-reported) 3.1.3 Obtained certificates (self-reported)</td>
</tr>
<tr>
<td></td>
<td>3.2 Training (teachers)</td>
<td>Belgium (NL), Denmark, Estonia, Finland, France, Italy, Malta, Norway, Slovakia</td>
<td>3.2.1 Training activities 3.2.2 Demand for training 3.2.3 Degree of autonomy in training plans</td>
</tr>
<tr>
<td>4. Strategy</td>
<td>4.1 National or internal system of ICT policy on education</td>
<td>Finland, France, Ireland, Italy, Belgium (NL), Norway, Netherlands, Denmark</td>
<td>4.1.1 ICT strategy 4.1.2 Guidelines of use 4.1.3 Data-Processing Agreements</td>
</tr>
</tbody>
</table>
8. Investigating schools’ approaches for ICT inclusion in teaching and learning

After providing a general picture of the contents covered by the national surveys and their cross-national comparability, we now zoom in on some ‘frontier’ topics in educational research on the role of ICT. Namely, we focus on the organisational and pedagogical approaches that underlie the adoption and inclusion of ICT in teaching and learning. In addition, we investigate how these topics are covered by the national surveys included in the analysis. More precisely, we focus on three subdimensions identified above (Table 13), namely:

- Inclusion of ICT in teaching practices (subdimension 2.2);
- Teacher training (subdimension 3.2);
- Schools’ ICT implementation strategies (dimension 4).

It should be noted that the goal of this focus is not to assess again the surveys’ comparability (as done in sections 6 and 7), rather to describe the type of relevant information collected and the questions used in the different countries. For this reason, surveys that have previously been dropped because they solely target ISCED 3 (Four in Balance Monitor (Netherlands) and Perception Study of FATIH Project (Turkey)) have been included again. The full list of relevant questions is available in Appendix III.

Inclusion of ICT in teaching practices (§2.2)

The national surveys provide a wealth of information on how ICT is included in, and/or impacts teaching practices. Such information can be divided in three subgroups:

- **Type of actions** (§2.2.1). The following countries collect detailed information on types of action that include ICT for school-related purposes: Belgium NL (Mictivo), France (Evaluent; Profetic), Italy (PON), Malta (Learning Self-Review (Gap Analysis)), Netherlands (Four in Balance Monitor), Turkey (Perception Study of FATIH Project). Questionnaires collect information on how often ICT is used for a number of actions, such as: (i) preparing lessons, courses, and educational sessions material; (ii) collaborating or communicating with other teachers, parents, and with the students themselves; (iii) customizing learning paths; (iv) assessing students; (v) having students work on something, in class or at home (e.g. have students look up information, make students collaborate). With respect to these last aspects, listing the types of action can sometimes give an idea of how the class is structured in terms of the pedagogical approach. This is explained in greater detail in the next point. Some questionnaires collect detailed information on the specific technology used (e.g. social media; educational games; Virtual Learning Environment, etc.).

- **Teacher vs. student centred approach** (§2.2.2). Questions in this area investigate the balance between teacher vs student centred approaches. While it is not always easy to narrowly define the two concepts, it is possible to give a general idea about the prevailing concept. Eight surveys from seven countries (France is represented twice) deal with this topic: Belgium NL (Mictivo), Finland (Opeka), France (Evaluent, Profetic), Ireland (ICT in Schools Census), and Malta (Learning Self-Review (Gap Analysis)), Netherlands (Four in Balance Monitor), Norway (Monitor Skole). Please note that three of the analysed questionnaires do not restrict their questions to ICT usage but remain general. Due to the high relevance of the topic these questionnaires have been included in the analysis as well. The main contents covered by the analysed national questionnaires are the following:
  - Teacher focus: General questions that assess how involved the teacher is during lessons (e.g. *I decide what my pupils learn and when*).
○ **Student focus**: General questions that assess how involved students are during lessons (e.g. *Pupils assess each other’s work and offer suggestions for improvement*).

○ **Students’ activities**: Questions asking for specific ICT-related activities that students perform in or outside the classroom, in single or group work (e.g. creating digital content, using document cameras in class, using ICT to find information for lessons, etc.).

○ **Reverse teaching/ flipped classroom**: Only Norway covers this topic. The survey asks whether teachers performed this technique, and the teachers’ attitudes towards it. In this question, ICT is not specifically mentioned.

- **Space organization** (§2.2.3). An active learning environment is a necessary component to promote active learning. With regard to ICT, active learning environment refers to the positioning of computers, beamers and other ICT equipment in relation to students and teachers (e.g., whether a computer faces the teacher, the students, or is hidden in a corner). Only one questionnaire, Evaluent (France), deals precisely with this issue, while Opeka from Finland refers to the matter less directly. Unfortunately, these are the two only surveys that deal with space organisation. The way mobile devices are used in pedagogical activities – although not directly connected to space organisation – shows to which extent teaching and learning activities are constrained by school physical infrastructures, or to which extent they expand outside the school buildings.

**Teacher Training** (§3.2)

A number of countries included in this study collect information on teacher training related to ICT (Belgium NL, Denmark, Finland, France, Ireland, Italy, Malta, Norway and Slovakia). Information concerning teacher training and continuous professional development (CPD) is collected through both principals’ and teachers’ questionnaires. The main contents covered by the analysed national questionnaires are the following:

- **Training activities**: most questionnaires collect information on whether teachers undertake/have undertaken (different types of) training courses and the frequency of these training activities. Questions are phrased in different formats, hence information is not easily comparable: there are differences in the time span considered (e.g. “current school year”, “past two years”, or undefined time periods) and in the courses’ types and contents. Most questionnaires concern CPD but some questionnaires distinguish between initial training and CPD (France);

- **Demand for training**: A second topic has to do with the perceived need for training. In most cases, this information is collected by asking teachers’ opinions on their perceived training needs and whether these are satisfied by the training supply in the country;

- **Degree of autonomy in training plans**: A third set of questions aims to assess whether teacher training is left to the single teachers’ initiative, promoted/organised by schools, or even made mandatory by school managing authorities. In addition, some questionnaires collect information on the single schools’ policy towards ICT training of their teachers, and aim to assess to which extent schools are autonomous in deciding about teacher training on ICT.

- **ICT skills certifications**: Questionnaires also collect information on teachers’ possession of certificates (e.g., Italy (PON), France (Profetic) and Finland (Opeka)). Often, the certificates under study are country-specific and hence not comparable across countries.

**Strategy** (§4)

The meaning of Strategy in the context of ICT is twofold. On the one hand, it refers to the set of rules and plans concerning the inclusion of ICT school activities, on the other hand it refers to the provision of regulations on students’ data handling. Even if implemented within the schools, the strategy can be decided at the same school level or at a higher level (e.g., municipality level, national level, etc). Of the six surveys covering this topic, three ask strategy related questions to both principals and teachers (Evaluent from France, MICTIVO from Belgium NL, and Four in Balance from the Netherlands), two only to principals (ICT in Schools from Ireland and the
Questionnaire on digital teaching aids from Denmark), and one to teachers only (Opeka from Finland). With the exception of Denmark, all surveys ask directly about the existence of an ICT strategy. In the case of Denmark, the principals are asked about their self-conception regarding their approach to ICT; hence, they ask about the personal, implicit policy of the principal rather than one agreed upon openly.

Apart from that, clearly definable similarities become less common. While some questionnaires pay a lot of attention to the topic and ask very detailed questions (e.g. Ireland: [Does it apply that] the ICT (eLearning) planning section is updated regularly to reflect overall school priorities?) others cover the topic only briefly and thus remain quite general (e.g. Finland: Our school has a jointly agreed goal for utilizing ICT in teaching). The most extensive questionnaires on this matter are those from the Netherlands and Ireland. Both questionnaires deal intensively with the guidelines for Internet use for teachers and students; in addition, the Dutch survey also covers Data Processing Agreements with software suppliers, which are meant to protect students’ privacy. To sum up, the following main topics on strategy are covered by the surveys:

- **ICT strategy:** Surveys ask whether a strategy exists in general, about its contents, whether it has been formally written down and agreed upon, how often it is updated, who is involved in the planning, etc.;
- **Guidelines of use:** A behavioural protocol for students and teachers, regulating their behaviour to ensure safe use. The questions refer to the topics covered by the guidelines as well as to whether the guidelines are regularly updated;
- **Data-Processing Agreements (DPAs):** DPAs are signed with third-party software suppliers and cover what they can and cannot do with students’ data. The Dutch survey asks whether a DPA exists and whether parents are aware of it.

9. A look at international surveys on ICT at school

In addition to the national surveys described above, a number of international surveys cover the topic of ICT at school. Some of them have an ad-hoc section within a more general survey – for instance the Programme for International Student Assessment (PISA) – others have been designed and carried out with the specific purpose of collecting information about ICT (e.g. Survey of School, International Computer and Information Literacy Study (ICILS).

As can be seen from table 14, the Survey of Schools is the only survey that covers all EU countries plus Norway and Turkey, and each country was examined at least once by one of the other surveys. However, for Survey of Schools Germany, the Netherlands, and the United Kingdom cannot be considered because the coverage rate is so small that information are unreliable (less than 40 schools). Concerning the 15 countries that participated in the ICT@School project, PISA covers all of them; Survey of Schools misses information about the Netherlands; Estonia and Turkey are excluded from PIRLS; Austria, Ireland, Malta, and Turkey are not in TALIS; Austria and Denmark are not covered by TIMMS; and many more are excluded from ICILS, which covers only 5 of the 15 countries in the ICT@School project (in total, ICILS covers 11 countries). However, PISA focuses only on 15 years old students and in addition collects no information on teachers.

