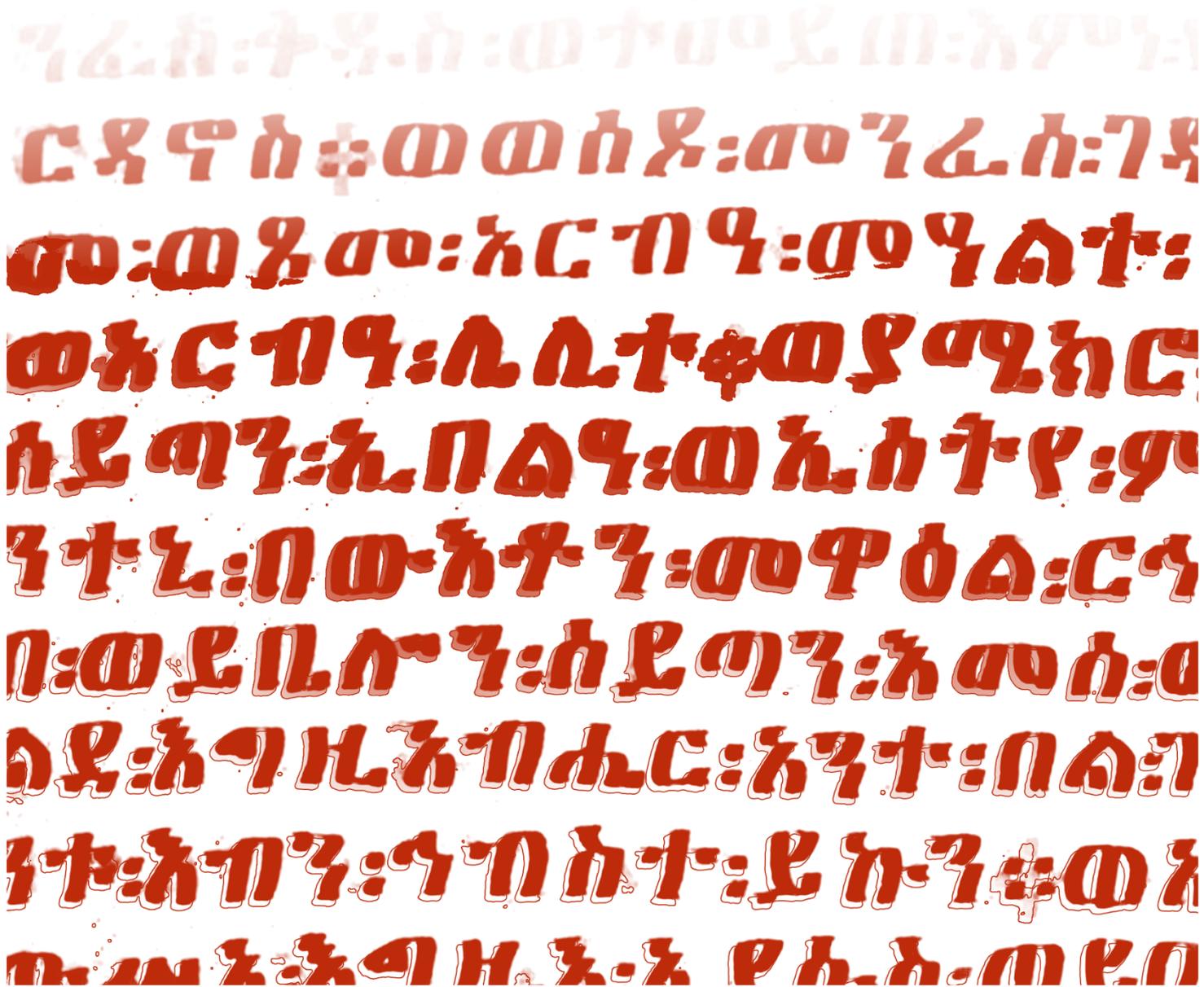




Birgit Breuer

**Report on digital competences,  
learning outcomes and best practices  
in teaching and learning**



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## 1 Objectives of the report

The report is based on an international online survey on *Digital competences, learning outcomes and best practices in teaching and learning* conducted as part of the ENCODE project in July 2021 (Intellectual Output 1). With the aim of bridging the <gap> in Ancient Writing Cultures, the ENCODE project intends to promote digital competences among students and academic staff by developing innovative teaching modules with modern digital approaches and implementing them in the existing academic curricula.<sup>1</sup> The pilot experiences of previous workshops and intensive programmes are of great importance for the design of new training modules. Therefore, a survey was conducted among teachers and participants of these digital workshops, the results of which are analysed in this report.

The purpose of the report is to discuss examples of good Learning and Training practices in the field of Ancient Writing Cultures. It also aims to identify improvement possibilities, as well as areas where digital methods should be expanded or newly established.

The report is the first study to look at transnational training activities and considering the views of both students and academic staff.<sup>2</sup> By providing ideas for future training modules, the report forms the basis for further action within the ENCODE project.

The core of this report are the survey results, i.e. the description of the transnational training experiences (section 3), and the conclusions (sections 3 and 4) drawn from them. It is preceded by an introductory section about the online survey (section 2).

## 2 Survey on digital competences

### 2.1 Survey design

The survey<sup>3</sup> was conducted via a Google questionnaire and is aimed at participants and teachers of digital workshops in the field of Ancient Writing Cultures. The current version (July 2021) consists of 22 questions for both participants and teachers. However, two questions (teachers) respectively one question (participants) are

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<sup>1</sup> Cf. Project summary (Erasmus+), 2f.

<sup>2</sup> Cf. Project summary (Erasmus+), 140.

<sup>3</sup> <https://forms.gle/bkvSo8coTVvRztbC8>.

subdivided into a) and b), so that there are actually 24 (teachers) respectively 23 questions (participants). The questionnaire distinguishes between participants and teachers early on (question 3), so that the respondent knows from the start which perspective to take. From number 4 onwards, the questions differ or are at least slightly adapted to the respondent.

To increase the chances of the questionnaire being filled in, the questions are kept as short and clear as possible. Since many of the questions collect statistical data, in most cases answers are given from which respondents can choose one or more options; alternatively, they can enter a free response. This not only makes it easier to complete the survey, but also to evaluate it. To avoid a premature termination of the questionnaire, which would also mean losing the data of the answers already given, respondents are allowed to skip questions. Only two questions are compulsory, namely the one about the title of the course (question 1<sup>4</sup>) and about one's own function (participant / teacher; question 3). A short text before the questionnaire stating that it will take less than 10 minutes to complete is intended to motivate participation. Respondents are also informed that the survey is focused on a single course at a time, so it must be completed more than once to provide information about multiple courses. Therefore, at the end of the survey, respondents are asked to participate again if they have attended or taught further courses. Filling out the questionnaire separately for different courses is necessary so that the data collected in the responses can be clearly attributed to a single course. Otherwise, the accuracy would decrease.

The first of the two parts of the survey deals with the general framework (question 1 to 3). From question 4 onwards, respondents are directed to a set of questions that is only slightly different in most cases, depending on whether they are teachers or participants. In this teacher / participant assessment, they are asked to provide information about the organisation of the course (e.g. duration, course format), the course content (e.g. academic areas, subjects, teaching materials), their own motivation and affiliation (e.g. country of origin, place of work, own scientific field), the participants initial level regarding the digital contents and the courses outcomes (e.g.

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<sup>4</sup> Nevertheless, one teacher managed to avoid the obligatory question 1 by entering "not available" instead of the title of the course.

level of digital competences achieved by the participants, further course interests, possible improvements).

The only slight adaptation of these questions to the respondents makes it possible not only to explore the perceptions of the participants and teachers separately, but also to compare them with each other. In this way, it is possible to find out whether they assess the situation similarly or at least hold common views within their own group.

Five questions each are addressed exclusively to teachers and participants of digital courses. On the teachers' side, they concern frequency of course delivery, 'non-digital' course requirements, areas and levels of future courses for which there is a particular need, reusable teaching materials and the knowledge of the European frameworks CALOHEE and DigComp 2.1 (see section 2.2).

Participants, on the other hand, are asked about their level (Student, PhD student, Post-doc, Staff), how they found out about the course, what skills they have acquired and already used in their academic practice, whether they would recommend the course to potential applicants and what features of the course they liked best.

In summary, the questionnaire aims not only to collect general information about the courses attended or taught by the respondents, but also to focus on the areas and levels of competences.

## 2.2 Alignment with frameworks

The ENCODE project seeks to align training in competences for the edition of ancient texts with the most relevant European frameworks. There are two frameworks, a humanistic framework called CALOHEE and a digital framework called DigComp 2.1.

The European frameworks provide an internationally consistent definition of competences and learning outcomes. They thus enable the classification and comparison of competences at European level as well as a common reflection on a possible improvement of academic curricula. Therefore, the frameworks are essential for the development of new training modules of different areas and levels.

As the ENCODE project primarily promotes the dissemination of digital competences through the design of innovative teaching modules, the survey is particularly based on the digital framework, but also considers the CALOHEE humanistic framework.

### 2.2.1 CALOHEE

CALOHEE is the name of an EU funded project launched in January 2016 and stands for "Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe". It developed frameworks for five academic areas, namely Engineering, Health Care, Humanities, Natural Sciences and Social Sciences, to measure and compare the competences of students in various Bachelor's and Master's programmes across Europe.<sup>5</sup>

The CALOHEE humanistic framework is considered in the survey in question 15, which deals with "non-digital" course requirements and is aimed exclusively at teachers. There, three of the five response options are taken from the humanistic framework:

Cataloguing practices and work with metadata

Source analysis – Transcription, critical edition, and interpretation

Contextualization of source production and transmission – preservation history / historical context

### 2.2.2 DigComp. 2.1

DigComp 2.1<sup>6</sup> is the European Framework on Digital Competences, whose full title is: "Digital Competence Framework for Citizens with eight proficiency levels and examples of use". It was published in 2017 and is a revision of DigComp 1.0 (2013) and a slight adaption of DigComp 2.0 (2016). The framework divides digital competences into five competence areas, which in turn are subdivided into 21 sub-competences. Each of these sub-competences is divided into eight proficiency levels.<sup>7</sup>

In the survey five questions of the teachers and four questions of the participants relate to digital content: the question about the digital course content itself<sup>8</sup> and the questions

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<sup>5</sup> <https://www.calohee.eu/why-calohee-2>.

<sup>6</sup> <https://publications.jrc.ec.europa.eu/repository/handle/JRC106281> = Carretero / Vuorikari / Punie 2017.

<sup>7</sup> Carretero / Vuorikari / Punie 2017, 10. 21.

<sup>8</sup> Teachers: question 9, participants: question 8.

about the initial,<sup>9</sup> acquired,<sup>10</sup> aspired<sup>11</sup> or particularly needed<sup>12</sup> level in different digital areas.

In these nine questions, the digital contents are grouped in such a way that they can be mapped to four competence areas<sup>13</sup> and seven sub-competences of DigComp 2.1 (Table 1). The grouping and mapping was done in consultation with the University of Hamburg.<sup>14</sup>

Competence areas (DigComp 2.1)	Sub-competences (DigComp 2.1)	Digital contents (Survey)
1: Information and data literacy	1.2: Evaluating data, information and digital content	Linking people / places / metadata
	1.3: Managing data, information and digital content	Tools for publication on the web (EFES, Recogito, TEI publisher ...)
2: Communication and collaboration	2.4: Collaborating through digital technologies	Content creating in existing databases (EDR, Pleiades ...)
3: Digital content creation	3.1: Developing digital content	Markup languages (Markdown, HTML, XML ...)
	3.2: Integrating and re-elaborating digital content	Data formats (JSON, RDF, Linked Open Data, IIIF ...)
	3.4: Programming	Programming languages (XPath, XSLT, XQuery, Python, Java, SQL ...)
5: Problem solving	5.3: Creatively using digital technologies	<i>Free answers from the respondents</i>

Table 1: Mapping of the grouped digital contents of the survey with DigComp 2.1.

<sup>9</sup> Teachers: question 16, participants: question 16.

<sup>10</sup> Teachers: question 17, participants: question 17.

<sup>11</sup> Teachers: question 19, participants: question 18.

<sup>12</sup> Teachers: question 18.

<sup>13</sup> Competence area 4 (Safety) cannot be mapped to the questionnaire, as protection of devices, personal data, health and environment is not taught in digital Ancient Writing Cultures.

<sup>14</sup> In ongoing project work, the results of the survey will be aligned to a database developed by the University of Hamburg (<https://encode.uni-hamburg.de>). To enable alignment, both questionnaire and database are oriented as closely as possible to DigComp 2.1.

It has seemed appropriate to divide the digital content of the survey into only four instead of eight proficiency levels (**Table 2**). For this purpose, the four main levels of DigComp 2.1 were taken over into the questionnaire without further subdivision. Only the wording of these main levels was slightly simplified. The number of proficiency levels evokes the initial DigComp 1.0, which distinguished only three of them.

Proficiency levels (DigComp 1.0)	Proficiency levels (DigComp 2.1)	Proficiency levels (Survey)
Foundation	Foundation 1 Foundation 2	Basic
Intermediate	Intermediate 1 Intermediate 2	Intermediate
Advanced	Advanced 1 Advanced 2	Advanced
	Highly specialised 1 Highly specialised 2	Specialist

Table 2: Comparison of the proficiency levels of the survey and DigComp 1.0 / 2.1.

DigCom 2.1's more detailed differentiation into eight proficiency levels is particularly useful for developing highly differentiated teaching materials.<sup>15</sup> However, experience<sup>16</sup> has shown that it is difficult for course participants and trainers to define and assess their own digital competences or those of others. It would therefore not make sense to confront the respondents with a complicated matrix.<sup>17</sup>

### 2.3 Recruitment of respondents

Potential respondents to the questionnaire are teachers and participants of digital courses in the field of Ancient Writing Cultures.

The names of many teachers can be found on the internet as they are listed on the websites of digital programmes or courses.

<sup>15</sup> Carretero / Vuorikari / Punie 2017, 12.

<sup>16</sup> The Intensive Training "Linked Open Data for Written Artefacts" (Hamburg 2021) was preceded and followed by a self-assessment which revealed the difficulties everyone had with eight proficiency levels.

<sup>17</sup> In the present questionnaire, despite the simplified matrix, 11% to 23% of the respondents did not answer the questions about their proficiency level or that of the participants, sometimes giving as a reason that they did not know what to answer (see section 3.2.4.1 below).

The following websites were considered:

SynoikisisDC,<sup>18</sup> EpiDoc Workshops,<sup>19</sup> ENCODE,<sup>20</sup> Epigraphy.info,<sup>21</sup> Hiob Ludolf Centre Summer School in Ethiopian and Eritrean Manuscript Studies,<sup>22</sup> Parma Digital Papyrology,<sup>23</sup> Encoding Inscriptions, Papyri, Coins & Seals (Cologne 2017),<sup>24</sup> SummerCamp 2020 of the VeDPH.<sup>25</sup>

The course participants, however, cannot be identified via the internet. This is where the help of digital course organisers is needed, who are listed on the same websites as the teachers.

Many email addresses of teachers and course organisers could be found through a simple Google search. After as many email addresses as possible had been collected, the link to the questionnaire was sent out. To disseminate the questionnaire as widely as possible, the teachers and organisers contacted were asked to forward the mail to anyone who teaches digital Ancient Writing Cultures but was not involved in the courses mentioned above. The organisers were also asked to forward the questionnaire to the participants of their courses.

### **3 Survey results: Transnational training experiences**

#### **3.1 Survey respondents**

The link to the questionnaire was sent to over 300 individuals, of whom 36 teachers (92%) and 3 participants (8%) of digital courses completed the survey (**Figure 1**).<sup>26</sup>

They come from the countries of the ENCODE project partners as well as from other countries (**Figure 2**). However, most of the respondents<sup>27</sup> are native Italians (54%).

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<sup>18</sup> <https://github.com/SunoikisisDC>.

<sup>19</sup> [https://wiki.digitalclassicist.org/EpiDoc\\_Summer\\_School](https://wiki.digitalclassicist.org/EpiDoc_Summer_School).

<sup>20</sup> <https://site.unibo.it/encode/en>.

<sup>21</sup> [Epigraphy.info](http://epigraphy.info).

<sup>22</sup> <https://www.aai.uni-hamburg.de/en/ethiostudies/service/summerschools.html>.

<sup>23</sup> <http://www.papirologia.unipr.it/ricerca/pdp.html>.

<sup>24</sup> <https://eadh.org/news/2017/09/12/register-cologne-autumn-school-and-expert-workshop-encoding-inscriptions-papyri>.

<sup>25</sup> <https://vedph.github.io/summercamp/speakers>.

<sup>26</sup> The percentage values are rounded without decimal places.