Not always has the entire country been subject to analysis. PIRLS, the Survey of Schools, TALIS, and TIMMS analysed only England (and Northern Ireland in case of TIMMS and Survey of Schools) and not the entire UK; TALIS and TIMMS focused only on the Flemish part of Belgium. Nonetheless, the overall coverage of the European Union is satisfactory.

<table>
<thead>
<tr>
<th>Survey Organization</th>
<th>ICILS</th>
<th>PISA</th>
<th>PIRLS</th>
<th>Survey of Schools*</th>
<th>TALIS</th>
<th>TIMMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>IEA</td>
<td>OECD</td>
<td>IEA</td>
<td>European Comm.</td>
<td>OECD</td>
<td>IEA</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Bulgaria</td>
<td>Croatia</td>
<td>Cyprus</td>
<td>Czech Republic</td>
<td>Denmark</td>
<td>Estonia</td>
</tr>
<tr>
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</tbody>
</table>
Table 15 provides an overview of the different surveys covering different populations and dimensions. As one can see, TIMMS is the only survey that targets parents. All surveys interview students and — with the exception of PISA — teachers. Furthermore, ICILS, PISA, and the Survey of Schools cover all dimensions, and apart from TALIS, which lacks information on availability, the remaining surveys cover all dimensions but attitudes.\(^\text{10}\)

<table>
<thead>
<tr>
<th>Survey</th>
<th>Target Population</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICILS</td>
<td>Principals</td>
<td>Availability</td>
</tr>
<tr>
<td>PISA</td>
<td>Teachers</td>
<td>Use</td>
</tr>
<tr>
<td>PIRLS</td>
<td>Students</td>
<td>Competences</td>
</tr>
<tr>
<td>Survey of Schools</td>
<td>Parents</td>
<td>Attitudes</td>
</tr>
<tr>
<td>TALIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIMMS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The subdimensions considered for national surveys have also been analysed for international surveys. Detailed information can be found in Appendix III and IV.

10. Concluding remarks

In each country participating in ICT@School at least one survey on the topic of ICT at school is available. This can be taken as a sign that the topic is considered relevant within all national education policy frameworks. The number of surveys that have been conducted in the countries suggests that it is widely accepted to rely on sound data to inform political agents about ICT in schools. This first analytical report provides a systematic comparative description of these national surveys with respect to both their methodological features and their contents. Out of the 34 data sources signalled by the national partners, a specific focus has been placed on the 21 surveys for which the original questionnaires were made available.

According to our analysis, the national surveys are barely comparable from both a content point of view and a methodological perspective. One possible reason for this heterogeneous picture may be that the surveys were designed for different purposes, and that countries often take up very different approaches when studying ICT in schools. At one extreme, some countries (e.g., France) make use of a very centralised and integrated approach, aimed at collecting data on the different policy-relevant aspects related to the introduction and use of ICT in schools. At the other extreme, some countries (e.g., United Kingdom) make use of a more decentralised and integrated approach, aimed at collecting data on the different policy-relevant aspects related to the introduction and use of ICT in schools. However, it is important to note that the exact nature of this interaction may vary depending on the specific context and objectives of each country.

We collected more detailed information about the contents derivable from international surveys, which will be included in Appendix III and IV.
of ICT in schools. On the other hand, other countries either follow a regional approach (e.g. Belgium), making it difficult to retrieve nation-wide data and indicators, or simply have no systematic approach and rely on scattered experiences of data collections, sometimes in relation to the implementation of a specific project or programme, sometimes including questions related to ICT in different sources of data.

Among the main sources of non-comparability of indicators across countries, the following ones have to be stressed. First, national surveys do not always cover the same ISCED levels and target populations. Particularly, the national surveys happen to be quite developed in covering teachers and principals, but less so when it comes to students and parents. Second, the sampling procedures implemented largely differ: some countries conducted studies with large and representative samples. However, in other countries the only relevant data happen to be related to specific projects, which are non-representative of the country. Moreover, other studies applied non-representative sampling methods, such as snowball sampling. While the project-related data and non-representative data might respond to the purposes they were designed for (e.g. evaluate a project), their results cannot be extended to the entire country and are hence of limited use. Third, national surveys cover a wide spectrum of content dimensions, which are definitely a positive indicator of the richness of the surveys carried out across Europe. However, this does not always allow comparability across countries. Even PC availability at school, among the most established indicators in the field, is covered by only 10 countries out of 15. Moreover, even when the surveys focus on the same content, the specific questions included in the questionnaires differ with respect to the wording and the answer modalities, which severely hampers the comparison.

In sum, the national surveys are particularly useful to analyse the topic deeply within one country. Their analysis is also a useful starting point to identify a core of fundamental topics that should be included in future surveys about ICT in education. However, comparing the national indicators across countries is virtually impossible. In the attempt to identify a subset of cross-nationally comparable indicators, part of the analysis presented in this report is restricted to surveys covering teachers and principals at ISCED 1 and 2 only (the combination that maximises the number of countries covered) and that share a basic set of methodological criteria. This led to the identification of seven countries in which ISCED-1 teachers are interviewed concerning their use of ICT and their digital competences. However, even within this group, most of the time the specific questions used in the questionnaires are different from one another, so that comparing information is not feasible. It shall be stressed that this situation also hampers the possibility of integrating national data with data coming from international surveys.

In addition to our comparability endeavour, the report also takes a closer look at some ‘frontier’ research topics concerning the inclusion of ICT in school processes. Namely, we focused on the issues of schools’ ICT implementation strategy; ICT inclusion in teaching practices (i.e., types of activities done with the support of ICT, student-centred approaches, ICT and space organisation); and teacher training. This focus revealed the existence of a rich set of questions in the different countries that could be used as a basis to harmonise existing national surveys as well as to draft new ones at the European level.

The final step of ICT@School (STEP3) will be entirely dedicated to drafting a methodological proposal on how to improve and harmonise the quality of indicators, the data collection procedures and, ultimately, the cross-national comparability. We can anticipate here that the proposal will likely be drafted around three main axes: (i) Focus: we propose to focus on the collection of comparable indicators that relate to schools and teachers in ISCED levels 1 and 2; (ii) Methodological design of the surveys: we propose the adoption of representative sampling designs and validated protocols for the field operations; (iii) Content subdimensions to be covered. Priority will be assigned to the three ‘frontier’ topics on schools’ approaches to include ICT in teaching and learning; it is also important to stress that some more basic/standard indicators will have to be collected in order to gain a proper understanding and interpretation of the ‘frontier’ themes. Among the relevant indicators that will have to be included, we will focus on availability indicators, frequency and modalities of use of ICT, teacher training, the inclusion of ICT in teaching practices, and implementation strategies.
Appendix I – Online survey

I.a – Letter sent to the member of the working group:

Dear member of the EUN Working Group on ICT in Education Indicators,

Please, find below the link to the questionnaire that – as agreed in Brussels – has been prepared by FBK-IRVAPP with kind support of EUN and that we kindly ask you to fill in.

ICT@School questionnaire

As you will remember, the goal of this questionnaire is gathering precise and cross-nationally comparable information on the relevant survey data on the topic of ICT in schools. Hence, your contribution at this stage is very useful and greatly appreciated.

Please, remember that you are asked to fill in one questionnaire for each survey carried out within a given education level (e.g., if there are two surveys in your country, one for primary and one for primary and secondary education levels, you will have to fill out the questionnaire three times). Remember also that the questionnaire is aimed at primary and secondary education only (i.e., ISCED 1 to ISCED 3). The exact number of times that you are required to fill in the questionnaire is indicated in the online spreadsheet we have shared with you: the number of green cells in the table corresponds to the number of times you will have to complete the questionnaire. If you have not ‘validated’ it yet with the FBK-IRVAPP team, it may still contain some errors. Please modify the table and inform us. If you have doubts, do not hesitate to contact us anytime.

According to the schedule of the working group, you are expected to fill in the questionnaire/s by September 30 at the latest.

Before proceeding, please read the attached document carefully, as it may be useful to guide you through the questionnaire and may also clarify some of your doubts.

If you are aware of other surveys, which you are not going to consider when filling in our questionnaire (e.g., because you do not know the details of that survey), we would kindly ask you to provide us with the name of these additional surveys and the contact details of a person we could interview as soon as possible.

In addition to filling in our questionnaire, we also ask you to provide us with the original questionnaires of the surveys. If you have these questionnaires already translated in English then please send us them, otherwise you do not need to translate them, but just send them in the original language. Translations will be taken care of by us. This material will be used to assess the comparability of the indicators developed in each country. Please remember to provide all the different questionnaires (if there are several) and save them within the Google folder we have shared with you, possibly naming them in order that the name of the source and the ISCED level covered are clearly understandable.

Thank you very much for your collaboration!

Enrico Rettore and Patricia Wastiau

For any problem or clarification requests, do not hesitate to contact us any time. Please, use the following mail addresses always in CC, so that even if one of us is absent, someone else will be able to answer you in due time.

Contacts:
FBK-IRVAPP: azzolini@irvapp.it; bruss@irvapp.it; piazzalunga@irvapp.it
EUN: patricia.wastiau@eun.org

I.b – Online questionnaire [See attachment]
I.c – Readme – Questionnaire instruction [See attachment]
# Appendix II – Tables for all target populations

## Table A1 Survey geographical scope, by target population

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Principal</th>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire country</td>
<td>21</td>
<td>27</td>
<td>9</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>One or more regions</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>35</strong></td>
<td><strong>17</strong></td>
<td><strong>5</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.

## Table A2 Survey sampling designs, by target population

<table>
<thead>
<tr>
<th>Sampling Design</th>
<th>Principal</th>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census</td>
<td>11</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Representative sample</td>
<td>7</td>
<td>20</td>
<td>10</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>Convenience/project sample</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Missing information</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>35</strong></td>
<td><strong>17</strong></td>
<td><strong>5</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.

## Table A3 Field operations in surveys based on representative samples administered to principals, teachers, students and parents

- **Multiple contacts if not answering?**
  - Yes: 30
  - Information not available: 11
  - **Total**: 41

- **Replacement procedures adopted?**
  - Yes: 14
  - No: 19
  - Information not available: 8
  - **Total**: 41

Source: ICT@School web survey.

## Table A4 Questionnaire administration procedures by target population

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Principal</th>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephonic interviews</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Computer interviews</td>
<td>20</td>
<td>28</td>
<td>12</td>
<td>3</td>
<td>63</td>
</tr>
<tr>
<td>NA/ Don't Know/ Missing</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>35</strong></td>
<td><strong>17</strong></td>
<td><strong>5</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.

## Table A5 Type of questions by target population

<table>
<thead>
<tr>
<th>Type of Question</th>
<th>Principal</th>
<th>Teachers</th>
<th>Students</th>
<th>Parents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple choice</td>
<td>19</td>
<td>27</td>
<td>12</td>
<td>3</td>
<td>61</td>
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<tr>
<td>Likert</td>
<td>15</td>
<td>27</td>
<td>12</td>
<td>3</td>
<td>57</td>
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<tr>
<td>Ranking scores</td>
<td>6</td>
<td>12</td>
<td>6</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Open answers</td>
<td>9</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Standardised Tests</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>NA/don't know</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.
<table>
<thead>
<tr>
<th>Country</th>
<th>Availability</th>
<th>Use</th>
<th>Competences</th>
<th>Strategy</th>
<th>Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardware</td>
<td>Software</td>
<td>Internet</td>
<td>Teachers</td>
<td>Students</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium (NL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
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<td></td>
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<tr>
<td>Estonia</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
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<td></td>
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<tr>
<td>Malta</td>
<td></td>
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<tr>
<td>Netherlands</td>
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<tr>
<td>Norway</td>
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<tr>
<td>Portugal</td>
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<tr>
<td>Slovakia</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># countries</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: ICT@School web survey.

a) Administrative data
Tab A7 Content dimensions and subdimensions covered by the national surveys

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Subdimension</th>
<th>Countries</th>
<th>Example of indicators</th>
</tr>
</thead>
</table>
| 1. Availability | 1.1 Availability of ICT devices such as computers at school                   | Belgium NL, France, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Estonia              | 1.1.1 Number of computers  
1.1.2 Number of mobile devices  
1.1.3 Number of White Boards  
1.1.4 Others devices (printers, digital cameras, etc.) |
|           | 1.2 Availability of internet access at school                                | Austria, Belgium NL, Finland, Italy, Netherlands, Norway, Portugal, Spain, Estonia             | 1.2.1 Internet connection  
1.2.2 Wi-Fi connection |
|           | 1.3 Availability of ICT software at school                                   | Belgium NL, France, Portugal, Estonia                                                        | 1.3.1 E-mail services available  
1.3.2 Digital learning resources (virtual learning environment) available  
1.3.3 ICT software used in school since ... |
|           | 1.4 School provision of ICT devices to students for personal use at school   | Denmark, Finland, France, Turkey                                                              | 1.4.1 Teaching also takes place outside of classroom using mobile devices  
1.4.2 Type of mobile devices that have been handed out to students  
1.4.3 List of steps that have been taken to allow access to the extranet |
|           | 1.5 Shortage/inadequacy of ICT devices (hardware/software)                    | Belgium NL, Denmark, Finland, France, Ireland, Italy                                        | 1.5.1 Speed and stability of the Internet connection  
1.5.2 Access to needed ICT hardware  
1.5.3 Software problems  
1.5.4 Technical support  
1.5.5 Devices are old/ outdated  
1.5.6 Relevant sites are blocked  
1.5.7 Limitation to use VLE |
| 2. Use    | 2.1 Frequency of use of ICT (Teachers)                                       | Austria, Belgium NL, Denmark, Estonia, Finland, France, Estonia                             | 2.1.1 Use of ICT (Yes/No)  
2.1.2 Online tools and/or external virtual learning environments are used to support teaching and learning reported by principals |
| 2.2 ICT inclusion in teaching practices | Austria, Belgium NL, Estonia, Finland, France, Ireland, Malta, Netherlands, Norway, Turkey | 2.2.1 Listing types of actions  
2.2.2 Teachers/students centred pedagogical approach  
2.2.3 Organization of the space |
| 2.3 Frequency of use of ICT (students) | Belgium NL, Estonia, France, Italy | 2.3.1 Frequency of use (reported by teachers)  
2.3.2 Frequency of use (self-reported)  
2.3.3 Time spent |
| 2.4 Frequency of ICT use at school by type of actions using ICT (student) | Belgium NL, Estonia, Italy | 2.4.1 Listing types of actions |
| 3. Competences | Austria, Belgium NL, Estonia, Finland, France, Ireland, Italy, Malta, Norway | 3.1.1 Skill level (self-reported)  
3.1.2 Level of comfort when performing certain tasks (self-reported)  
3.1.3 Obtained certificates (self-reported) |
| 3.2 Training (teachers) | Belgium NL, Denmark, Estonia, France, Italy, Malta, Norway, Slovakia | 3.2.1 Training activities  
3.2.2 Demand for training  
3.2.3 Degree of autonomy in training plans |
| 3.3 Students' competences (self-reported) | Belgium NL, Italy | 3.3.1 Skill in using PC/Internet (self-assessed) |
| 3.4 Students' test-based skills | Norway | Tests not available |
| 3.5 Navigation skills | - | - |
| 4. Strategy | Belgium NL, Denmark, Finland, France, Ireland, Netherlands, Norway | 4.1.1 ICT strategy  
4.1.2 Guidelines of use  
4.1.3 Data-Processing Agreements |
| 5. Attitude | Austria, Belgium NL, Denmark, Estonia, Finland, France, Italy | 5.1.1 Performance increase of students due to ICT use  
5.1.2 Preference to use more ICT in teaching  
5.1.2 Difficulty of ICT  
5.1.3 Exhaustion due to constant new introduction of ICT to teaching (Y/N) |
| 5.2 Attitudes/ opinions regarding the role of ICT in learning and teaching (principals) | Belgium NL, France | 5.2.1 Service quality of Digital Learning Environment  
5.2.2 Most important functions of the Digital Learning Environment for monitoring  
5.2.3 Editorial educational resources improved teaching and learning |
|---|---|---|
| 5.3 Attitudes/ opinions regarding the role of ICT in learning (students) | Belgium NL, France | 5.3.1 Increasing willingness to learn due to VLE  
5.3.2 Increasing willingness to work harder due to VLE |
| 5.4 Attitudes/ opinions regarding the role of ICT in learning and teaching (parents) | Austria | 5.4.1 Importance of acquainting one’s child with ICT  
5.4.2 Importance of filter programs  
5.4.3 Attitude towards computers, media in general, and time spend in front of PC by child |

Note: a) administrative data.
Appendix III – In-depth analysis of schools’ approaches for ICT inclusion in teaching and learning

2.2 ICT inclusion in teaching practices

2.2.1 List of activities

Belgium NL
Survey: Mictivo
Target Group: Principals
● How many teachers in your school actually do the following activities?
  - Preparing exercises for students using a special exercise program.
  - Present information to students through ICT.
  - Teach students how to work with a computer
  - Use ICT to support students with disabilities
  - Use ICT to make students acquire new material independently.
  - Set up test questions for students with a specific test program.
  - Monitoring the students’ academic performance through a digital pupil tracking system (or a similar system).
  - digitally monitor and supervise tasks and group work of pupils
  - Communicate with students through ICT.
  - Use ICT to collaborate with fellow teachers on a specific project
  - Use ICT to collaborate with teachers from another school on a specific project
  - Use ICT to communicate with fellow teachers

Survey: Mictivo
Target Groups: Teachers
● How often do you use educational games to:
  - pupils to look up information
  - let students collaborate with peers from their own school
  - let students collaborate with students from another school
  - students in school to chat with each other or mail a task or about the subject matter
  - students outside school to chat with each other or mail a task or about the subject matter
  - communicate with your students
  - support students with disabilities
  - students to learn new material themselves
  - To let students work together
  - let pupils do exercises
  - let students do tests
  - to monitor the academic performance of your students
● How often do you use social media (eg Facebook) (as part of your job) to:
  - pupils to look up information
  - let students collaborate with peers from their own school
  - let students collaborate with students from another school
  - students in school to chat with each other or mail a task or about the subject matter
  - students outside school to chat with each other or mail a task or about the subject matter
  - communicate with your students