<sup>27</sup> Only 72% of the respondents had the possibility to indicate, where they were born or work/study. This is because a preliminary version of the questionnaire (early July) sent to the project partners did not yet include these questions.

Many of them were working or studying in Italy (31%) or Germany (23%) at the time of the course (**Figure 3**).

Most respondents belong to the field of Digital Humanities (56%), followed by representatives of Epigraphy (46%), Ancient Languages and Ancient History (both 36%), Papyrology (28%) and Linguistics (8%; **Figure 4**). The scientific field is thus broadly diversified, especially that of teachers (**Figure 5**). However, the participants also belong to several academic areas, particularly Ancient Languages and Ancient History (both 67%; **Figure 6**), although they are only slightly represented in the survey.

The course participants were students (33%) at the time of the training (**Figure 7**) and were informed about it in three ways (**Figure 8**): through their study programme (33%), mailing lists (33%) or the internet (33%).

There are many motivations for offering or attending digital courses. Teachers (**Figure 9**) mainly want to offer opportunities for future study/work (78%), to train the required people (53%) or to implement digital repositories of ancient documents (42%). Participants (**Figure 10**), on the other hand, choose to take the course for research purposes (33%) or because they are interested in the subject (33%) and are looking for inspiration (33%) or new perspectives (33%).

## 3.2 Digital Workshops

### 3.2.1 *Training programmes and scientific areas*

#### 3.2.1.1 *Training programmes*

The respondents taught or attended various courses belonging to different Larger Programmes. For clarity, they are listed in two figures: **Figure 11** shows the Larger Programmes of which several courses were indicated in the responses. The Programmes with one single course are shown in **Figure 12**.

Most of the courses were extracurricular and transnational (85%): The respondents mainly taught or attended courses of the programmes ENCODE (18%), Synoikisis Digital Classics (15%) and EpiDoc (15%). However, teachers from two courses of the Parma Digital Papyrology programme (13%) and the Venice Centre for Digital and Public Humanities (VeDPH, 5%) also participated in the survey (**Figure 11**).

In addition to the programmes represented several times, the following courses are indicated more than once in the responses (**Figure 11**, **Figure 12**): Digital Greek and Latin Epigraphy Workshop (ENCODE, 13%), Digital encoding of Literary and Paraliterary Papyri (Parma Digital Papyrology, 2019, 8%), Textual Encoding and Linguistic Annotation of Literary and Paraliterary Papyri (Parma Digital Papyrology, 2020, 5%), EpiDoc Workshop (London and Bologna 2021, 8%), EpiDoc Workshop (Venice 2019, 5%) and the Introduction to the Study of Gə'əz Manuscripts of the Hiob Ludolf Centre for Ethiopian and Eritrean Studies (HLCEES, Hamburg 2021, 5%).

Among the respondents, 15% have taught an academic course in the field of Ancient Writing Cultures. Each respondent (**Figure 13**) reported courses at different universities (Basel, Bologna, Hamburg, Heidelberg, Nebraska-Lincoln and Venice) and different levels (BA, MA, PhD, *not indicated*). A total of 50% of the academic courses are Master's courses, the remaining 50% are distributed among Bachelor's level (17%), PhD (17%) and courses whose level and programme are not specified (17%).

The programme and course overlaps in the answers make it possible to compare the experiences of the respondents. In the case of the EpiDoc workshop (London and Bologna 2021), the insights of one participant and two teachers can be contrasted.

### 3.2.1.2 Scientific areas

The digital courses represent different scientific areas. Respondents indicated (**Figure 14**) that most of the courses they attended or taught were in the areas of "Text encoding" (82%), "Papyrology" (54%) and "Epigraphy" (44%).

Courses in "Text encoding" (**Figure 15**) are mainly attended or taught by respondents with the scientific field of "Digital Humanities" (56%), "Epigraphy" (47%), "Ancient History" (38%), "Ancient Languages" (38%) and "Papyrology" (28%). The Papyrology and Epigraphy courses (**Figure 16**) involve almost the same representatives of scientific fields: In the course area "Papyrology" individuals from the field of "Digital Humanities" (57%), "Papyrology" (52%), "Epigraphy" (43%), "Ancient History" and "Ancient Languages" (both 38%) are represented, in "Epigraphy" (**Figure 17**), respondents from the scientific field of "Epigraphy" (71%), "Digital Humanities" (65%), "Ancient History" and "Ancient Languages" (both 47%).

The four Larger Programmes with the greatest presence in the survey (ENCODE, Synoikisis Digital Classics, EpiDoc, academic courses) deal, according to the respondents, particularly with the scientific areas of Text encoding, Epigraphy and Papyrology (**Figure 18** to **Figure 21**)<sup>28</sup> and involve mainly respondents from the scientific fields of Epigraphy, Ancient History, Ancient Languages and Digital Humanities (**Figure 22** to **Figure 25**).<sup>29</sup>

### 3.2.2 *Timing and duration*

The respondents have attended or taught courses that took place between 2015 and 2021 (**Figure 26**). In each of these years (except 2018) there are consistently more respondents than in the previous year, with a clear focus on the current year 2021 (59% in 2021 compared to 13-28% in previous years). This could be due to an increase in the number of courses offered each year. However, the large increase of 31% between 2020 and 2021 suggests that respondents are more likely to report courses that have just taken place rather than courses that have taken place in previous years.

Most of the courses about which respondents provided information lasted only a few days (**Figure 27**). However, there are also courses that have been held over more than a week, several weeks or a whole semester. The majority of the courses ran for a day (23%), a semester (21%) or 5 (18%) respectively 4 (13%) days.

The courses associated with a degree programme (academic courses) typically have a duration of a semester (67%; **Figure 28**). Exceptions (both 17%) are the academic course „Digitale Praxis und Strategien in den Altertumswissenschaften” offered by the graduate school of the University of Basel (duration: 2 days) and the course „Edizioni digitali di testi sanscriti: introduzione a XML e TEI” within the programme “Extension of the Laboratorio Orientalistico” offered by the University of Bologna (duration: 4 days).

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<sup>28</sup> The percentages of the Programmes are: ENCODE (Text encoding, Epigraphy and Papyrology 86% each), Synoikisis Digital Classics (Text encoding, Epigraphy and Papyrology 50% each), EpiDoc (Text encoding 100%, Epigraphy 67% and Papyrology 50%), academic courses (Text encoding 83%, Epigraphy and Papyrology both 33%). Among the academic programmes, the course area "Manuscript studies" is more strongly represented (50%) than Epigraphy and Papyrology.

<sup>29</sup> ENCODE: Epigraphy and Ancient History 71% each; Synoikisis: Ancient Languages 67%, Digital Humanities 50%; EpiDoc: Digital Humanities and Epigraphy 83% each, academic courses: Ancient History 83%, Digital Humanities and Epigraphy 67% each.

A closer look should also be taken at the course duration of the intensive training of the three Larger Programmes (**Figure 29** to **Figure 31**) that are widely represented in the survey: The ENCODE courses have mostly lasted 4 days (57%), a Synoikisis Digital Classics seminar 1 day (83%) and EpiDoc workshops 2 or 5 days (both 33%).

It is interesting to note that most teachers and participants are satisfied with the duration of the digital courses (72%) and no one thinks that the course took too long (**Figure 32**). Among the participants, even 100% find the duration appropriate to understand the desired content (**Figure 33**). 31% of the teachers think that the course was too short (**Figure 34**).<sup>30</sup>

This more critical attitude is likely due to the fact that the sample of teachers is much larger, and thus the percentage of teachers who taught courses lasting only a few days. Of these courses, 93% were taught by teachers and only 7% attended by the participants of this survey (**Figure 35**). Comparing the teachers' lack of satisfaction with the duration of the courses (**Figure 36**), it is noticeable that more than two thirds of the dissatisfied teachers taught a course that lasted only one (45%) or two days (27%).

On the other hand, teachers who give the course regularly are mostly satisfied with the duration: Only 9% of regular courses are rated as too short,<sup>31</sup> but 91% of non-regular courses (**Figure 37**).

Most courses in the field of digital Ancient Writing Cultures are not offered regularly (64%; **Figure 38**). However, when they are offered regularly, they are most often even held every year (33%) or have been taught four times (22%). Courses offered once, twice, five times or ten times are also represented (11% each; **Figure 39**). The regular courses usually last one semester (62%) or five days (15%). There are also regular workshops that run for 4 days, 1 week or 6 weeks (8% each; **Figure 40**).

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<sup>30</sup> Sometimes even teachers who have taught in the same workshop disagree whether the duration was appropriate or too short. This is the case with the Digital Greek and Latin Epigraphy Workshop (ENCODE; 60% of the teachers agree with the duration, 40% disagree).

<sup>31</sup> This 9%, which is considered too short, is a regular seminar that already lasts one semester.

### 3.2.3 Teaching and learning approaches

#### 3.2.3.1 Formats

The courses were most frequently conducted as video conferences (59%) and significantly less frequently as blended learning (a combination of online and face-to-face formats; 23%) or face-to-face seminars (18%; **Figure 41**). However, a look at the annual distribution (**Figure 42**) shows that in 2019<sup>32</sup> face-to-face seminars still predominated (44% face-to-face seminars, 33% blended learning and 22% video conferences). In 2020, with the onset of the Corona pandemic, videoconferences begin to prevail (55% video conferences, 27% blended learning, 18% face to face seminars). In 2021, they finally take a prominent position (70%) and blended learning also increases (30%), while the respondents do not indicate any face-to-face seminars (0%). This is due to the Corona pandemic, as is presumably the overall high proportion of videoconferencing (**Figure 41**).<sup>33</sup> It can therefore be assumed that face-to-face seminars will increase again after the pandemic is over.

The survey data suggest (**Figure 43**) that the proportion of videoconferencing is lower for regular courses than for non-regular offerings (54% of regular courses are conducted as videoconferences compared to 61% of non-regular courses). At the same time, the proportion of blended learning is significantly higher (46% of regular courses and only 9% of non-regular courses). However, whether there is actually a correlation between the regularity of the courses and the course format could only be verified with a larger data set.<sup>34</sup> The 2021 data (**Figure 44**) seem to confirm the observation made in **Figure 43**: Of all the courses held in 2021, the regular and non-regular offerings are represented in almost equal proportions (45% were non-regular, 55% regular), so the data appears comparable. All reported non-regular courses in 2021 were videoconferences (45% out of 45%), while the majority (30% out of 55%) of regular courses was conducted as blended learning and only a smaller part (25% out of 55%) as pure video conference. In 2020, on the other hand, the distribution of regular

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<sup>32</sup> No reliable statements can be made about the years before 2019, as only a total of 51% of the courses are spread over these 4 years. The three following years, on the other hand, are more than twice as frequently represented (110%). The high rate of over 100% can be explained by the fact that some courses took place every year or at least several times.

<sup>33</sup> The percentage is further increased by the fact that 59% of all the respondents' courses took place in 2021, the year with the highest proportion of video conferences (**Figure 26**).

<sup>34</sup> Teachers who give a course regularly may be more likely to use face-to-face formats

and non-regular courses is the same as in 2021 (**Figure 44**), but the result looks quite different with significantly more videoconferencing in regular courses than in non-regular courses.<sup>35</sup>

Looking at the course format of the four Larger Programmes most represented in the survey, it can be noticed that Synoikisis Digital Classics and ENCODE use video conferencing most frequently (Synoikisis 100%, ENCODE 86%; **Figure 45**). The yearly distribution (**Figure 46**) shows that Synoikisis Digital Classics has been using online formats exclusively since its start in 2015,<sup>36</sup> while ENCODE gives video conferencing a lot of space in 2021 due to Corona. EpiDoc, on the other hand, seems to rely more on a combination of face-to-face and online teaching (blended learning) in times of pandemic.<sup>37</sup> The academic courses in 2021 included as much blended learning as video conferencing.

Comparing the formats used by the three most frequent course areas (Text encoding, Papyrology, Epigraphy), it is remarkable that in 2021 the percentages of blended learning and video conferencing are almost similarly distributed (**Figure 47**):<sup>38</sup> In each of the three course areas, more than twice as many seminars are conducted as videoconferences than as blended learning.

### 3.2.3.2 Methods

The teaching methods (**Figure 48**) of most courses are based on innovative pedagogy and combine presentations with practical exercises (72%), sometimes in combination with discussions or group work (another 3% each). That a course is conducted exclusively with presentations (13%) or exercises (10%) seems to be rare.

Over the years, the teaching methods have not changed noticeably in proportion, considering that no clear conclusions can be drawn from the courses before 2019 due to the low number of respondents (see **Note 32**). Between 2019 and 2021 (**Figure 49**),

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<sup>35</sup> Regular: 36% of the courses of 2020 were conducted with videoconferencing; irregular: only 18% of the courses were videoconferences.

<sup>36</sup> Synoikisis is a fully online course and offers online sessions streamed live via YouTube.

<sup>37</sup> Of the EpiDoc courses in 2021, 67% were delivered as blended learning and only 33% as video conferences (**Figure 46**). The duration of EpiDoc courses is only slightly longer (usually 2 or 5 days) than that of ENCODE seminars (usually 3 to 4 days; see **Figure 29**, **Figure 31**), so that both programmes seem to be comparable.

<sup>38</sup> This is probably due to the fact that the three areas are often combined in training.

the picture is comparable to **Figure 48**: The vast majority of courses consists of presentations and practical exercises with or without group work and discussions (between 73% and 89%). The regularity of the courses offered also does not seem to have any impact on the teaching methods (**Figure 50, Figure 51**), and the three most frequently indicated scientific course areas (Text encoding, Epigraphy, Papyrology) show a similar distribution of teaching methods (**Figure 52**).

Interestingly, of the four Larger Programmes most represented in the survey (**Figure 53**), EpiDoc seems to avoid exclusive presentations or pure exercises in its seminars (100% presentations and practical exercises). Synoikisis Digital Classics, on the other hand, sometimes seems to be less student-centered, with about half of the courses (50%) involving presentations that are not linked to practical exercises.

### 3.2.3.3 Materials

It is important for the learning process to have access to the teaching materials. This is the case in 90% of the seminars in the survey (**Figure 54**): In most courses, participants even receive access to the materials before and after the training (38%), otherwise before (28%) or at least afterwards (23%). That there is a change over time between 2015 and 2021 cannot be inferred with certainty from the survey data; a larger data set would be important here (**Figure 55**).

However, the data seem to indicate (**Figure 56, Figure 57**) that irregular courses are more likely to have no materials provided than regular courses (17% of the irregular courses vs. 0% of the regular courses). However, this result could also be due to the small amount of data.

All four of the most represented Larger Programmes (academic courses, ENCODE, EpiDoc, Synoikisis Digital Classics) offer their participants access to materials, often even before and after the course (**Figure 58**). At the top are the academic courses, 67% of which provide materials before and after the course. The proportion of courses that make their materials available only afterwards seems to be particularly high in the Synoikisis Digital Classics (50%)<sup>39</sup> programme.

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<sup>39</sup> The materials of Synoikisis are available via GitHub.

Of the three prevalent course areas (Text encoding, Papyrology, Epigraphy), two were occasionally associated with no access to course materials in the survey data (19% of the Papyrology course area, 13% of the Textual encoding course area; **Figure 59**). Accordingly, some teachers and students who indicated Papyrology as their own scientific field stated no access to course materials (36%; **Figure 60**).

### 3.2.4 Competences and skills

As mentioned above (see section 2.2 above), the survey takes into account the humanistic framework of CALOHEE and the DigComp. 2.1 framework. It is striking that only just under half of the teachers of digital workshops have ever heard of the frameworks (44%; **Figure 61**).

The CALOHEE framework (see section 2.2.1) is considered by asking the teachers whether the participants need to have non-digital skills and if so, which ones. Although the courses focus on digital content, in most cases (76%) they require the participants to possess non-digital skills at the beginning, especially in Ancient Languages (e.g. Greek, Latin, Sanscrit, Ethiopian; 68%). However, knowledge is also expected in the following areas of the CALOHEE framework: Source analysis (Transcription, critical edition, and interpretation; 44%), contextualisation of source production and transmission (preservation history / historical context; 9%) as well as cataloguing practices and work with metadata (9%; **Figure 62**).

The four most common Larger Programmes in the survey data all require knowledge of Ancient languages (**Figure 63**), especially EpiDoc (83%) and ENCODE (57%).<sup>40</sup> Synoikisis Digital Classics seminars, on the other hand, seem to be particularly likely to omit requirements of non-digital skills<sup>41</sup> (67%) and only sometimes presuppose knowledge of Ancient languages (17%). In the other three Larger Programmes,

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<sup>40</sup> In the course areas of Papyrology (76%), Paleography (67%), Text encoding (66%) und Epigraphy (53%), knowledge of Ancient Languages is most frequently required (**Figure 64: Percentage of course areas requiring knowledge of Ancient languages.**) – as well as in courses dealing with Tools for linguistic annotation (100%) and publication on the web (75%; **Figure 65**, for course content see below). Also courses teaching Linking people / places / metadata (73%) and Markup languages (70%) frequently require skills in Ancient Languages.