28
- support students with disabilities
- students to learn new material themselves
- To let students work together
- let pupils do exercises
- let students do tests
- to monitor the academic performance of your students

● Why do you use the following media in your lessons?
   1 = Never; 2 = almost never; 3 = sometimes; 4 = often; 5 = Always
   _MOT: Because it motivates students
   _ILL: Supporting class (as illustration)
   _KLG: To start a class discussion
   _ONT: Relaxation
   - newspaper or newspaper articles
   - (Articles from) a magazine (weekly or monthly)
   - Documentary
   - film (fragments)
   - readers write
   - fragments of radio programs
   - news on TV
   - blog
   - slides or photos
   - Game
   - Animation
   - Commercial
   - Video
   - soap or sitcom
   - Twitter

● How often do you do the following activities?
   - Finding information using ICT.
   - Working with office applications such as word processing, presentation software, spreadsheets and databases to prepare your lessons.
   - Data processing using ICT, such as adjusting pictures or drawings.
   - Preparing exercises for students using a special exercise program.
   - Present information to your students through ICT.
   - Your students learn how to work with a computer.
   - ICT use to support students with disabilities
   - Use ICT to let your students acquire new material independently.
   - Set up test questions for students with a specific test program.
   - monitoring the students' academic performance through a digital pupil tracking system (or a similar system).
   - digitally monitor and supervise tasks and group work of pupils
   - Communicate with students through ICT.
   - Use ICT to collaborate with fellow teachers on a specific project
   - Use ICT to collaborate with teachers from another school on a specific project
   - Use ICT to communicate with fellow teachers
France
Survey: Evaluent
Target Group: Teachers

- Do you use the ENT to get students to produce?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to get students to work collaboratively?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to produce educational content with other teachers?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to provide or share additional resources (links, documents, videos, etc.)?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to access a website, a video, a sound document, etc.?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use ENT to get students to search?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to communicate with students out-of-school?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to get students to communicate with each other?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to give lessons that students should learn?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to report on activities and productions made in class by students?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to evaluate students?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to personalize the support of students?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you have a use of the ENT that does not appear in the list but that you consider important?
  - Yes/No
  - If yes, which:
- Do you use ENT to organize your work without students?
  - Yes/No

Survey: Profetic
Target Group: Teachers

- In the workplace, you use ICT to (every day/at least once a week/ at least once a month/ less than once a month/ never..)
  - Prepare courses (search documentation, examples of activity ...)
  - Build classroom activities sequences without manipulation of digital materials by students
  - Build classroom activities sequences with manipulation of digital materials by students
  - Have students conduct research at home or reviewing lessons made in class that requires no Internet access
  - Have students conduct research at home or reviewing lessons made in class that requires Internet access
  - Have students conduct research at home or reviewing lessons made in class that requires Access to ENT or the establishment's website
  - Provide activities to do at home to prepare an educational session requiring that students use digital equipment without Internet access
  - Provide activities to do at home to prepare an educational session requiring that students use digital equipment with Internet access
  - Provide activities to do at home to prepare an educational session requiring that students use digital equipment with access to the extranet or the establishment's website
- Provide activities to do at home to extend an educational session requiring that students use digital equipment without Internet access
- Provide activities to do at home to extend an educational session requiring that students use digital equipment with Internet access
- Provide activities to do at home to extend an educational session requiring that students use digital equipment with access to the extranet or the establishment’s website
- Customize learning paths by making students work autonomy
- Customize learning paths by making students work in Managed Mode
- Communicate with students (blog, forum, wiki, messaging, social network ...)
- Give voice to students and make them work together (blog, school newspaper, travel blog, forum, wiki, messaging, social network, etc.) in the classroom
- Give voice to students and make them work together (blog, school newspaper, travel blog, forum, wiki, messaging, social network, etc.) outside the classroom
- Communicating with Parents
- Exchange, pool, share with peers (social networks, mailing lists, etc.)
- Complete digital text book
- Enter the notes and / or absences
- Assess students through monitoring tool skills
- Assess students (formative or “training”)
- Assess students (summative)

Italy
Survey: PON
Target Group: Teachers

- **How often do you have performed the following activities in education?**
  * (never, a few times a year, several times a month, almost every day)
  - Browse and / or search for content on the Internet to prepare lessons
  - Browse and / or search for content on the Internet to be used by students during class
  - Create your educational content, exercises and digital activities for students
  - Create online questionnaires
  - Publish the tasks for students in the school site or other sites
  - Use ICT to give feedback and / or assess students
  - Communicate online with parents via the electronic register,
  - Communicate online with parents via email, social networks, or other applications
  - Look for online opportunities (eg. Calls, contests for himself and for students)
  - Exchange materials, resources, and views with colleagues through the web and / or dedicated environments (eg. Collaborative learning platforms)

- **How often, from the beginning of the year, you have done the following teaching activities with your class?**
  * (every day or almost every week, sometimes a month, sometimes a year, never)
  - Driving the kids to find and select reliable network sources
  - Teach children to work in a collaborative network via the network
  - Teach boys to defend their online privacy
  - Teach kids how to have online ethical behavior
  - Teach kids the creative use of digital tools (eg. Photo editing software, video or audio, web programming, etc.)
Malta
Survey: Learning Self-Review (Gap Analysis)
Target Group: Teachers

- I use the Interactive Whiteboard to:
  [Yes/ Yes, but I still need help/ No/ No. I need help]
  - Play sounds/music on speakers
  - Project videos, PowerPoints or other media
  - Write on (instead of normal whiteboard)
  - Project noted/documents on board for annotation
  - Present prepared lesson material during lessons
  - Save what I write during lesson for later use
  - Re-use previous lessons for revision or other classes
  - Browse the web during lessons
  - Show student work to the class
  - Carry out Formative Assessment (e.g. Quizzes, Voting Systems, etc.)
  - Allow students to use interactive content (e.g. Drag and Drop, Fill-in, hide and reveal)
  - Allow students to present their own work

Target Group: Teachers

- I use the Internet to:
  [Yes/ Yes, but I still need help/ No/ No. I need help]
  - Access personal email/ ilearn email account
  - Access educational websites
  - Research to get updated on my subject (e.g. Online education news, educations papers, etc.)
  - Participate in MOOCs (online courses)
  - Download free or low cost tools, resources or software for use in my lesson
  - Send material and information to students by email
  - Record assessment online
  - Create/maintain my own web page
  - Access social media for educational use (e.g. Facebook, Twitter, etc.)
  - Collaborate online with other teachers (e.g. via wikis)
  - Share resources with colleagues
  - Upload student work to websites (e.g. wordpress, blogs, etc.)
  - Use Web 2.0 Tools (e.g. Prezi, Powtoon, etc.)
  - Participate in eTwinning/ Learning Events/ Webinars

- I use iLearn VLE (Fronter) to:
  [Yes/ Yes, but I still need help/ No/ No. I need help]
  - Access the Staffroom Page
  - Access subject/EO’s rooms
  - Record attendance online
  - Record end of year assessments online
  - Register grades on the results matrix
  - Upload resources for students (e.g. lesson notes, presentation, etc)
  - Embed online resources (e.g. images, videos, other media)
  - Use eContent resources available on the VLE
  - Give and collect homework (Hand-ins)
  - Give online tests to students
Netherlands
Survey: Four in Balance Monitor 2015
Target Group: Teachers

- How often do you use ICT in the ways listed below?
  - to prepare lessons
  - to use data to track pupil progress (e.g. a pupil information management system [grades] or an electronic learning environment)
  - in teaching, for example using PowerPoint or online video material
  - for communication (e-mails, social media, ELE)
  - for simulations (e.g. to simulate experiments) and games
  - to have pupils produce and organize information (such as PowerPoint or Word)
  - to have pupils find information (e.g. Google or Wikipedia)
  - in practice exercises (e.g. practice software that may or may not be supplied with a course)
  - IF VET/SEC
  - to have pupils practice occupational skills, e.g. AutoCAD, Floorplanner, Publisher or other specialist software

Turkey
Survey: Perception Study of FATİH Project
Target Group: Teachers

- If you use it, for what purpose do you use the EBA? (You can select more than one options)
  - I develop a course (video, simulation, presentations, etc.) or share materials
  - I hold competitions (framing, cartoon, short film, experiment, etc.)
  - it makes my work more visible and become known that I share my work
  - I access electronic content for my work (animations, simulations, videos, educational games, photos, audio, e-books, etc.)
  - I use the EBA forums to exchange information and experiences with other teachers
  - I use it to develop content for my lessons
  - To follow announcements and news
  - To watch live broadcasts made by UZEM (Ankara University Distance Education Centre)
  - To get help and support for the FATİH project
  - Other...