<sup>41</sup> Requirements of non-digital skills are most frequently omitted in the course areas of Mycenology, Art History and Digital techniques (100% each; **Figure 66**). However, these course areas are only represented once each. In the course areas of Papyrology (10%), Epigraphy (12%), and Text encoding (16%), the prospects for course participation are lowest without non-digital skills. Courses dealing with Programming languages (40%), Data formats and Content creating in existing databases (25% each) most frequently not require any non-digital skills (**Figure 67**).

knowledge of Source analysis<sup>42</sup> is particularly required for participation (EpiDoc 67%, ENCODE 57%, academic courses 50%).<sup>43</sup>

The questions on the digital content of the questionnaire are based on DigComp. 2.1 (see section 2.2.2). As the courses represented in the survey are all digital, digital content is taught in all of them. The focus of digital teaching seems to be on Markup languages such as, for example, Markdown, HTML and XML (77%). The following contents are also represented several times in the questionnaire (**Figure 70**): Content creating in existing databases (e.g. EDR, Pleiades; 31%), Tools for publication on the web (e.g. EFES, Recogito, TEI publisher; 31%), Linking people / places / metadata (28%), Programming languages (e.g. XPath, XSLT, XQuery, Python, Java, SQL; 13%), Data formats (e.g. JSON, RDF, Linked Open Data, IIIF; 10%) and Linguistic annotation tools (5%).

Within the four Larger Programmes (**Figure 71**), Markup languages are mainly taught in the ENCODE and EpiDoc programmes (both 30%), Content creating in existing databases (50%) and Tools for publication on the web (45%) especially in the ENCODE programme. Linking people / places / metadata is most frequently associated with the Larger Programme EpiDoc (38%).

The people who teach or learn Markup Languages,<sup>44</sup> Content creating in existing databases,<sup>45</sup> Tools for publication on the web,<sup>46</sup> and Linking people / places / metadata<sup>47</sup> belong in particular to the scientific fields of Digital Humanities and Epigraphy<sup>48</sup> (**Figure 72 to Figure 76**). The four most frequently represented contents appear to be taught primarily in Text encoding courses (**Figure 77 to Figure 79**),<sup>49</sup>

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<sup>42</sup> Source analysis is particularly important for the course areas of Manuscript studies (60%), Epigraphy (53%), Text encoding (44%) and Papyrology (43%; **Figure 68**), as well as for course content such as Tools for publication on the web (58%), Linguistic annotation tools (50%) and Data formats (50%; **Figure 69**).

<sup>43</sup> This is in line with Bodard / Stoyanova 2016, 54, according to whom EpiDoc courses mainly require knowledge of Greek and Latin (Ancient languages) and Leiden conventions (Source analysis).

<sup>44</sup> Markup languages: Digital Humanities (60%) and Epigraphy (50%).

<sup>45</sup> Content creating in existing databases: Digital Humanities and Epigraphy (both 58%).

<sup>46</sup> Tools for publication on the web: Digital Humanities (75%) and Epigraphy (67%).

<sup>47</sup> Linking people / places / metadata: Digital Humanities (73%) and Epigraphy (64%).

<sup>48</sup> The analysis includes the scientific fields that are indicated between 28% and 56% in the survey (**Figure 4**). The data from the other scientific fields are not meaningful due to their low representation.

<sup>49</sup> Tools for publication on the web 100%, Markup languages 93%, Linking people / places / metadata 91%, Content creating in existing databases 75%.

unless the data are skewed by the fact that these courses were most frequently reported in the survey.

Of the course content, Markup languages (33%) and tools for Linking people / places / metadata (33%) were already applied by participants in their job or scientific practice (**Figure 80**). Another 33% have not yet been able to use any of the content taught in the course. Interestingly, the participants who have already applied the digital content taught in the course did not take the course for research or professional requirements, but out of pure interest in the subject (**Figure 81**).

The digital content is examined in more detail in the following sections, taking into account the respondents' answers to the initial and final level of participants, as well as the content they would like to learn in the future or consider most necessary.

#### 3.2.4.1 Initial and final level of the digital content

Between 11% and 23% of the respondents did not answer the level questions, sometimes giving the reason for their skipping in the "Other" section of the survey: 38% of the respondents who did not answer the question about the participants' initial level did not know what to indicate, followed by 25% who stated that a different level of the participants is responsible for not answering the question (**Figure 82**). The reasons for not answering the final level question are that the course participants did not give feedback (40%), were not tested on the course content (20%) or that the respondents did not know the answer (20%; **Figure 83**).

However, the limitations of self-assessment are also evident in the answers that are given: **Figure 84** to **Figure 89** show the initial and final level of courses that have multiple respondents (either teachers only or teachers and participants): Although sometimes the respondents of a course completely agree on the initial and final level,<sup>50</sup> respondents often estimate the initial and final digital knowledge of participants in the same courses differently: The differences usually<sup>51</sup> amount to one level of competence

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<sup>50</sup> Cf. **Figure 84** (Markup languages): Textual Encoding and Linguistic Annotation of Literary and Paraliterary Papyri (Parma 2020) – initial level: Basic, final level: Advanced.

<sup>51</sup> In two course, the difference is two levels of competence, cf. **Figure 88** (Content creating in existing databases): Digital Greek and Latin Epigraphy Workshop (ENCODE) – initial level: None (75%), Intermediate (25%), final level: Intermediate (100%). The teacher who had indicated "Intermediate" in the initial level noted that some of the participants already had experience in entering data in EDR. For the other course with the difference of two levels cf. **Note 53**.

and exist either only in the initial<sup>52</sup> or final level<sup>53</sup> or in both<sup>54</sup>. Sometimes it even remains unclear whether a content is taught in the course or not.<sup>55</sup>

Comparing the initial level of the different digital contents (**Figure 90** to **Figure 95**), it is noticeable that the courses are generally<sup>56</sup> offered for participants with little (basic) or - more often<sup>57</sup> - no previous knowledge. No prior knowledge is most common for Programming languages (89%) and Content creating in existing databases (77%) and Tools for publication on the web (67%), basic knowledge is most often required for Markup languages (28%), Content creating in existing databases (20%) and Linking people / places / metadata (18%).

The courses lead to the final levels basic and intermediate for all contents (**Figure 96** to **Figure 101**) and sometimes even to advanced knowledge for some contents (Markup languages 21%, Linking people, places metadata 5%, Content creating in existing databases 3%). Specialised skills are not taught for any content in the courses represented. For most of the content,<sup>58</sup> basic skills are more likely to be achieved than intermediate skills, and intermediate skills again more likely than advanced skills. The most common are basic knowledge of Markup languages (31%), Tools for publication on the web (28%) and Linking people / places / metadata (26%). Intermediate knowledge is represented in particular in the contents of Markup languages (26%), Content creating in existing databases (18%) and Linking people / places / metadata (15%). By the end of some courses, participants have acquired knowledge of Spectral curves (Basic), Linguistic annotation tools (such as Arethusa, PapyGreek) and the Creation of context-free grammars for their domain-specific languages (**Figure 102**).

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<sup>52</sup> **Figure 84** (Markup languages): Digital Greek and Latin Epigraphy Workshop (ENCODE) – initial level: None (50%), Basic (50%), final level: Intermediate (100%).

<sup>53</sup> **Figure 84** (Markup languages): Digital encoding of Literary and Paraliterary Papyri (Parma 2019) – initial level: None (100%), final level: Basic (33%), Advanced (67%).

<sup>54</sup> **Figure 89** (Linking people/places/metadata): EpiDoc Workshop (London and Bologna 2021) – initial level: None (teachers, 67%), Basic (participant, 33%), final level: Basic (teachers, 67%), Intermediate (participant, 33%).

<sup>55</sup> **Figure 88** (Content creating in existing databases): Digital encoding of Literary and Paraliterary Papyri (Parma 2019) – initial level: None, final level: None (67%), Basic (33%).

<sup>56</sup> An exception seems to be partially the workshop "Digital Greek and Latin Epigraphy", as one of the teachers indicates "Intermediate" as initial level for Content creating in existing databases; cf. **Note 51** above.

<sup>57</sup> Over half (Markup languages) to almost 90% of the courses (Programming languages) require no prior digital knowledge.

<sup>58</sup> For Content creating in existing databases the intermediate level is more common than the basic level (**Figure 100**).

Regarding the content "Markup languages", most often the participants do not need to have previous knowledge at the beginning of the course (51%) and reach the level of basic knowledge (31%), intermediate (26%) or advanced (21%) at the end (**Figure 90** and **Figure 96**).<sup>59</sup> If the course does not require knowledge of Markup languages (**Figure 103**), participants are most likely to end up with Basic knowledge (40%), but sometimes they reach intermediate (25%) or advanced level (20%).<sup>60</sup> If the course, on the other hand, presupposes basic knowledge, participants finish the course usually at either intermediate or advanced level (40% each)<sup>61</sup> or stagnate<sup>62</sup> in their basic knowledge (20%).

Tools for publication on the web are mostly taught without prior knowledge (67%), resulting in basic (28%) or intermediate knowledge (8%) for the course participants (**Figure 91** and **Figure 97**).<sup>63</sup> If participants started with no prior knowledge (**Figure 106**), they achieved basic (35%) or intermediate (4%) knowledge.<sup>64</sup> However, if the participants had basic knowledge at the beginning, they often gained intermediate knowledge (50%).<sup>65</sup>

In the case of Programming languages, too, no prior knowledge is assumed in most cases (89%) and a basic level (15%) or an intermediate level (3%) is reached at the end (**Figure 92** and **Figure 98**). Whether there is no initial knowledge or basic knowledge (**Figure 109**), the participants achieve the next level in each case (16%

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<sup>59</sup> A teacher indicated in the "Other" section which contents of the Markup languages were specifically taught (XML, EpiDoc and Leiden +) and defined the final level "Intermediate" in the words of the DigComp. 2.1 framework (The participants reached autonomy in dealing with tasks assigned and solve some non-routine problems).

<sup>60</sup> Without prior knowledge (**Figure 104**), the basic level of Markup languages is usually reached in 2 days or 1 semester (15% each), the intermediate level in 4 days (15%) and the advanced level in 5 days (20%).

<sup>61</sup> If basic knowledge is required at the beginning of the course (**Figure 105**), the intermediate level is usually achieved in 4 days (29%), the advanced level in 5 days (20%).

<sup>62</sup> These cases are not mentioned in the following; presumably, the stagnation of the initial level of knowledge is due to the fact that the contents were not primarily taught.

<sup>63</sup> One teacher noted in the 'Other' section that the EFES tool was taught in the course and that he had obtained the following result: Participants achieved autonomy in completing simple tasks (but not in adapting the tool to their own needs; Basic).

<sup>64</sup> Basic skills are mostly achieved in 4 days (19%), intermediate skills in 5 days (19%) without prior knowledge (**Figure 107**).

<sup>65</sup> With little previous skills (Basic; **Figure 108**) the next competence level (Intermediate) is reached within one week or one semester (25%).

Basic without prior knowledge; 33% Intermediate with basic knowledge at the beginning).<sup>66</sup>

Also in courses in which Data formats are taught, participants require prior knowledge in the fewest cases (8%) and achieve basic (15%) or intermediate knowledge (5%), if the content is taught (**Figure 93** and **Figure 99**). Interestingly, however, the courses whose participants have basic knowledge of Data formats at the beginning do not seem to deepen this knowledge (**Figure 112, Figure 114**);<sup>67</sup> without initial knowledge, on the other hand, the level basic or even intermediate is reached (**Figure 112**).<sup>68</sup>

Participants who learn to create content in existing databases mostly do so without prior knowledge (77%), sometimes with basic knowledge (20%) and rarely with intermediate<sup>69</sup> knowledge (3%). Usually they develop intermediate skills (18%), less often basic (13%) or advanced skills (3%; **Figure 94** and **Figure 100**). If they attend a course that teaches Content creating without prior knowledge (**Figure 115**), they acquire intermediate (13%), basic (9%) or advanced (4%) knowledge.<sup>70</sup> With basic prior knowledge (**Figure 115**), they arrive at the intermediate level in one semester (50%; **Figure 117**); with intermediate skills, they remain at this level (100%; **Figure 118**).<sup>71</sup>

Linking people / places / metadata is - like the other contents - predominantly taught without prior knowledge (54%; **Figure 95**); the course result is that the participants have basic (26%), intermediate (15%) or advanced knowledge (5%; **Figure 101**). Here, too, it can be observed that depending on the respective prior knowledge, it is particularly the next level of competence that is reached (**Figure 109**): No prior knowledge results mainly in basic skills (33%) and less often in intermediate (10%) or

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<sup>66</sup> Without prior knowledge (**Figure 110**), the basic level is reached in 2, 3, 6 days or 1 semester (4% each). The intermediate level is reached in 6 weeks (33%) with little previous knowledge (Basic; **Figure 111**).

<sup>67</sup> This is probably due to the small sample size.

<sup>68</sup> The basic level is reached in 2, 3, or 6 days (4% each), the intermediate level in 3 days or one semester (4% each; **Figure 113**).

<sup>69</sup> Cf. **Note 51** and **Note 56** above.

<sup>70</sup> Without prior knowledge (**Figure 116**), participants reached the basic level in 5 days or one semester (4% each), the intermediate level usually in 4 days (9%) and the advanced level in 6 days (4%).

<sup>71</sup> The teacher of this course noted "Participants reached autonomy in dealing with tasks assigned and solve some non-routine problems". Perhaps the learning progress is that no longer some participants (as at the beginning of the course, cf. **Note 51**) but all participants have advanced knowledge at the end of the course.

advanced (5%) skills at the end of the course.<sup>72</sup> Basic knowledge in Linking people / places / metadata, on the other hand, usually leads to intermediate (43%) or sometimes advanced skills (14%).<sup>73</sup>

#### 3.2.4.2 Future interest and particular need for digital content

Course participants show equal interest in all digital content.<sup>74</sup> Two thirds of the participants (67%) would like to acquire competences in each content, the other third skipped the question. Among teachers a gradation can be seen (**Figure 123**): Teachers themselves are most interested in learning Programming languages (70%),<sup>75</sup> Markup languages (56%) and Data formats (52%), and less interested in learning how to link people / places / metadata (33%), how to publish using tools on the web (30%) and how to create content in existing databases (19%).

Of the four levels (Basic, Intermediate, Advanced, Specialist), course participants are mainly interested in the intermediate level and the advanced level in all the content, either in both levels equally<sup>76</sup> or exclusively in the intermediate<sup>77</sup> or advanced level.<sup>78</sup> Teachers, on the other hand, are interested in all levels for most content. For Markup languages and Linking people / places / metadata, their interest increases with the level of proficiency.<sup>79</sup> For Programming languages and Data formats, there is also interest at all levels (mainly at the highest level Specialist), but for the former, the least interest is at the intermediate level,<sup>80</sup> for the latter at the advanced level.<sup>81</sup> In one level

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<sup>72</sup> The basic level is mostly reached in 2 days (14%), the intermediate level in 5 days (24%), the advanced level in 6 days (5%) without prior knowledge (**Figure 120**).

<sup>73</sup> With basic skills (**Figure 121**), the participants usually arrive at the intermediate level in 3 days, 4 days or one week (14% each) and at the advanced level in one semester (14%).

<sup>74</sup> Furthermore, one participant stated in the "Other" section that he would be interested in "any tool necessary to combine classical teaching of the humanities with the digital age".

<sup>75</sup> The training of trainers is not only of great importance in terms of lifelong learning, but also because teachers who have acquired new knowledge can act as multipliers and pass it on to their course participants. The preliminary version of the questionnaire (early July, cf. **Note 27**) did not yet include the question about teachers' interest. This is taken into account in the percentages.

<sup>76</sup> Intermediate and Advanced (33% each): Markup languages (**Figure 124**), Tools for publication on the web (**Figure 125**) and Data formats (**Figure 127**).

<sup>77</sup> Exclusively Intermediate (67%): Programming languages (**Figure 126**) and Content creating in existing databases (**Figure 128**).

<sup>78</sup> Exclusively Advanced (67%): Linking people/places/metadata (**Figure 129**).

<sup>79</sup> Markup languages (**Figure 124**): Basic (7%), Intermediate (7%), Advanced (11%), Specialist (22%); Linking people / places / metadata (**Figure 129**): Basic (4%), Intermediate (7%), Advanced (11%), Specialist (11%).

<sup>80</sup> Programming languages (**Figure 126**): Basic (11%), Intermediate (4%), Advanced (22%), Specialist (33%).

<sup>81</sup> Data formats (**Figure 127**): Basic (11%), Intermediate (11%), Advanced (7%), Specialist (22%).

each of “Tools for publication on the web” (Intermediate) and “Content creating in existing databases” (Specialist) teachers have no interest for their future course choice.<sup>82</sup>

Teachers see a particular need<sup>83</sup> (**Figure 131**) for teaching Programming languages (75%) according to their own interests for future course attendance (**Figure 123**). However, the urgency of teaching “Tools for publication on the web” seems to exceed their personal interest for further training (particular need: 72%, future interest 30%).<sup>84</sup> The importance of “Content creating in existing databases” is also rated significantly higher than the own interest in it (44% instead of 19%), but is still in last place. Overall, the percentages are close together with values between 44% and 75%, so that it is difficult to establish a ranking.

While the course participants are interested in the intermediate and advanced levels for all the content indicated, the teachers differentiate more strongly according to content: In terms of Markup languages<sup>85</sup> and Tools for publication on the web<sup>86</sup>, they see a particular need for the two highest levels of competence (Advanced, Specialist). This is in line with the fact that among the courses represented, the final level “Basic” of Markup languages and “Tools for publication on the web” is the most widespread (**Figure 96, Figure 97**). As far as Data formats are concerned, teachers feel that future courses are mainly needed for the two lowest levels (Basic, Intermediate).<sup>87</sup> For “Content creating in existing databases” and “Linking people / places / metadata”, the teachers believe that the courses should be expanded at the basic and advanced levels.<sup>88</sup> Programming languages, on the other hand, seem to be especially needed at both the highest and lowest level (Specialist, Basic).<sup>89</sup>

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<sup>82</sup> Tools for publication on the web (**Figure 125**): Basic (4%), Advanced (19%), Specialist (7%); Content creating in existing databases (**Figure 128**): Basic (4%), Intermediate (7%), Advanced (7%).

<sup>83</sup> One teacher considers the teaching of Ancient languages to be particularly important (**Figure 130**).

<sup>84</sup> The results could also be skewed by the fact that not all teachers had the possibility to answer the question about their interests (cf. **Note 75**).

<sup>85</sup> Markup languages (**Figure 132**): Advanced (28%), Specialist (25%), Basic (8%), Intermediate (8%).

<sup>86</sup> Tools for publication on the web (**Figure 133**): Advanced (25%), Specialist (22%), Basic (14%), Intermediate (11%).

<sup>87</sup> Data formats (**Figure 135**): Basic (28%), Intermediate (17%), Specialist (14%), Advanced (11%).

<sup>88</sup> Content creating in existing databases (**Figure 136**): Basic (17%), Advanced (14%), Specialist (11%), Intermediate (3%); Linking people / places / metadata (**Figure 137**): Basic (19%), Advanced (17%), Specialist (11%), Intermediate (11%).

<sup>89</sup> Programming languages (**Figure 134**): Specialist (22%), Basic (19%), Intermediate (17%), Advanced (17%).

More than 50% of the particular need in any digital content is seen by Digital Humanists (**Figure 138** to **Figure 143**). Epigraphers, on the other hand, see 43% to 48% of the need, followed by Ancient Historians (25-36%), representatives of Ancient languages (22% to 33%) and Papyrologists (24% to 32%). This corresponds to the frequency with which the scientific fields are represented in the survey (**Figure 4**).

### 3.2.5 Assessment

The participants of digital courses in the field of Ancient Writing Cultures have consistently rated them positively and would recommend them to others (**Figure 144**). Nevertheless, there are some suggestions for improvement from the teachers and participants.

The teachers' suggestions (**Figure 145**) relate to the methods (50%), course duration (21%), course format (14%), and course materials (7%). Furthermore, there is a content-specific suggestion for improvement on Digital Mycenology (7%; **Figure 146**), a desire<sup>90</sup> to reach more people (7%; **Figure 147**) and the opinion that nothing should be changed (7%; **Figure 148**).

In terms of methods (**Figure 149**), teachers would like to include more practical exercises<sup>91</sup> in general (7%), sometimes even on concrete problems in existing projects.<sup>92</sup> In particular, teachers consider more guided practical exercises (14%) useful, i.e. more tasks that are solved in plenary and not by the participants alone.<sup>93</sup> Another 14% of the teachers would like to have more interaction with the course participants. To facilitate interaction, teachers would sometimes (7%) need to know more about the level of knowledge and the objectives of the participants, e.g. through a self-assessment before the course starts.

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<sup>90</sup> However, there is no proposal on how to address a wider circle of interested people.

<sup>91</sup> All teachers who suggest more exercises already use exercises as a regular teaching method.

<sup>92</sup> Exercises are very important to activate the participants' newly acquired knowledge through application (learning by doing). For the learning process it also seems useful to confront participants with realistic issues of current research (problem-based training). In this way, research is integrated into teaching by giving students the opportunity to contribute (mutual learning), cf. the *Edendo discimus* project on textual encoding: <https://epikur-wuerzburg.de/aktivitaeten/editio/e-discimus/>. On the concept of learning by doing to acquire knowledge of TEI markup, see Dee / Foradi / Šarić, 2016.

<sup>93</sup> While minimal guidance is a concept of current didactics, the experiences of some teachers seem to suggest that guidance is useful to a certain extent. By solving exercises with the participants, teachers can identify where there are difficulties and benefit from this in future teaching.

14% of the teachers again<sup>94</sup> state that they would appreciate more time (**Figure 150**), of which 7% could alternatively imagine skipping certain contents.

The teachers who are dissatisfied with the course format (14%) refer to video conferencing (**Figure 151**): They consider videoconferencing unsuitable and would prefer to hold the course in presence (7%); if this is not possible, an alternation between synchronous and asynchronous training sessions would be reasonable (7%).

In addition, the need for well-designed teaching materials (e.g. textbooks) is seen (7%; **Figure 152**).

The participants' suggestions for improvement (**Figure 153**) relate in agreement with the teachers, to greater interaction between teacher and participants (50%; **Figure 154**). Furthermore, the speaking speed is sometimes (50%) considered too fast to perceive all the information (**Figure 155**). This is probably due to language barriers of non-native speakers combined with a complicated topic.

An advantage here is seen in the asynchronous teaching format, which makes it possible, for example, to watch a video tutorial or a training video several times. Here the participants who indicated improvements (100%) confirm (**Figure 156, Figure 157**) the teachers' impression (see above) that asynchronous sessions are a useful complement to video conferences. Among the other preferred training features, participants mention the compact and appealing style of the PowerPoint presentation and its transparency in providing links (**Figure 158**), the clarity of the teachers' language and their efficient time management (**Figure 159**).

Some teachers (17%) gave links in the questionnaire to materials that are freely available on the internet and that they would recommend to others (**Figure 160**).<sup>95</sup>

Most of the recommendations (50%) relate to the teaching of Markup languages (**Figure 161**), mentioning the slides and guidelines provided by the EpiDoc Community (17%), as well as Materials of the recent (2021) London and Bologna Online EpiDoc Workshop<sup>96</sup> (33%). The indicated materials appear to be appropriate for taking

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<sup>94</sup> 27% of those who had indicated at the beginning that the duration was too short repeated it in this final section of the questionnaire.

<sup>95</sup> Another 8% of teachers consider a joint effort useful, but without contributing to the recommendations themselves.

<sup>96</sup> <https://github.com/EpiDoc/Tutorials/wiki/London-Bologna-April-2021>.

participants who have basic or no prior knowledge of Markup Languages to an intermediate or advanced level.<sup>97</sup>

There are also recommendations for Linguistic annotation (33%; **Figure 163**), namely the course materials for automatic annotation of classical languages<sup>98</sup> (17%), for the Perseids and Alpheios platform and for materials for teaching Ancient Greek with the linguistic model<sup>99</sup> (17%). Recommendations were also made (17%) for materials to teach the Linked Open Data format<sup>100</sup> (**Figure 164**), which seem suitable to bring participants without prior knowledge to an intermediate level (**Figure 165**).<sup>101</sup>

#### **4 Conclusions**

The limitations of this survey are obvious: Due to the small number of respondents, the survey data do not allow any firm conclusions to be drawn: Correlations cannot be established beyond doubt, and individual opinions, which may not be representative of the entire digital courses in the field of Ancient Writing Cultures, are given great weight. Furthermore, although trainers and students responded to the survey, they did so to a very different extent: Less than a tenth of the respondents are course participants, of whom only students are represented, while other target groups (doctoral students, post-docs, staff) are missing. In short, the data analysis is on a weak basis; sending out the link to the questionnaire again will hopefully bring further respondents.

Nevertheless, some results can be derived from the survey: All participants would recommend the courses without hesitation and no one considers the courses to be too long. On the contrary, some teachers would appreciate more time, which shows that there is a great need for teaching digital Ancient Writing Cultures. It is therefore gratifying that some courses are already offered regularly and embedded in academic training.

In times of the pandemic, the limitations of online teaching have become obvious, as it is very difficult for both participants and teachers to conduct courses and workshops

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<sup>97</sup> The material recommendations come from teachers who have taught courses at this level in Markup Languages (**Figure 162**).

<sup>98</sup> [https://github.com/WoPoss-project/automatic\\_annotation](https://github.com/WoPoss-project/automatic_annotation).

<sup>99</sup> <https://vgorman1.github.io/Greek-Language-Class/>.

<sup>100</sup> <https://pietroliuzzo.github.io/LOWA/>.

<sup>101</sup> The materials are recommended by a teacher who has taught a course at this level (**Figure 165**).

exclusively as videoconferences: To improve videoconferencing, it would be important to either put more emphasis on integrating face-to-face components (blended learning) or, alternatively, to use asynchronous elements, as is already sometimes done.

Most courses are conducted using a variety of methods by combining the pure input of presentations with practical exercises, sometimes supplemented by group work or discussions. Possibilities for improvement are seen in the integration of more exercises in courses and workshops. A closer linking of exercises with research could further stimulate the learning process of the participants, and teachers could also benefit in terms of mutual learning (cascade effect) by receiving new impulses for their own work.

Another concern of teachers and participants is to make the courses more interactive. It would be helpful if the teachers knew more about the participants, both in advance of the course to find out their prior knowledge and goals, and afterwards to be able to assess their learning progress. Two feedback approaches could be usefully employed here: Before the course, participants could be asked for a self-assessment of their knowledge. However, it would be necessary to simplify the complicated matrix of DigComp. 2.1, perhaps even more than in this questionnaire, with which some respondents had difficulties. At the end of the course, the participants' written or oral feedback could help the teachers to improve the courses or give them ideas for future training modules.

While most courses so far require little or no knowledge of digital content, teachers and course participants seem to have a special interest in attending courses with a higher starting level leading to a more advanced final level than Basic (participants: Intermediate / Advanced; teachers: Specialist).

According to the survey data, course participants generally have access to the materials before and after the courses and appreciate the PowerPoint presentations for their transparency and clarity. However, further well-designed training materials (e.g. textbooks) would be necessary. Efforts have already been made in the right direction: There are some freely available materials on the internet that have already proven useful for teaching certain contents. More materials will follow and will be developed as part of the collaborative work of the ENCODE project.

## 5 Table of figures

### 5.1 Survey respondents (section 3.1)

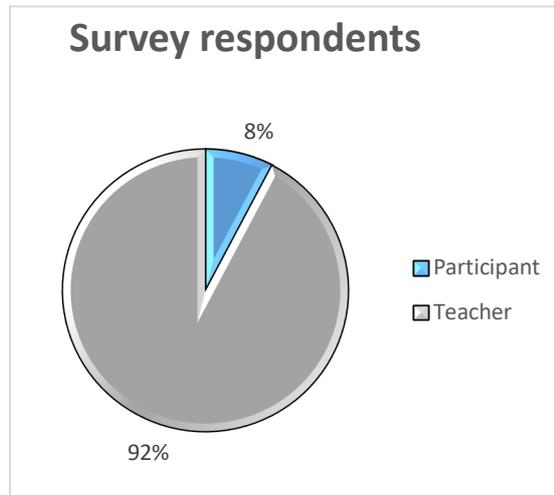


Figure 1: Survey respondents.

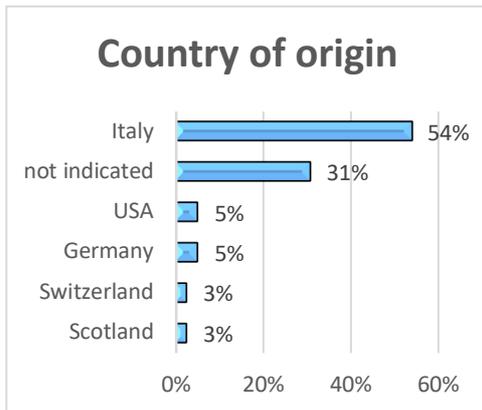


Figure 2: Country of origin (all respondents).

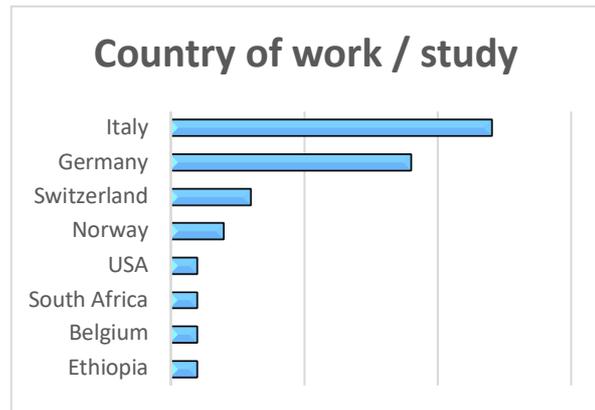


Figure 3: Country of work/study (all respondents).

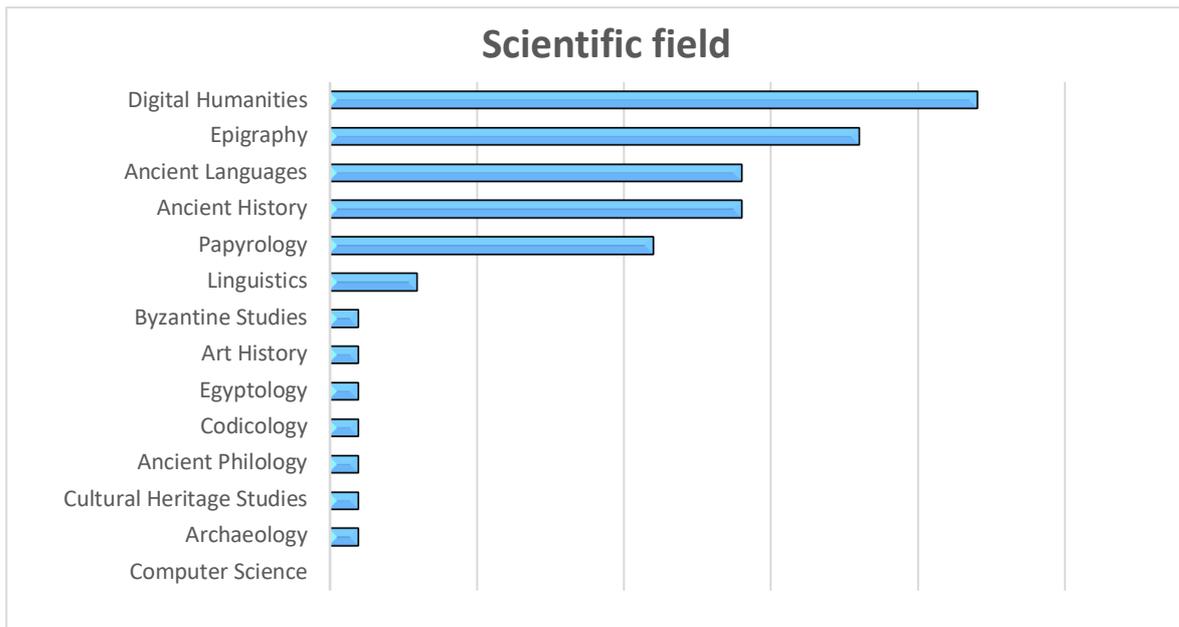


Figure 4: Scientific field (all respondents).

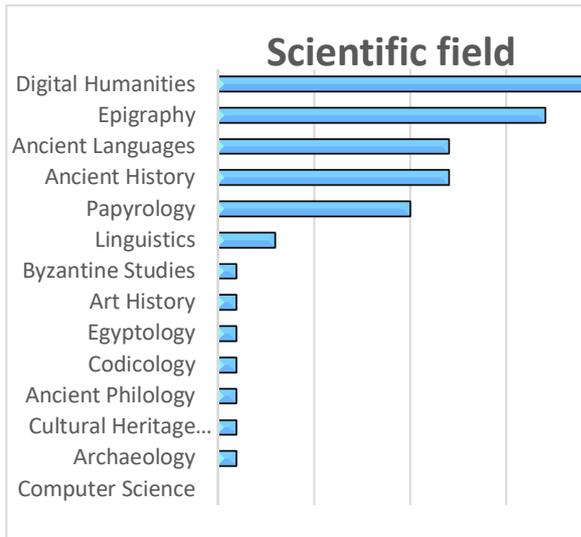


Figure 5: Scientific field (teachers).