2.2.2 Teachers/students centred pedagogical approach

Belgium NL
Survey: Mictivo
Target Groups: Teachers

- How often do your students as part of your classes ...
  - Add a new post on a blog (eg. for the school website)
  - create a photo
  - editing a picture with the aid of a computer program
  - a homemade (and / or edited) images put online (eg. on Flickr, Tumblr, Facebook, ...)
  - create a video
  - editing a video with the aid of a computer program
  - a homemade (and / or edited) video put online (eg. YouTube, Facebook ...)
  - Make a Website
- write an article for a newspaper (eg. for the school newspaper), a reader's letter to a newspaper, magazine or website
- send tweets / tweet
- How often do you let your students (or students) perform the following activities as part of your classes (whether such activities take place at school (in the center) or outside)?
  - My students use ICT to find information for my lessons
  - My students create with ICT documents, presentations or diagrams as part of my lessons.
  - My students use ICT to give presentations in class.
  - My students work on data in the framework of my lessons, using ICT to edit photos or drawings.
  - My students do exercises using ICT in the context of my lessons.
  - My students work under my lessons with each other on a job with the help of ICT, such as sharing documents.
  - My students communicate about the subject matter with peers of their own school using ICT.
  - My students make tests on a computer.
  - My students use ICT to acquire new material independently.

**Finland**
Survey: Opeka
Target Group: Teachers
- Students use presentation equipment such as interactive whiteboard or document camera in my classes.
- How often do students create various media contents (e.g. images, sounds and videos) in your classes?

**France**
Survey: Evaluent
Target Group: Teachers
- Do you use the ENT to get students to produce?
  - Absolutely/Rather yes/Rather not/Not at all
- Do you use the ENT to get students to work collaboratively?
  - Absolutely/Rather yes/Rather not/Not at all
- Which work modality(ies) did you implement when using the ENT with your students?
  - Offline activities (classroom computer, etc.)
  - Need groups
  - Rotating workshops
  - Half-class
  - Full Class
  - Other
  - None

Survey: Profetic
Target Group: Teachers
- Out of these four proposals, which one corresponds the most to you? (Check one)
  - Do not use ICT with your students but to prepare lessons and activities you offer them, tell you, do research
  - Using the digital classroom for simple functions, to introduce students to learning situations with existing resources (projector, TNI, media room with computers or mobile classroom ...).
  - You use in the classroom all the features that you think can develop for interaction between students and adapting resources if necessary
  - You integrate digital into your daily practices with students, in the classroom and outside the classroom by modifying or producing resources that meet the needs of every student and building new educational scenarios.
Ireland
Survey: ICT in Schools Census 2013
Target Group: Teachers

- In general, to what extent do the following aspects of teaching and learning (with or without ICT) feature when teaching your main subject classes, at the target year level?
  - At the beginning of the lesson I present a short summary of the previous lesson
  - I ask my students to suggest or to help plan classroom activities or topics
  - Students make a product that will be used by someone else
  - I review with the students the homework they have prepared
  - I ask my students to write an essay in which they are expected to explain their thinking or reasoning at some length
  - I check, by asking questions, whether or not the students have understood the subject matter
  - Students work in small groups to come up with a joint solution to a problem or task
  - I explicitly state learning goals/outcomes
  - I give different work to the students that have difficulties learning and/or to those who can advance faster
  - Students work on projects that require at least one week to complete
  - Students work in groups based on their abilities
  - Students hold a debate and argue for a particular point of view which may not be their own
  - Students give feedback on other students’ work
  - Students use teacher feedback to revise their own work before receiving a final grade
  - Students choose how they will accomplish a task or how they will demonstrate what they have learned
  - I adjust the pace of instruction to respond to the students’ levels of understanding
  - I adjust assignments for individual students based on their knowledge, skills or learning needs
  - I select topics, activities, or examples that are relevant to students’ lives outside of school
  - Students work with members of the community or peers from outside the school on a class project
  - I check my students’ exercise/copy books

Malta
Survey: Learning Self-Review (Gap Analysis)
Target Group: Teachers

- I use the Interactive Whiteboard to:
  [Yes/ Yes, but I still need help/ No/ No. I need help]
  - [...]  
  - Show student work to the class
  - Carry out Formative Assessment (e.g. Quizzes, Voting Systems, etc.)
  - Allow students to use interactive content (e.g. Drag and Drop, Fill-in, hide and reveal)
  - Allow students to present their own work

Netherlands
Survey: Four in Balance Monitor 2015
Target Group: Teachers

- The following ten statements concern how you teach. Can you indicate the extent to which your approach resembles the description?
  - I decide what my pupils learn and when
  - I check whether pupils have mastered the subject matter
  - I have pupils do exercises
  - I ask questions about the assigned subject matter during lessons
  - I summarize the subject matter during lessons
  - I coach my pupils’ individual learning process
- Pupils have the freedom to choose their own learning content
- I encourage pupils to set their own goals
- I let pupils give each other feedback on their work
- I consider cooperation and initiative when assessing pupils’ work

**The following ten statements concern how lessons are taught at your school or institution. Can you indicate the extent to which teaching at your school or institution resembles the description?**
- The teacher decides what pupils learn and when
- The teacher checks whether pupils have mastered the subject matter
- The teacher has pupils do exercises
- The teacher asks questions about the assigned subject matter during lessons
- The teacher summarizes the subject matter during lessons
- The teacher coaches pupils’ individual learning process
- Pupils have the freedom to choose their own learning content
- The teacher encourages pupils to set their own goals
- The teacher lets pupils give each other feedback on their work
- The teacher considers cooperation and initiative when assessing pupils’ work

**How often do the following learning situations arise in your school or institution?**
- Pupils consult a planning board, a weekly planner, a diary or another source to see what they should be doing
- Pupils watch and listen to explanations
- Pupils read texts or look up information
- Pupils discuss subject matter with the teacher, other pupils or an expert
- Pupils practice and test their knowledge or skills so that recall becomes automatic
- Pupils work together to discover concepts and relationships in the subject matter
- Pupils write an essay or give a presentation to show that they have mastered the subject matter
- Pupils apply what they know in problem-solving
- Pupils demonstrate creative thinking by using their imagination to produce something related to the subject matter
- Pupils assess each other’s work and offer suggestions for improvement

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**Norway**

Survey: **Monitor 2016**
Target Group: **Teachers**

- **Have you used the method reverse teaching / flipped classroom in your teaching?**
  - Yes/No

- **Consider the following statements about reverse teaching / flipped classroom**
  [Agree / Partially agree / Partially disagree / Disagree / Do not know]
  [Routing: If the option "Yes" selected in ppm 20 ppm appears 21]
  - Flipped Classroom requires more preparation
  - Flipped Classroom provides more student activity
  - Using Flipped Classroom I can more easily differentiate instruction among students

- **How often do you or your students ICT (Information and Communication Technology) by ...**
  [Daily / Weekly / Seldom / Never]
  - blackboard Teaching
  - Group work, project or similar (teacher’s use)
  - Group work, project or similar (students’ use)
  - Individually student work
  - Pupils’ homework
2.2.3 Organization of space

Finland
Survey: Opeka
Target Group: Teachers
- I organize teaching also outside the classroom utilizing mobile devices.
- I use video as a part of distance education.
- Students in my school collect a portfolio in a digital learning environment.

France
Survey: Evaluent
Target Group: Teachers
- Can you access to the ENT in the school? (Evaluent; q24)
  - Very easy
  - Somewhat easily
  - Somewhat difficult
  - Not at all
- Where is the equipment that allows you to access the Internet and ENT in the school?
  - In an office
  - In a room (computer room, library, etc.)
  - In the classroom
  - Mobile PC Class
  - Mobile class tablets

3.2 Training (teachers)

Belgium NL
Survey: Mictivo
Target Group: Principals
- To what extent do you agree with the following statements?
  - My school supports teachers in the educational use of ICT by organizing refresher courses within the school / school (eg by an external or ICT coordinator).
  - My school supports teachers in the educational use of ICT by encouraging them to pursue further training outside the school.
  - Teachers in my school follow regular refresher courses around the educational use of ICT.
  - Teachers in my school regularly attend courses to brush up on their technical computer skills.
  - Teachers in my school try to stay up to date on everything to do with ICT in education.
  - Teachers in my school take the initiative to learn about everything related to ICT and education.

Survey: Mictivo
Target Group: Teachers
- To what extent do you agree with the following statements about the policy on ICT in your school?
  - My school supports me in the educational use of ICT by organizing refresher courses within the school or school (eg by an external person or ICT coordinator).
  - My school supports me in the educational use of ICT by encouraging me to follow further training outside the school.
  - The school supports me in the educational use of ICT by encouraging me to undergo periodic
To what extent do you agree with the following statements about the use of ICT in education?
- There is a sufficient supply service training for teachers on the technical use of ICT.
- There is a sufficient supply service training for teachers on the pedagogical and educational use of ICT in class.

To what extent do you agree with the following statements:
- I follow regular refresher courses around the educational use of ICT.
- I follow regular courses to brush up my technical computer skills
- I try to stay informed about what to do in teaching with ICT
- I take the initiative to learn about everything related to ICT and Education.