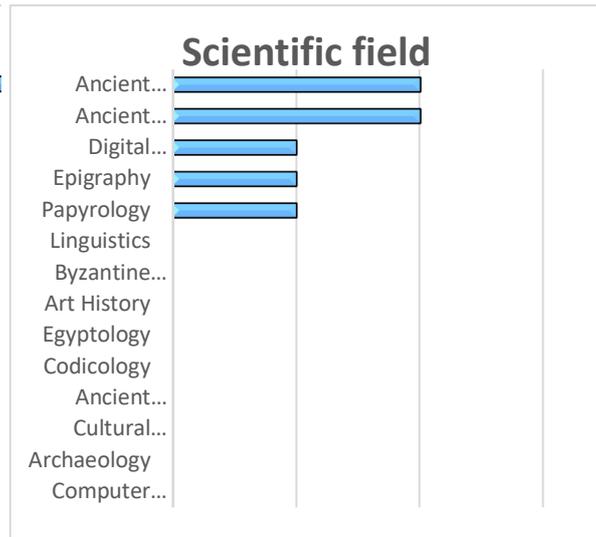


Figure 6: Scientific field (participants).

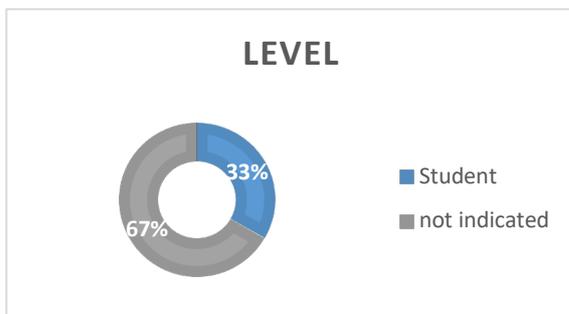


Figure 7: Level of the course participants.

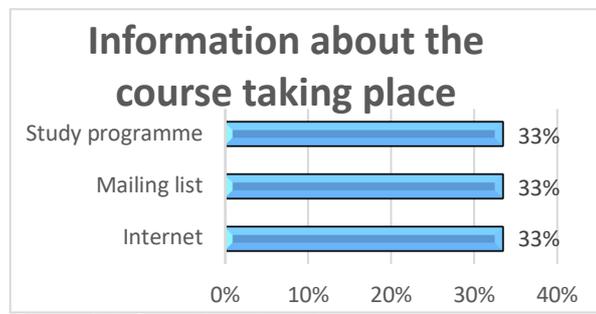


Figure 8: Information about the course.



Figure 9: Motivation for offering the course.

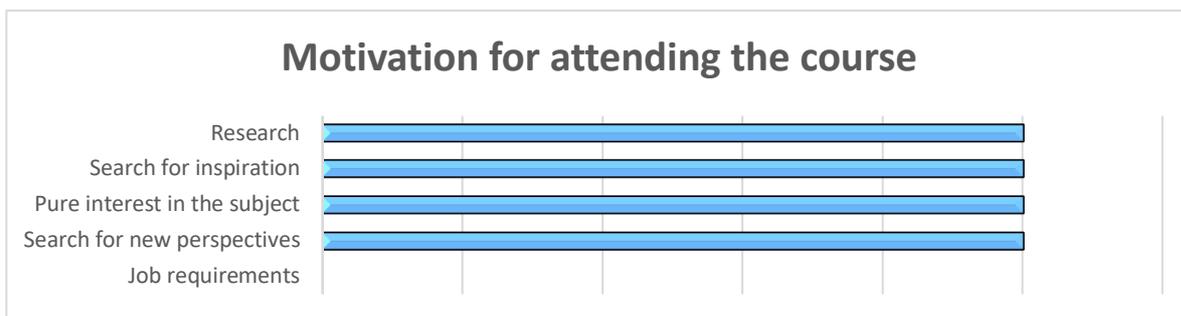


Figure 10: Motivation for attending the course.

## 5.2 Training programmes and scientific areas (section 3.2.1)

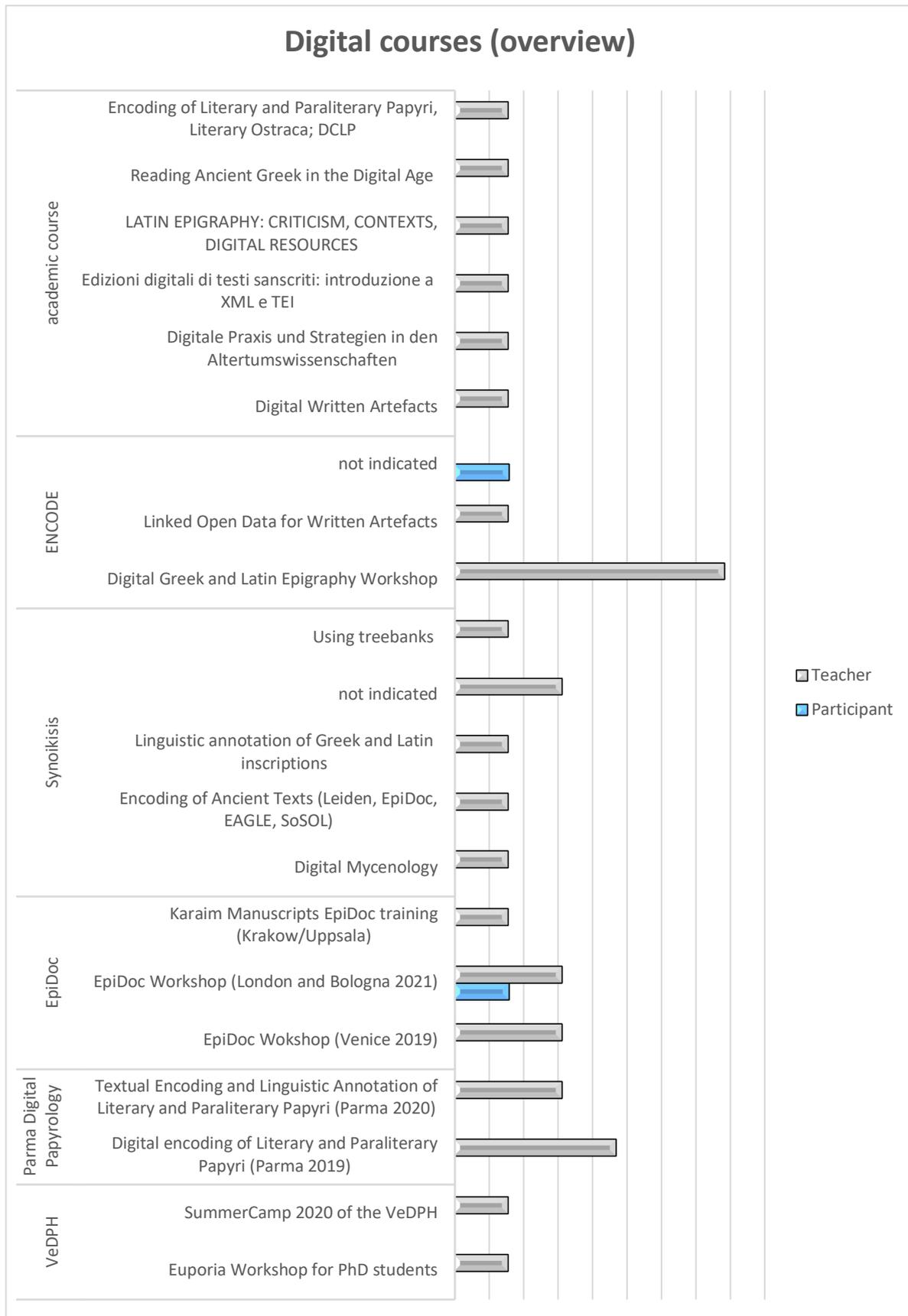


Figure 11: Course overview 1: Indication of the Larger Programme (represented by various courses).

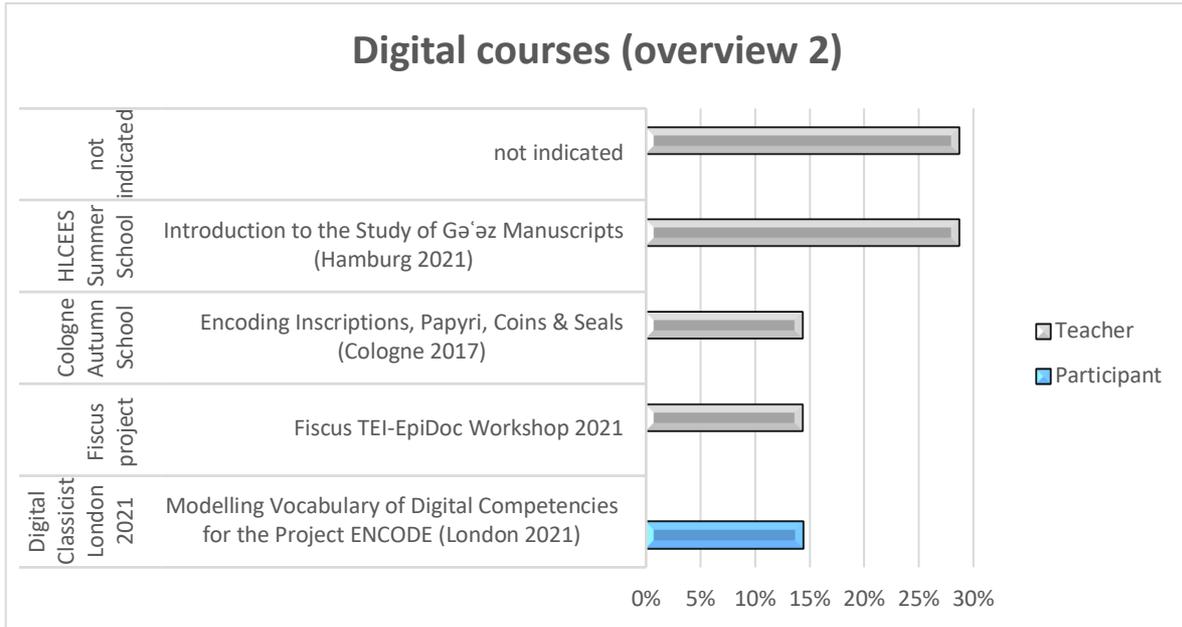


Figure 12: Course overview 2: Indication of the Larger Programme (represented by one course).

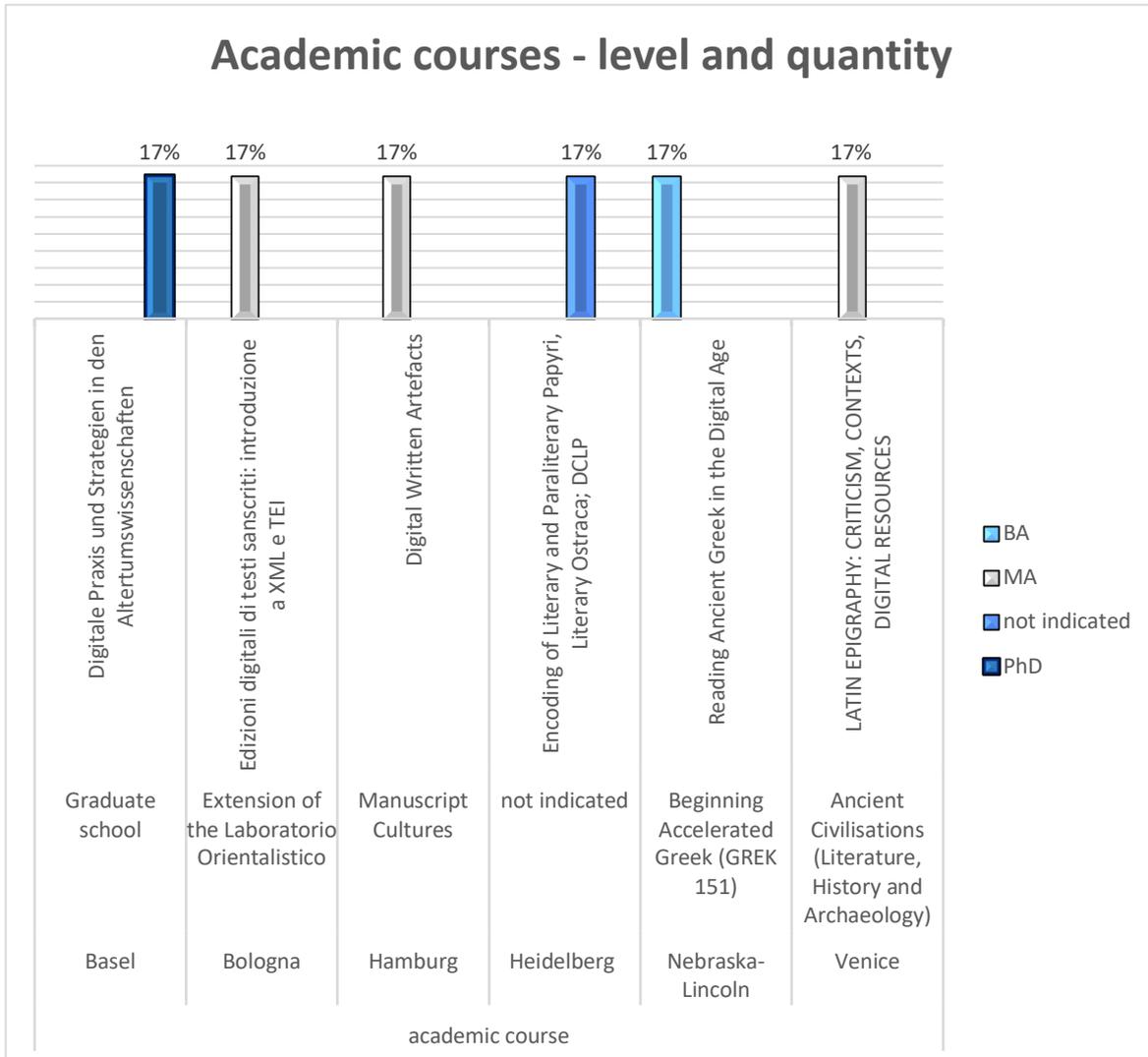


Figure 13: Academic courses - level and quantity (title, programme and university indicated).

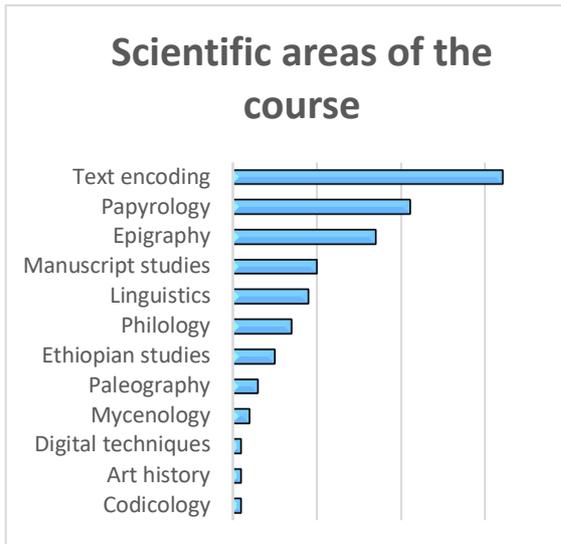


Figure 14: Scientific areas of the courses.

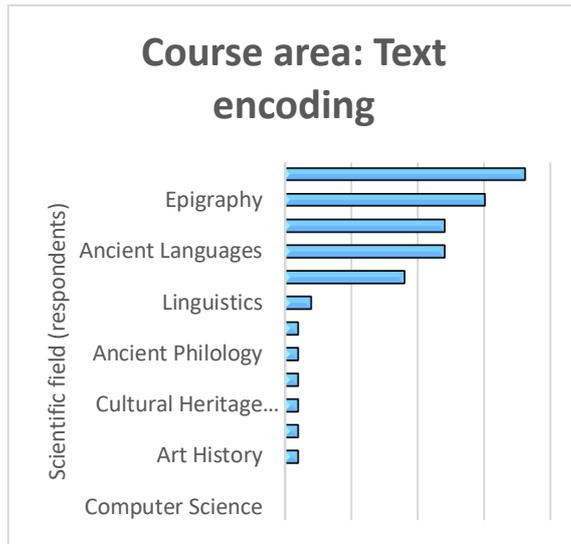


Figure 15: Text encoding – scientific fields.

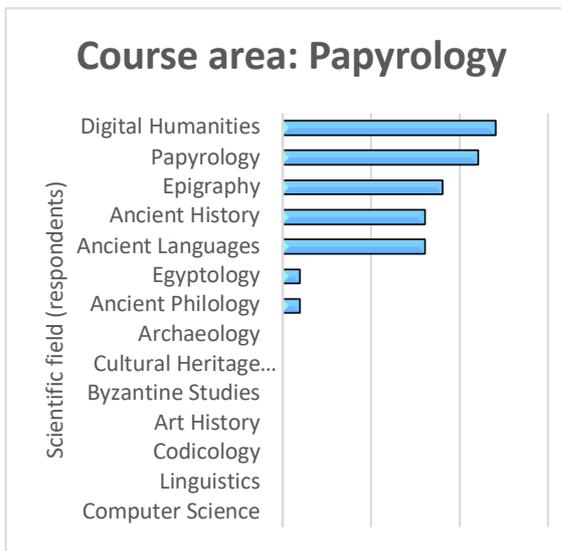


Figure 16: Papyrology – scientific fields.

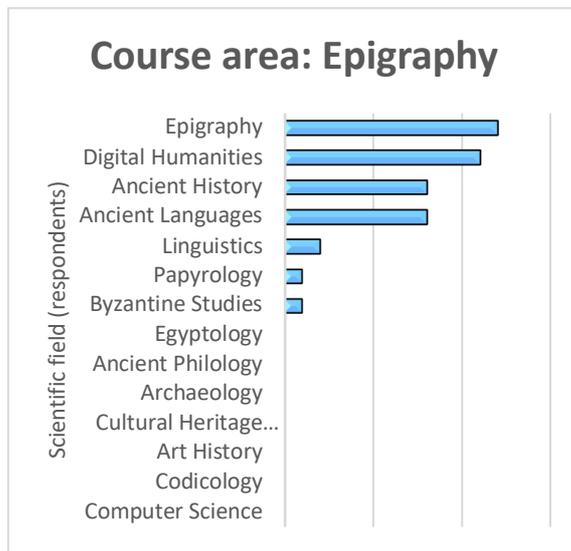


Figure 17: Epigraphy – scientific fields.

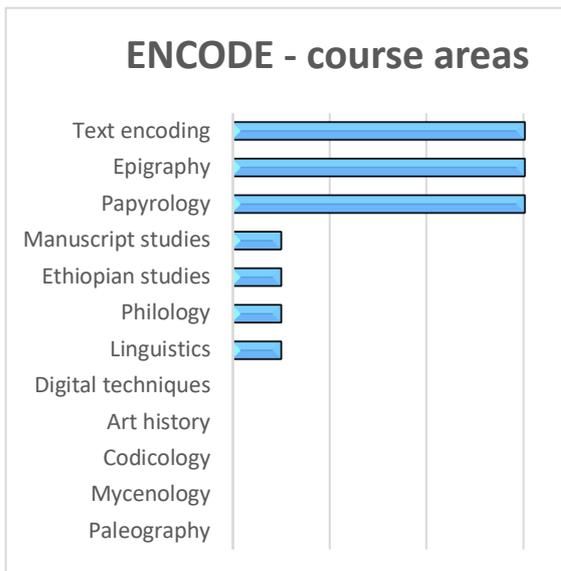


Figure 18: ENCODE – course areas.

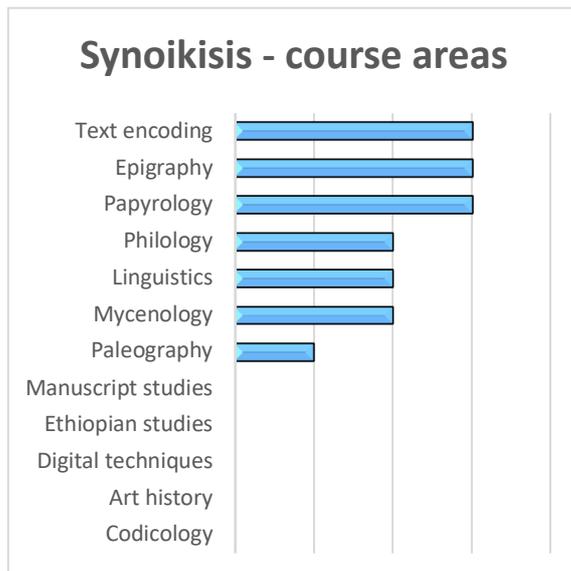


Figure 19: Synoikisis – course areas.

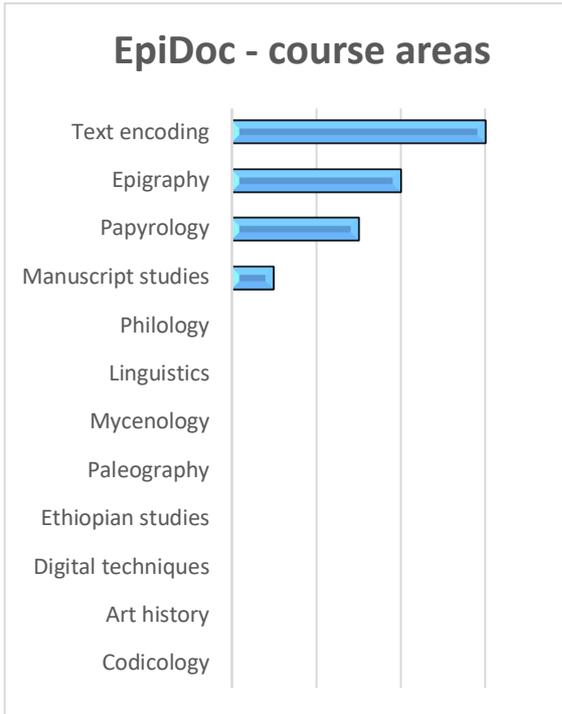


Figure 20: EpiDoc – course areas.

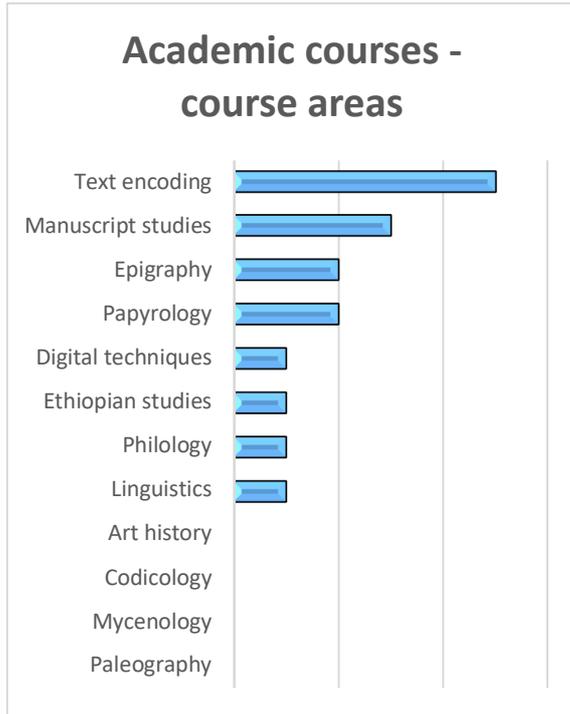


Figure 21: Academic courses – course areas.

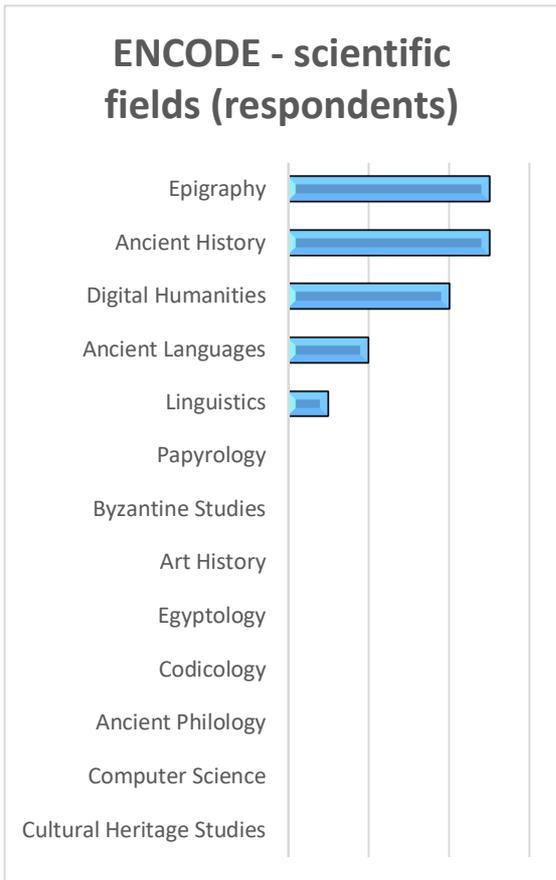


Figure 22: ENCODE - scientific fields (respondents).



Figure 23: Synoikisis - scientific fields (respondents).

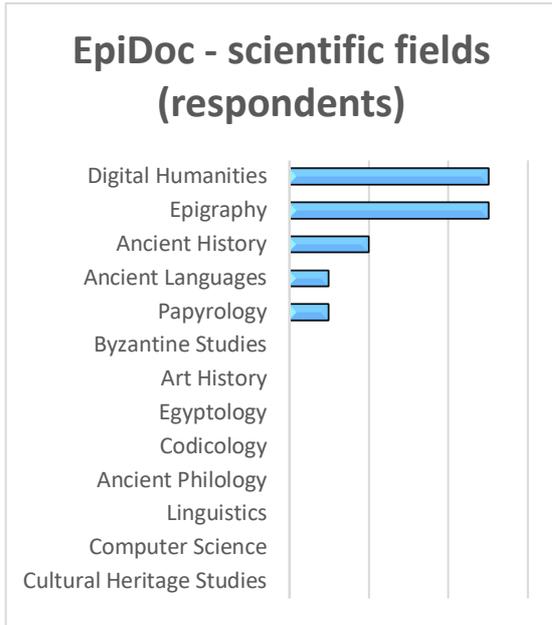


Figure 24: EpiDoc - scientific fields (respondents).

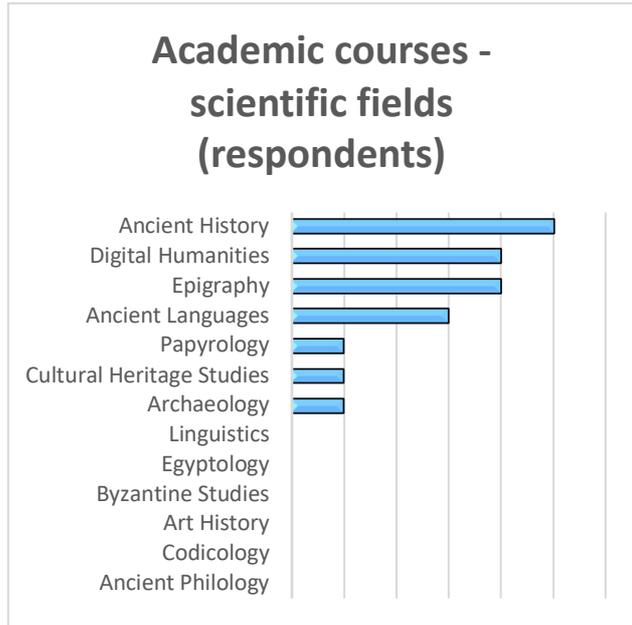


Figure 25: Academic courses - scientific fields (respondents).

### 5.3 Timing and duration (section 3.2.2)

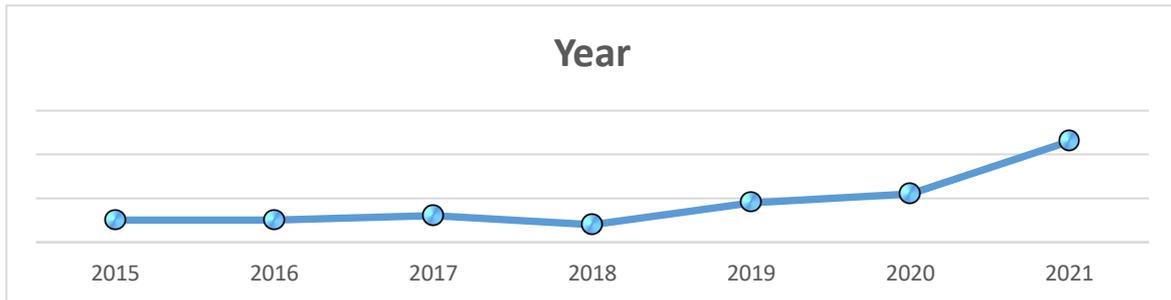


Figure 26: Year of the courses.

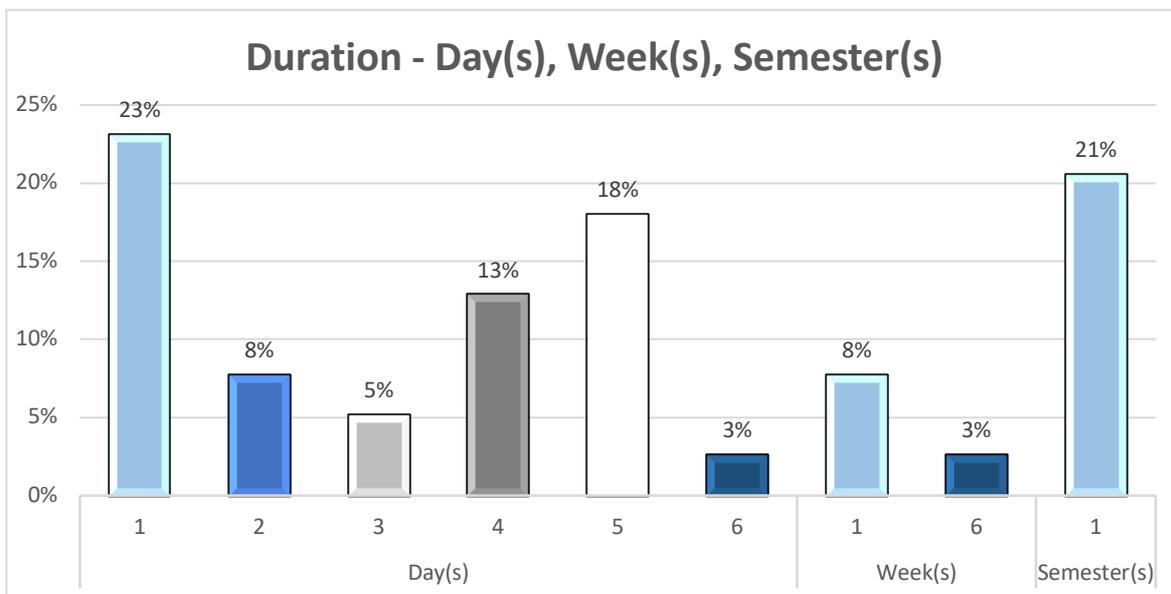


Figure 27: Course duration.

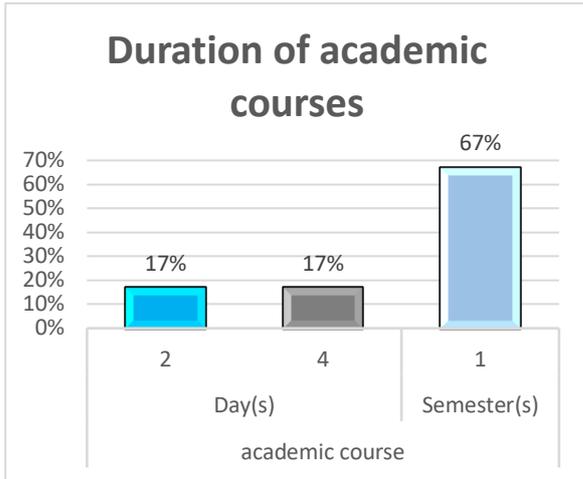


Figure 28: Duration of academic courses

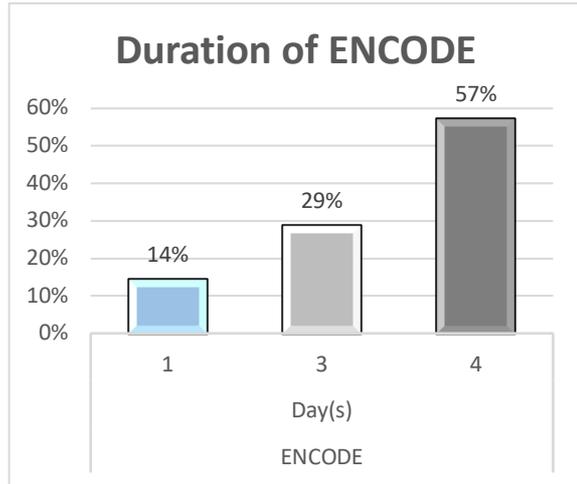


Figure 29: Duration of ENCODE.