Denmark
Survey: Questionnaire on digital teaching aids
Target Group: Principals
- Which of the following statements best describes IT-skill development at your school? Please choose the statement that best matches the school, even if the statement does not fully describe the situation.
  - Teacher skills are developed primarily with a focus on the acquisition of technical skills
  - Teacher skills are developed primarily with a focus on IT-pedagogical skills
  - Technical and IT pedagogical skills are given equal priority in skills development

Survey: Questionnaire on digital teaching aids
Target Group: Teachers
- Were you trained to use the digital teaching aid? (You may tick more than one box)
  - Yes, on an external course (e.g., through a provider or the municipality)
  - Yes by a colleague
  - Yes, through an online course/e-learning course
  - Yes, by other means
  - No

Finland
Survey: Opeka
Target Group: Teachers
- Do you have a TIEKE certificate?
  - No
  - Yes, @-level
  - Yes, A-level
  - Yes, AB-level
  - Yes, Knowledge Work Examination certificate
- I'm interested in trainings on basic computer skills.
  - Yes/No
- I'm interested in trainings on video-assisted teaching.
  - Yes/No
- I'm interested in trainings on mobile devices.
  - Yes/No
- I'm interested in trainings on audio, video and images.
  - Yes/No
- I'm interested in trainings on programming.
  - Yes/No
- My school supports me in taking part of ICT training.
  - Yes/No
France
Survey: **Evaluent**
Target Group: **Teachers**
- Have you taken or participated in training activities on the use and use of the ENT during the current school year?
  - Yes/No
- If “Yes”, by what staff was this training given to you?
  - TICE Animator/Educational consultant/Academic trainer/Other
- How would you rate the quality of ENT training you received?
  - Very satisfactory/Rather satisfactory/Rather unsatisfactory/Not satisfactory at all
- To date, do you have technical and/or pedagogical training needs to use ENT?
  - No/Yes, technical and educational needs/Yes, essentially technical needs/Yes, essentially educational needs

Survey: **Profetic**
Target Group: **Teachers**
- For your education, have you been trained (e) the use of digital: Yes/ No
  - By yourself MOOC or CLOM (in French)
  - By yourself Reading, personal environment …
  - Peer Colleagues of the establishment
  - Peer Colleagues off-premises
  - Using online training Via M @ Magisterium
  - Using online training other
  - During your initial training
  - Following training in FRAP (Academic Training Plan)
  - Following the establishment in training
  - Thanks to digital referent
- Overall, during the past two years, how many days of training or animation on the educational uses of digital technology and their uses have you attended?
  - 0 days
  - 1 to 2
  - 3 to 5 days
  - From 6 to 10 days
  - More than 10 days
- Why have you not participated in any training or animation on the educational uses of digital technology and their uses?
  - You do not need
  - You have not asked
  - You have asked but it was denied you
  - You do not have knowledge
  - You have found the inadequate supply your needs
  - You had to attend a training / animation but you ’have not been able to get there
  - Another reason - Specify;
- Would you say that these formations or animations on digital did you progress in your classroom practices?
  - Rather yes
  - Probably not
- Did you get? Give a response by line (1-Since less than 2 years; 2-From 2 to less than 4 years; 3-For 4 years or more; 4-No)
  - C2i level 1
  - The C2i2e (teacher level)
Ireland
Survey: ICT in Schools Census 2013
Target Group: Teachers

- In the last two years, how much CPD related to the use of ICT in teaching and learning have you undertaken? (Choose only one option.)
  - None
  - Three hours or less
  - Between three and five hours
  - Between five and twenty hours
  - More than twenty hours

- Please indicate the content of any ICT-related CPD that you attended in the last two years. (Yes/No)
  - Basic ICT skills (including word processing, presentation software and Internet use)
  - More advanced ICT skills (including blogging, website design, computer programming and other applications)
  - Digital media skills (including the use of digital video and audio)
  - ICT skills needed to use the school’s ICT equipment (e.g., interactive whiteboards, digital projectors, laptops)
  - ICT skills needed to use new ICT/mobile devices (including my own devices and those brought to school by students)
  - How to use ICT as a teaching and learning tool across the curriculum (including its application to specific subject areas)
  - How to use ICT to support the development of key skills (e.g., literacy and/or numeracy)
  - How to use ICT to support special educational needs
  - How to use ICT to support assessment of learning
  - How to use ICT to support assessment for learning
  - Planning and implementing eLearning
  - in your school/classes

- Please indicate how and when the ICT-related CPD that you participated in over the last two years was organised. (Yes/No)
  - ICT-related CPD provided in my school during additional/Croke Park hours
  - ICT-related course provided in the school but outside required hours of attendance (i.e. not including additional/Croke Park hours)
  - ICT-related CPD provided in my school during the school day
  - ICT-related course in an external venue (such as in an education centre) during term time
  - Online course on ICT in teaching and learning during term-time
  - A face-to-face summer course on ICT in teaching and learning
  - An online summer course on ICT in teaching and learning
  - Informal CPD on the use of ICT in teaching and learning provided on a peer-to-peer basis in the school
  - Formal mentoring/peer coaching on the use of ICT in teaching and learning
  - Self-directed, informal CPD in ICT (e.g., by utilising materials for self-tuition, demonstration videos, online communities, etc.)
  - Formal, accredited third level course (e.g., Post-grad diploma, Masters)
  - Observation visits to other schools

Italy
Survey: PON
Target Group: Teachers

- Have you participated in training courses in the last 7 years? If yes, it indicates the reference issue
  (pull-down menu with preset option "no", clicking on the menu opens list "none, 1, 2, 3, and so on. In this way the user has not pursued any course can scroll the question quickly)
  - disciplinary skills
- pedagogical skills
- Technologies for teaching
- Teaching aimed at adults
- Methodologies for the prevention of early school leaving
- Special educational needs
- Rating
- intercultural integration
- Mastering a foreign language
- management and administrative skills
- Collaboration with colleagues, parents, social services
- Planning, management and evaluation of their work
- educational research and experimentation

- Whether the last 7 years have obtained certifications of training (courses of at least 15 hours) and in what areas of reference (pull-down menu with preset option "no", clicking on the menu opens the list "None, 1, 2, 3, and so on. In this way the user has not obtained any certification can scroll the question quickly)
  - Specific certifications for teachers (eg. EIPASS Teacher, EPICT LIM - Certic LIM, FORLIM Certification, CERT-LIM Interactive Teacher, EIPASS Lim, LIM Certificate, Certificate Basic LIM, LIM ITALY)
  - advanced skills (eg. ECDL Advanced, ECDL CAD, Specialised ECDL, ECDL Update, EIPASS Advanced, EIPASS Progressive, EUCIP IT Administrator Fundamentals, IC3 GS3)
  - Basic skills (eg. Cisco Academy IT Essentials, CompTIA Strata, ECDL, ECDL Full, ECDL Start, EIPASS, EIPASS Basic EIPASS One, EUCIP, EUCIP Core, Information Technology Certificate, LPI Linux Essentials, MOS Excel - Power Point, Word Mos / Excel)
  - multimedia skills (eg. ECDL Module 6 - Presentation Tools, Multimedia ECDL)
  - Law and ICT (eg. Law and ICT)
  - E- citizenship (eg. ECDL e-Citizen)
  - networks (eg. CCNA Discovery - end home networking for small businesses, EIPASS Lab)
  - Specific certifications for PA (eg. EIPASS PA)
  - Visual communication (eg. Visual Communication using Adobe Photoshop CS5)

- Are you interested in following new courses?
  - Yes/No
  - I have not decided yet
● **If yes, what areas would you be interested to treat? You can choose up to a maximum of three sectors.**
  - disciplinary skills
  - pedagogical skills
  - Technologies for teaching
  - Teaching aimed at adults
  - Methodologies for the prevention of early school leaving
  - Special educational needs
  - Rating
  - intercultural integration
  - Mastering a foreign language
  - management and administrative skills
  - Collaboration with colleagues, parents, social services
  - Planning, management and evaluation of their work
  - educational research and experimentation

● **With respect to the issue of digital skills, which of these areas would you be interested to develop more? You can specify a maximum of three sectors**
  - The historical and cultural context of the Information Society
  - The actors: students teachers, families
  - The skills for the knowledge society
  - E-learning
  - Digital media
  - Languages and multimedia texts
  - The information in the digital environment
  - Produce and organize knowledge with ICT
  - The computer-mediated communication
  - Software for personal productivity
  - The digital whiteboard
  - simulations, immersive game worlds based learning
  - Authoring tools
  - Educational software
  - EBook
  - Blogs, Podcasts and Wikis
  - Assistive technology
  - Integrate digital resources in instructional design
  - Designing a learning resource
  - ICT and organization of teaching
  - Learning and technologies: theories and methodologies
  - The instructional design with ICT
  - ICT and learning environments
  - Technologies for the evaluation of learning
  - ICT in the educational curriculum and the strengthening of key competences
  - (with routes to the disciplines of the first cycle and thematic routes for the second cycle).
  - free software at school
  - App for school
  - Copyright and creative commons

**Malta**

Survey: **Learning Self-Review (Gap Analysis)**

Target Group: **Teachers**
● Are there any other uses of technology that you would like help with?