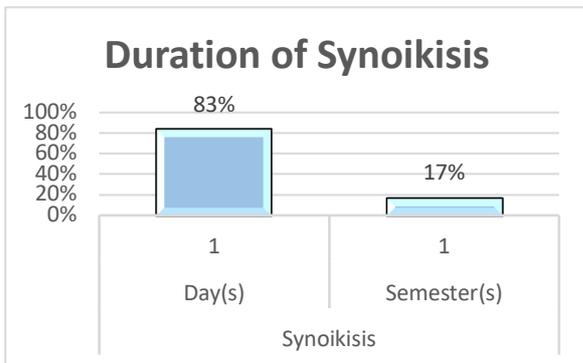


Figure 30: Duration of Synoikisis.

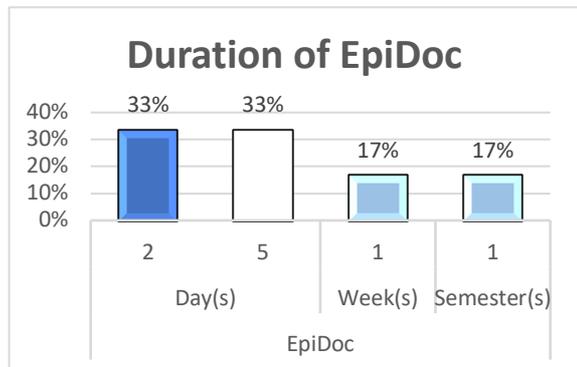


Figure 31: Duration of EpiDoc.

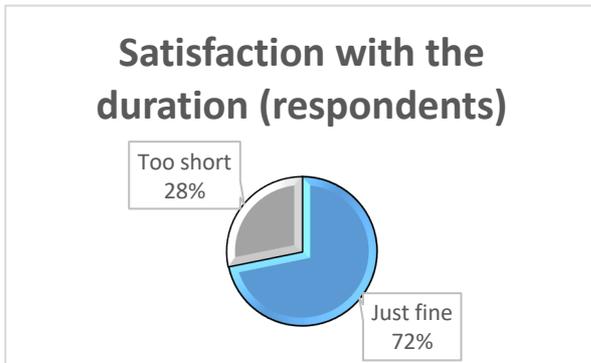


Figure 32: Satisfaction with duration (resp.).

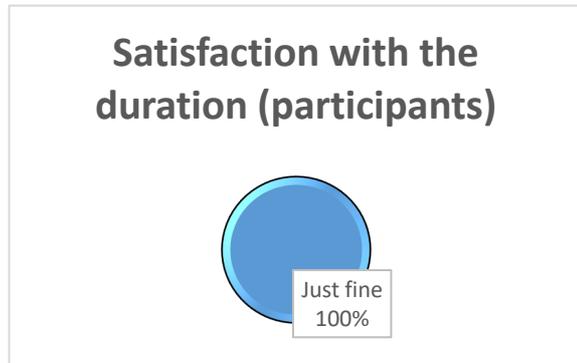


Figure 33: Satisfaction with duration (part.).

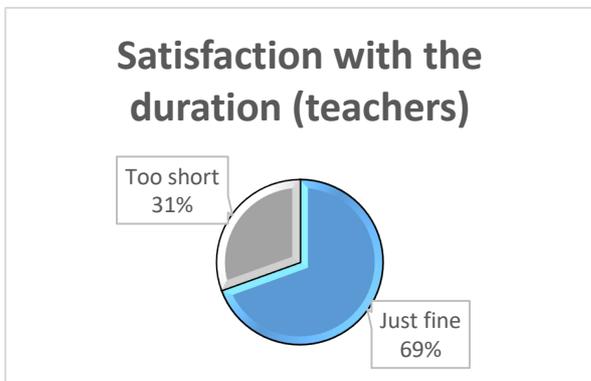


Figure 34: Satisfaction with duration (teachers).

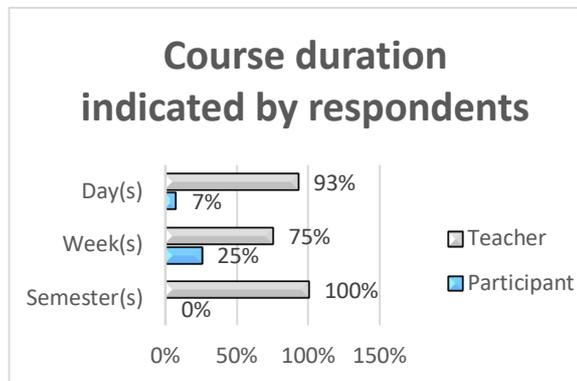


Figure 35: Course duration (teachers, part.).

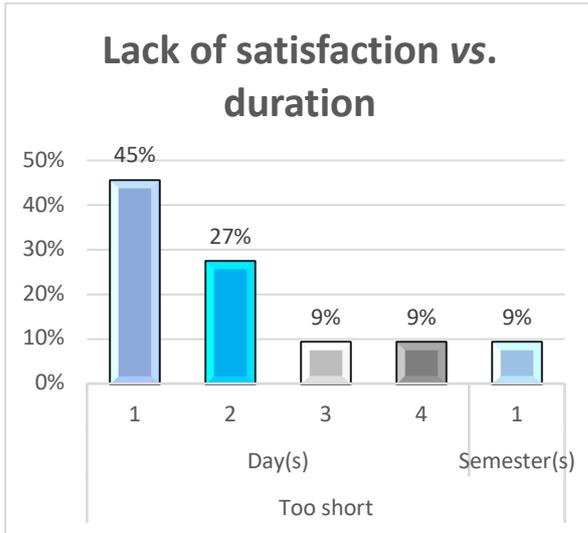


Figure 36: Lack of satisfaction vs. duration.

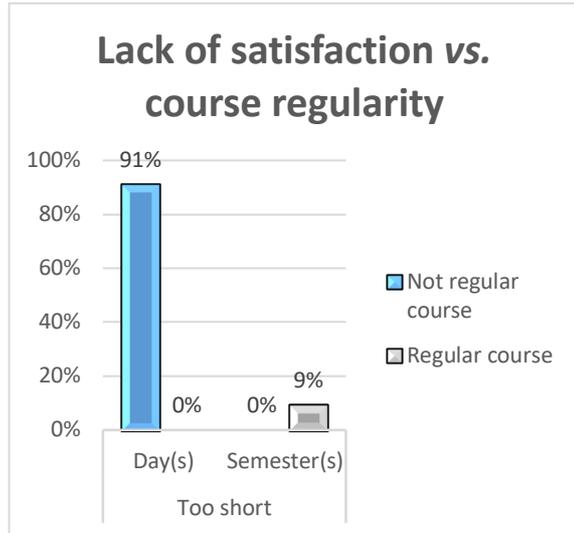


Figure 37: Lack of satisfaction vs. regularity.

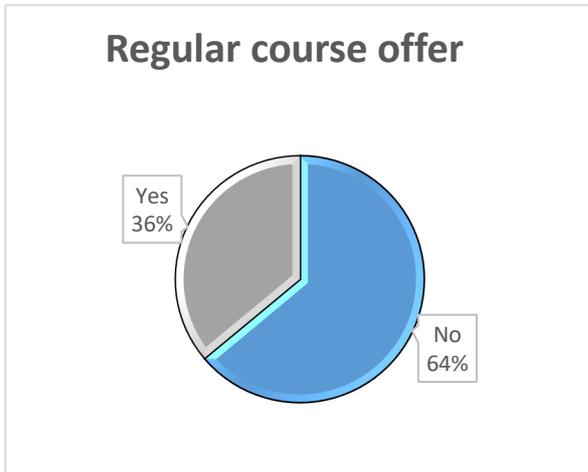


Figure 38: Regular course offer.

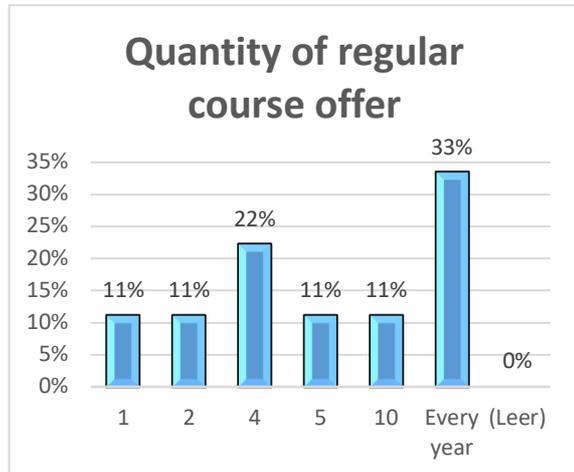


Figure 39: Quantity of regular course offer.

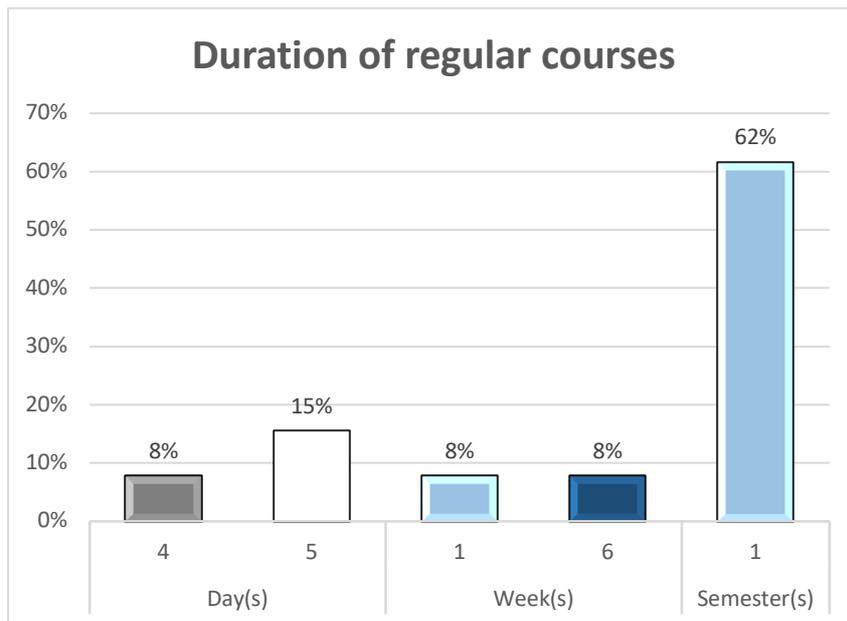


Figure 40: Duration of regular courses.

5.4 Teaching approaches: Format, materials, methods (section 3.2.3)

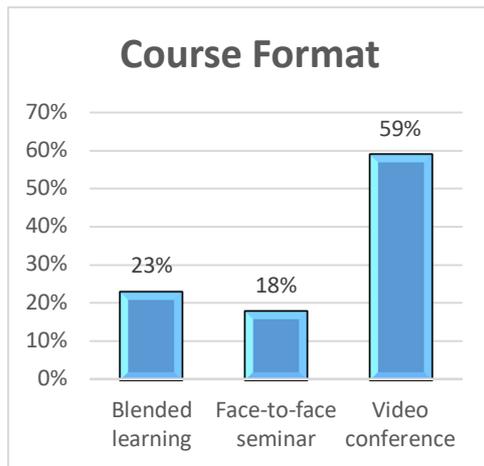


Figure 41: Course format.

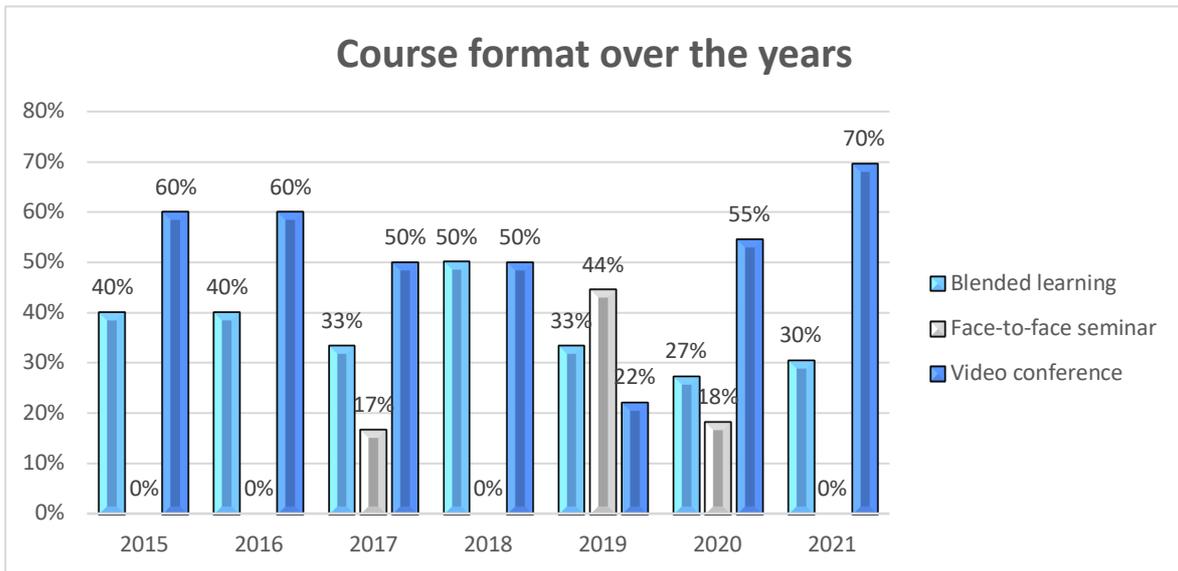


Figure 42: Course format over the years.

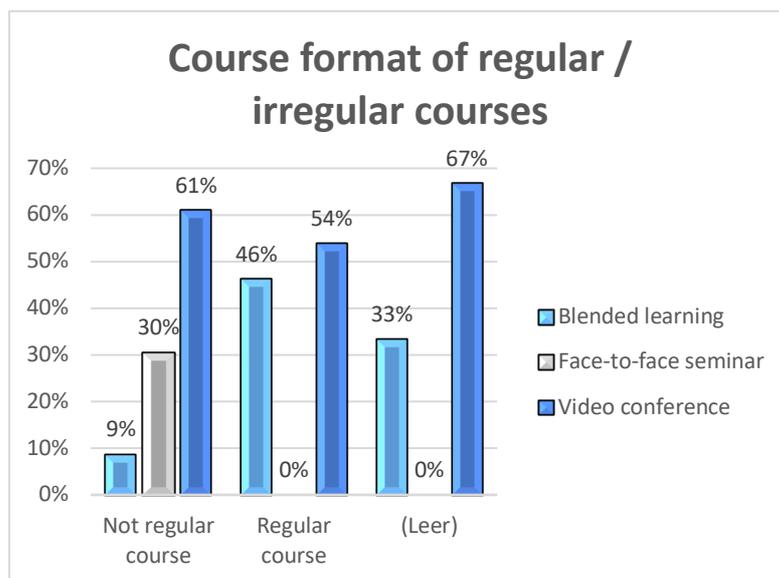


Figure 43: Course format of regular / irregular courses.

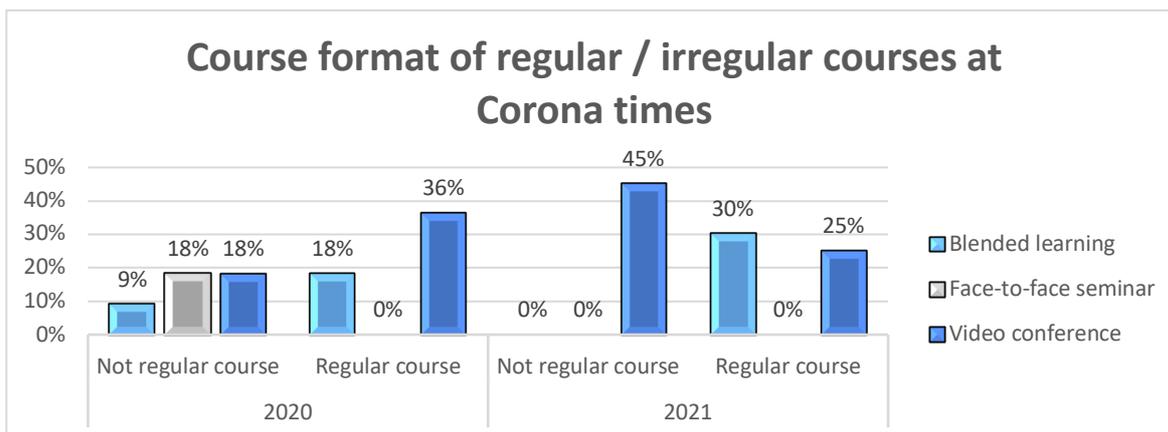


Figure 44: Course format of regular / irregular courses at Corona times.