**Norway**
Survey: Norwegian School Monitor
Target Group: Principals

- To what extent sets school resources for competence in: [In a very large extent / I quite largely / little extent / Not at all / Do not know]
  - Basic ICT skills (eg. Office applications, Internet, e-mail, digital learning platform, etc.)
  - Pedagogical skills related to integrating ICT in various teaching methods (use of interactive whiteboard, projector, etc.)
  - Integration of subject-specific learning resources in the classroom

**Slovakia**
Survey: Teacher questionnaire
Target Group: Teachers

- What ICT training you have had in the last three years and in which area? Please type in:
- In which areas of use of ICT would you like to educate?
  - innovation in school curriculum
  - in creating custom teaching materials
  - innovation in learning content,
  - innovation in work processes, strategies and methods
  - innovation in learning objectives
  - others
- Which of ICT skills do you need to improve most?
  - creation of PPT presentations
  - digital content creation
  - development of interactive exercises
  - management of e-learning
  - processing pedagogical researching
  - others. Please indicate:

4.1 National or internal system of ICT policy on education

**Belgium NL**
Survey: Mictivo
Target Group: Directors

- To what extent do you agree with the following statements?
  - My school has a developed ICT policy
  - The ICT policy was developed in consultation with the whole school.
  - my school lacks a clear vision on educational ICT use
- If your school has an ICT policy, does it contain any of the following components:
  - That teachers should encourage the use of open source / free software
  - Agreements on the use of social media by students
  - That teachers should pay attention to how students can safeguard their privacy
  - That teachers should pay attention to how students can use ICT safely
- The ICT policy was developed in consultation with the whole school.
- In my school lacks a clear vision on educational ICT use.
- In my school there are within the school agreements on the use of ICT in the classroom.

- **If your school has an ICT policy, contains any of the following components?**
  - I as a teacher should encourage use of open source / free software
  - Agreements on the use of social media by students
  - I have to pay as a teacher attention to how students can safeguard their privacy
  - I as a teacher must pay attention to how students can use ICT safely

### Denmark
Survey: **Questionnaire on digital teaching aids**
Target Group: **Principals**

- **Which of the following statements best describes your/your school management's approach to digital teaching aids?**
  - Please choose the statement that best matches the school management’s approach, even if it does not fully describe the situation.
  - As school principal, I take care of the external framework for IT matters, but leave it up to individual teachers to decide what digital teaching aids they use and how they use them
  - As principal, my focus is on ensuring that the technical infrastructure is provided and that teachers have access to good digital teaching aids
  - As principal, I see it as my job to support the teachers’ efforts to integrate IT in education
  - As principal, I see it as my job to help teachers share their experience and develop knowledge of digital teaching aids

### Finland
Survey: **Opeka**
Target Group: **Teachers**

- There is arranged opportunities for sharing pedagogical tips for ICT usage in our work community.
- Our school has a jointly agreed goal for utilizing ICT in teaching.

### France
Survey: **Evaluent**
Target Group: **Principals**

- **What steps have been taken at the initiative of the institution, to allow self-service access to ENT for students and parents in the establishment or nearby, out of class hours? If other, specify.**

Survey: **Evaluent**
Target Group: **Teachers**

- Does your school have a charter of good use of the Internet annexed to the rules of procedure?
  - Yes/No
- Does your school have a charter on the use of ENT?
  - Yes/No

### Ireland
Survey: **ICT in Schools Census 2013**
Target Group: **Principals**

- **ICT (eLearning) planning: Do these statements apply to your school? (Yes/No)**
  - ICT planning is an integral (rather than separate) part of the overall school planning process
  - The school has a written ICT (eLearning) planning section which forms part of the overall school plan
  - The ICT (eLearning) planning section is updated regularly to reflect overall school priorities
  - The school has a designated ICT coordinating teacher
  - The school has a designated eLearning (ICT coordinating) team which includes school management
- The 'NCTE eLearning Handbook' and 'Roadmap' are used for ICT planning purposes, in the context of overall school planning
- The school promotes the sharing of good practice in ICT integration among teachers
- The school management and the ICT coordinating teacher jointly develop the ICT (e-Learning) planning section
- The school eLearning team, including school management, ICT coordinating teacher, and all teachers are involved in co-developing the plan
- ICT/eLearning is a regular agenda item at staff meetings

● Responsible use of the Internet: Do the following apply to your school? (Yes/No)
  - There is an active Internet Safety Acceptable Use Policy (AUP) in our school, which guides responsible use of the Internet
  - The school AUP is reviewed and updated regularly
  - The AUP refers to Internet safety advice and guidelines
  - The AUP refers to online activities (e.g., searching, browsing websites, online research, online games)
  - The AUP refers to downloading or uploading of material
  - The AUP refers to copyright guidelines
  - The AUP refers to publishing a school website
  - The AUP refers to use of electronic communication (e.g., email, social networking, messaging)
  - The AUP refers to inappropriate, harmful and illegal use of online material
  - The AUP refers to sanctions and reporting mechanisms

Netherlands
Survey: Four in Balance Monitor 2015
Target Group: Teachers

● How would you best describe the way your school, location, department or institution uses ICT?
  - There are no agreements regarding the didactic use of ICT and digital learning materials. I can decide myself whether to use ICT and in what manner.
  - The school or institution has made a number of agreements regarding the didactic use of ICT and digital learning materials, and I must comply with those agreements.
  - The school or institution has made agreements about all lessons regarding the didactic use of ICT and digital learning materials, and I must comply with those agreements.

Survey: Four in Balance Monitor 2015
Target Group: Managers

● Which statement best describes the situation at your school or institution?
  - Our school or institution wishes to maintain its current vision of education and uses ICT only to the extent that it fits in with that vision
  - Our school or institution uses ICT as a means of making step-by-step changes and improvements to teaching

● How would you best describe the way your school or institution uses ICT?
  Choose no more than 1 answer
  - There are no agreements regarding the didactic use of ICT and digital learning materials. Teachers can decide for themselves whether to use ICT and in what manner.
  - The school or institution has made a number of agreements regarding the didactic use of ICT and digital learning materials, and teachers must comply with those agreements.
  - The school or institution has made agreements about all lessons regarding the didactic use of ICT and digital learning materials, and teachers must comply with those agreements.

● Does your school or institution use the following codes or protocols to regulate privacy matters?
  More than one answer is possible
  - privacy code (code that describes how personal data is processed/shared or used)
- internet protocol (protocol that describes how pupils and teachers should conduct themselves when using the internet at school)
- social media protocol (protocol that describes how pupils and teachers should conduct themselves when using social media at school)
- none of the above
- other, namely:

  ● Has your school or institution signed data-processing agreements (DPA) with software suppliers regarding the pupil data that they manage (e.g. Parnassys, Magister, etc.)? A DPA indicates what suppliers can and cannot do with pupil data.
    - Yes, and parents/guardians are aware of this
    - Yes, but parents/guardians are not aware of this
    - No
    - Unknown or not applicable
Appendix IV - Subdimensions of international surveys

Below each subdimension is listed and explained in detail. In addition, reference and target populations are named as well as the surveys that cover the subdimensions.

1. Availability

<table>
<thead>
<tr>
<th>Dimension</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdimension</td>
<td>1.1 Availability of ICT devices such as computers at school</td>
</tr>
<tr>
<td>Target population</td>
<td>Principals, teachers</td>
</tr>
<tr>
<td>Description</td>
<td>Availability of different electronical devices for educational purposes at school (desktop computers, laptop and notebooks, tablet computer, E-book, Printer, USB, data projectors, internet connection)</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PISA 2012; PIRLS 2011; TIMSS 2011; ICLS 2013; SURVEY_SCHOOLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response (presence/absence) or numerical response (total N° of devices)</td>
</tr>
<tr>
<td>Notes</td>
<td>Survey of school collects the information about number of devices by ISCED levels.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdimension</td>
<td>1.2 Availability of internet access at school</td>
</tr>
<tr>
<td>Target population</td>
<td>Principals, teachers</td>
</tr>
<tr>
<td>Description</td>
<td>Number of PCs connected to the Internet</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PISA 2012; PIRLS 2011; TIMSS 2011; ICLS 2013; SURVEY_SCHOOLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response (presence/absence) or numerical response (total N° of devices)</td>
</tr>
<tr>
<td>Notes</td>
<td>All surveys except for PIRLS and TIMMS ask for the precise number of PCs connected to the internet; PIRLS and TIMMS ask whether any of them are connected at all. SURVEY_SCHOOLS asks very precise questions on the kind of the connection.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdimension</td>
<td>1.3 Availability of ICT software at school</td>
</tr>
<tr>
<td>Target population</td>
<td>Principals, ICT coordinator</td>
</tr>
<tr>
<td>Description</td>
<td>Availability of different software for educational purposes at school (mathematics instructions, science instructions, reading instructions, tutorials, digital learning games, simulation software)</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>SURVEY_SCHOOLS 2011; ICLS 2012</td>
</tr>
<tr>
<td>Type of response</td>
<td>Ordinal response (Likert scale), binary response presence/absence</td>
</tr>
<tr>
<td>Notes</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdimension</td>
<td>1.4 School provision of ICT devices to students for personal use at school and home/access-permission for using ICT devices at school outside academic hours or extracurricular activities</td>
</tr>
<tr>
<td>Target population</td>
<td>Principal</td>
</tr>
<tr>
<td>Description</td>
<td>Type of procedures that the school has to facilitate for ICT learning. As an example, a virtual learning environment for students or providing students with notebooks or e-books for daily use, email services, allowing the students to access the computer room outside the school hour as well as providing teachers with the same devices</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICLS 2013; SURVEY_SCHOOLS 2011; PISA 2012</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response (yes/no - presence/absence); categorical response (no access; access on demand; permanent access)</td>
</tr>
<tr>
<td>Notes</td>
<td>-</td>
</tr>
</tbody>
</table>
### 1.5 Shortage/inadequacy of ICT devices (hardware/software)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>AVAILABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td><strong>1.5 Shortage/inadequacy of ICT devices (hardware/software)</strong></td>
</tr>
<tr>
<td>Reference population</td>
<td>Schools, teachers</td>
</tr>
<tr>
<td>Target population</td>
<td>Principal; ICT coordinator; teachers</td>
</tr>
<tr>
<td>Description</td>
<td>Shortage or inadequacy of ICT devices. For instance, insufficient number of ICT devices, slow internet connection, lack of technical support</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PIRLS 2011; TIMSS 2011; PISA 2012; SURVEY_SCHOOLS 2011; ICILS 2013</td>
</tr>
<tr>
<td>Type of response</td>
<td>Ordinal response</td>
</tr>
<tr>
<td>Notes</td>
<td>-</td>
</tr>
</tbody>
</table>

### 2. Use

<table>
<thead>
<tr>
<th>Dimension</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td><strong>2.1 Frequency of use of ICT (teachers)</strong></td>
</tr>
<tr>
<td>Target population</td>
<td>Teachers</td>
</tr>
<tr>
<td>Description</td>
<td>This indicator measures the frequency of students’ ICT use (computer, internet, software) at school for general tasks such as teaching or organizational work.</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICILS 2013; SURVEY_SCHOOLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Ordinal scales for short periods (every day, once or twice a week, once or twice a month, never) and for long period (less than one year, more than one year but less than three, ... , more than seven years); minutes and hours per day; binary response; percentage of time teaching with ICT devices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td><strong>2.2 ICT inclusion in teaching practices</strong></td>
</tr>
<tr>
<td>Target population</td>
<td>Teachers</td>
</tr>
<tr>
<td>Description</td>
<td>Teacher actions such as preparing exercises with ICT devices, using the internet during lessons, using ICT to assess students’ competences in different subjects, using different ICT devices for teaching</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICILS 2013; SURVEY_SCHOOLS 2011; TIMSS 2011; PIRLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response, categorical response, ordinal response</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td><strong>2.3 Frequency of use of ICT (students)</strong></td>
</tr>
<tr>
<td>Target population</td>
<td>Students</td>
</tr>
<tr>
<td>Description</td>
<td>This indicator measures the frequency of students’ ICT use (computer, internet, software) at school for general tasks related to learning (during the lessons period)</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PISA 2012; ICILS 2013; SURVEY_SCHOOLS 2011; TIMSS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Ordinal scales for short periods (every day, once or twice a week, once or twice a month, never) and for long period (less than one year, more than one year but less than three, ... , more than seven years); minutes and hours per day; binary response</td>
</tr>
</tbody>
</table>
### 3. Competences

<table>
<thead>
<tr>
<th>Dimension</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdimension</td>
<td>2.4 Frequency of ICT use at school by type of actions using ICT (student)</td>
</tr>
<tr>
<td>Target population</td>
<td>Students</td>
</tr>
<tr>
<td>Description</td>
<td>Student actions related to learning mathematics (calculation, drawing functions, graphs) or other types of sciences (literature, natural sciences, social sciences) using ICT devices; entering data in a spreadsheet; group works or homework a school; browsing in internet; sending emails; chatting online; using computers, notebooks, e-books</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PISA 2012; SURVEY_SCHOOLS 2011; ICILS 2013; TIMSS 2011; PIRLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response, categorical response, ordinal response</td>
</tr>
</tbody>
</table>

#### 3.1 Teachers’ competences (self-reported)

| Target population          | Teachers                                                           |
| Description                | ICT skills self-reported by the teacher (different skills related to ICT teaching), confidence performing specific tasks with the computer, ICT needs for personal development |
| Surveys and wave           | TALIS 2012; ICILS 2013; SURVEY_SCHOOLS 2011 |
| Type of response           | Categorical response, ordinal response                             |

#### 3.2 Training (teachers)

| Target population          | Principals, teachers                                               |
| Description                | Attended training programmes on ICT                                 |
| Surveys and wave           | ICILS 2013; SURVEY_SCHOOLS 2011; TALIS 2013                          |
| Type of response           | Binary response (presence/absence), multiple choice (choosing from a list of programmes; indicating the length of the training, etc.) |

#### 3.3 Students’ competences (self-reported)

| Target population          | Students                                                           |
| Description                | ICT skills self-reported by the student (use of different operational systems, competences such us using office, browsing, computing mathematical operations, producing texts, visual materials) |
| Surveys and wave           | ICILS 2013; SURVEY_SCHOOLS 2011                                    |
| Type of response           | Ordinal response (not at all, a little, somewhat, a lot); binary response (yes/no); categorical response (I know how to do this, I could work out how to do this, I do not think I could do this) |
### 3.4 Students’ test-based skills

<table>
<thead>
<tr>
<th>Target population</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The student assessment was based on four 30-minute modules. Each of the four assessment modules consisted of a set of questions and tasks based on a realistic theme and following a linear narrative structure. A series of small discrete tasks (typically taking less than a minute to complete) preceded a large task that typically took 15 to 20 minutes to complete. Collectively, the modules contained a total of 62 tasks and questions corresponding to 82 score points. The four modules were: after school exercise, band competition, breathing, school trips</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICILS 2013</td>
</tr>
<tr>
<td>Type of response</td>
<td>Multiple choice; construct response (open questions answered with the computer); exercises such as drag and drop, execution of specific commands, and tasks with the computer and software</td>
</tr>
<tr>
<td>Notes</td>
<td>A detailed description can be found in the second file</td>
</tr>
</tbody>
</table>

### 3.5 Navigation skills

<table>
<thead>
<tr>
<th>Target population</th>
<th>Students</th>
</tr>
</thead>
</table>
| Description       | Navigation behaviours are measured with two indices derived from the CBA log files created while students were answering the CBA-DRA tasks. Particularly, the log files contain a measure of the “length of navigation sequences” (i.e., number of movements/steps between different pages). In addition, they provide “qualitative” information of each step: task-relevant steps (from and to a relevant page), misstep (from a relevant to a non-relevant page), correction (from a non-relevant to a relevant page), task-irrelevant step (from and to a non-relevant page).  
  a) index of overall browsing activity: given by the total number of steps  
  b) index of targeted navigation: given by the total number of task-relevant steps subtracted by missteps and task-irrelevant steps.  
  The values of the two indices range between 0 and 100 – with 0 indicating no (targeted) activity and 100 indicating maximum (or, maximally targeted) activity – and reflect the percentile score given by the rank of the student among all students who were administered the same digital reading questions. |
| Surveys and wave  | PISA-CBA 2012 |
| Type of response  | - |

### 4. Strategy

<table>
<thead>
<tr>
<th>Reference population</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target population</td>
<td>Principal and NRC (national research coordinator); NRCs answer questions related to the national context</td>
</tr>
<tr>
<td>Description</td>
<td>This indicator measures if the school has a defined scheme of goals, rules, or an implementation plan related to ICT</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>SURVEY_SCHOOLS 2011; PISA 2012</td>
</tr>
<tr>
<td>Type of response</td>
<td>Binary response (yes/no)</td>
</tr>
<tr>
<td>Notes</td>
<td>ICT implementation plan refers to any kind of strategy that specifies how ICT technology will be applied or used; This plan can be provided by the government (exogenous implementation) or by the principal/ head of the school (endogenous implementation).</td>
</tr>
</tbody>
</table>
### 5. Attitudes

<table>
<thead>
<tr>
<th>Dimension</th>
<th>ATTITUDES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td>5.1 Attitudes/Opinions regarding the role of ICT in learning and teaching (teachers)</td>
</tr>
<tr>
<td>Target population</td>
<td>Teachers</td>
</tr>
<tr>
<td>Description</td>
<td>Opinions about the use of ICT devices such as hardware and software, interest in ICT devices for teaching, attitudes toward the use ICT, agreement or disagreement with ICT statements; Usefulness and relevance of ICT, integration of ICT for teaching and learning in teachers' schools</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICILS 2013; SURVEY_SCHOOL 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>Ordinal response (different wording but same response structure)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>ATTITUDES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td>5.2 Attitudes/ opinions regarding the role of ICT in learning and teaching (principals)</td>
</tr>
<tr>
<td>Target population</td>
<td>Principal</td>
</tr>
<tr>
<td>Description</td>
<td>Usefulness, relevance of ICT, integration of ICT for teaching and learning</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>ICILS 2013; SURVEY_SCHOOL 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>ordinal response (different wording but same response structure)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>ATTITUDES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subdimension</strong></td>
<td>5.3 Attitudes/ opinions regarding the role of ICT in learning and teaching (students)</td>
</tr>
<tr>
<td>Target population</td>
<td>Students</td>
</tr>
<tr>
<td>Description</td>
<td>Opinions about the use of ICT devices such as hardware and software, interest in ICT devices, attitudes toward learning to use ICT, agreement or disagreement with ICT statements</td>
</tr>
<tr>
<td>Surveys and wave</td>
<td>PISA 2012; ICILS 2013; SURVEY_SCHOOLS 2011</td>
</tr>
<tr>
<td>Type of response</td>
<td>ordinal response (different wording but same response structure)</td>
</tr>
</tbody>
</table>
Appendix V – Attachment with the full list of questions (international surveys)

[See excel attachment]