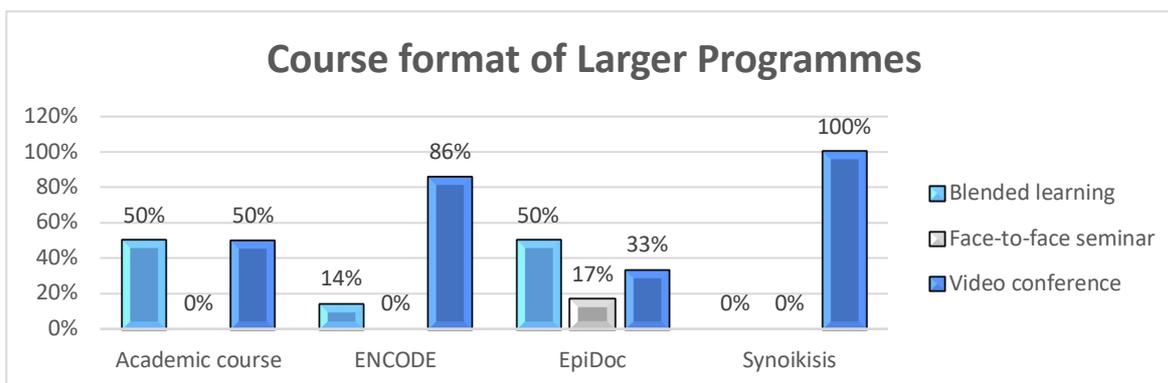


Figure 45: Course format of Larger Programmes.

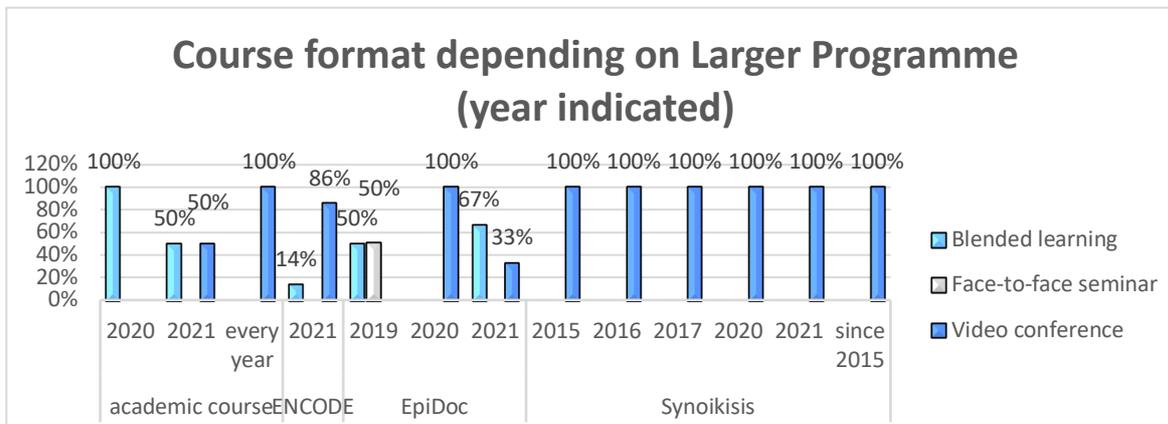


Figure 46: Course format depending on Larger Programme (year indicated).

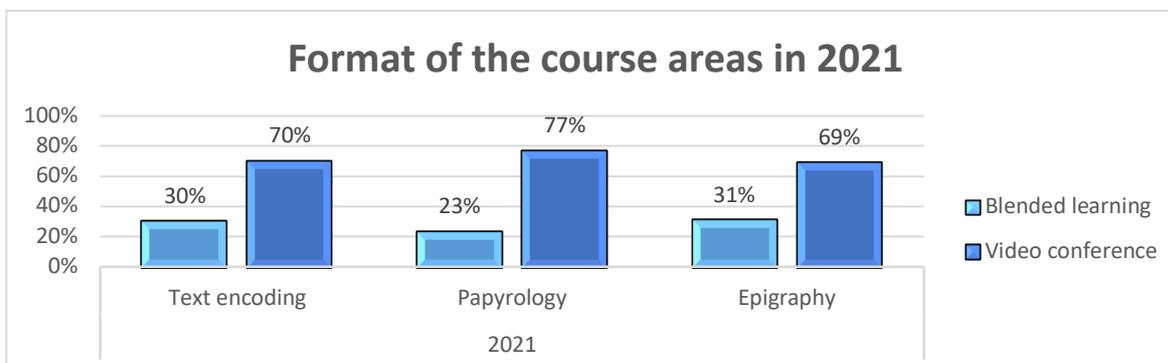


Figure 47: Format of the course areas in 2021.

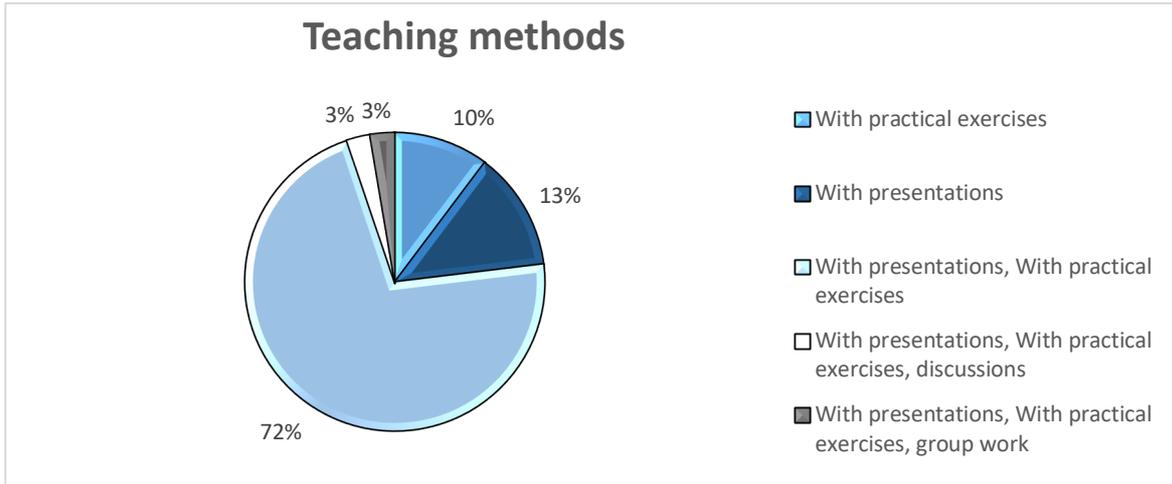


Figure 48: Teaching methods.

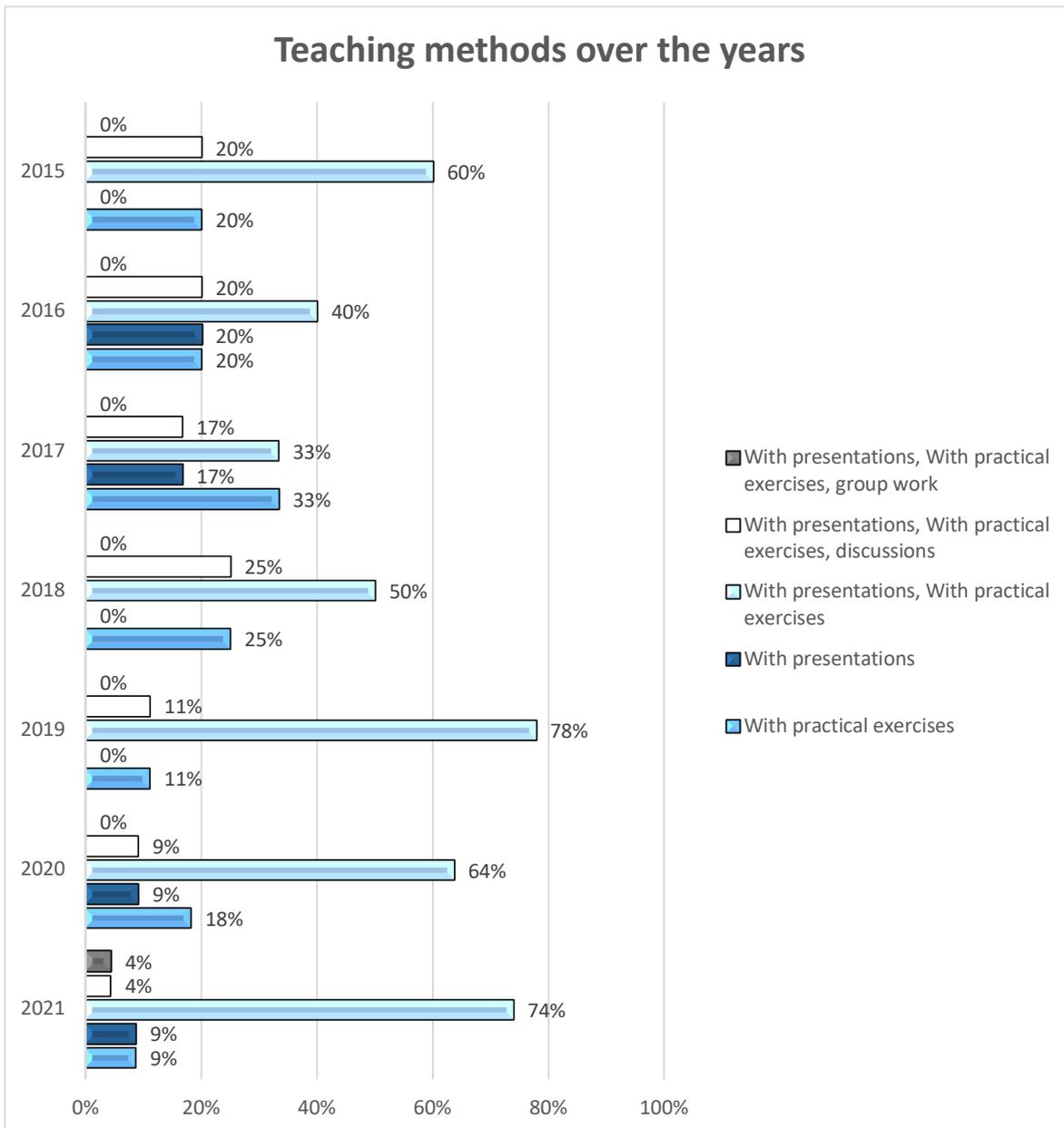


Figure 49: Teaching methods over the years.

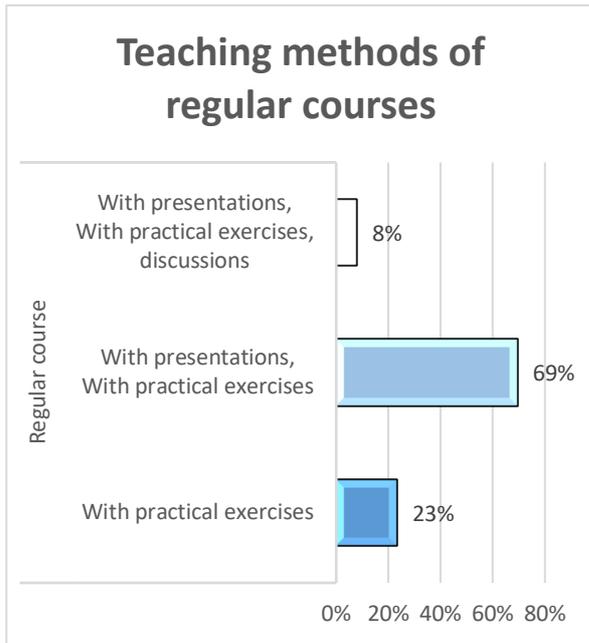


Figure 50: Methods of regular courses.

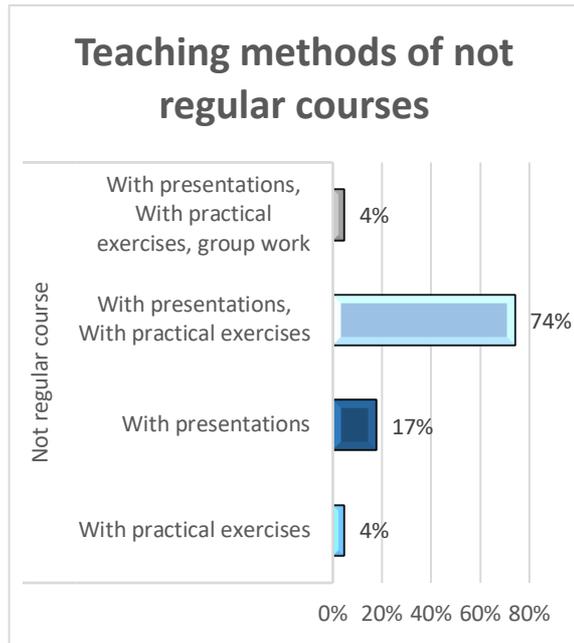


Figure 51: Methods of not regular courses.

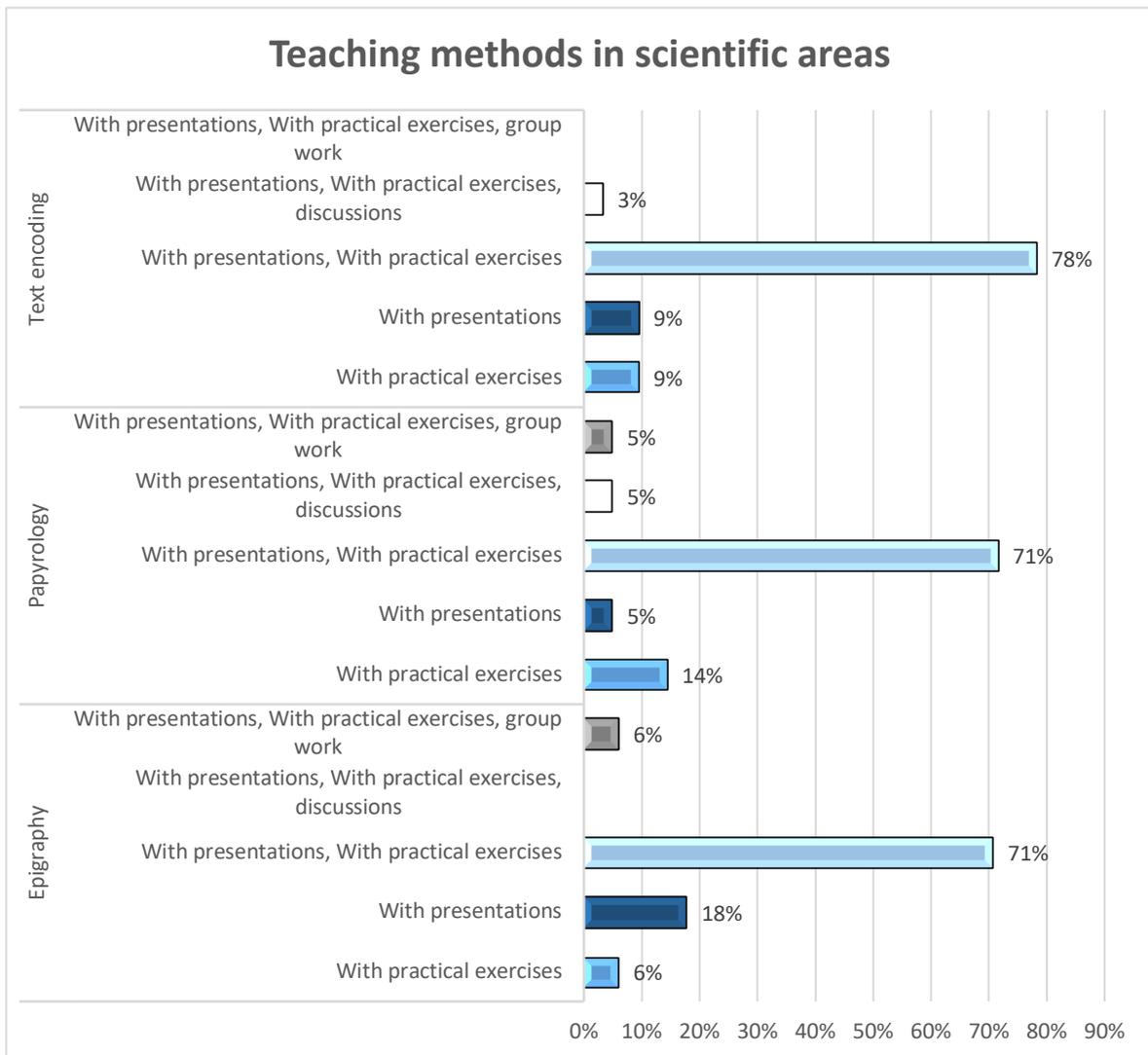


Figure 52: Teaching methods in scientific areas.

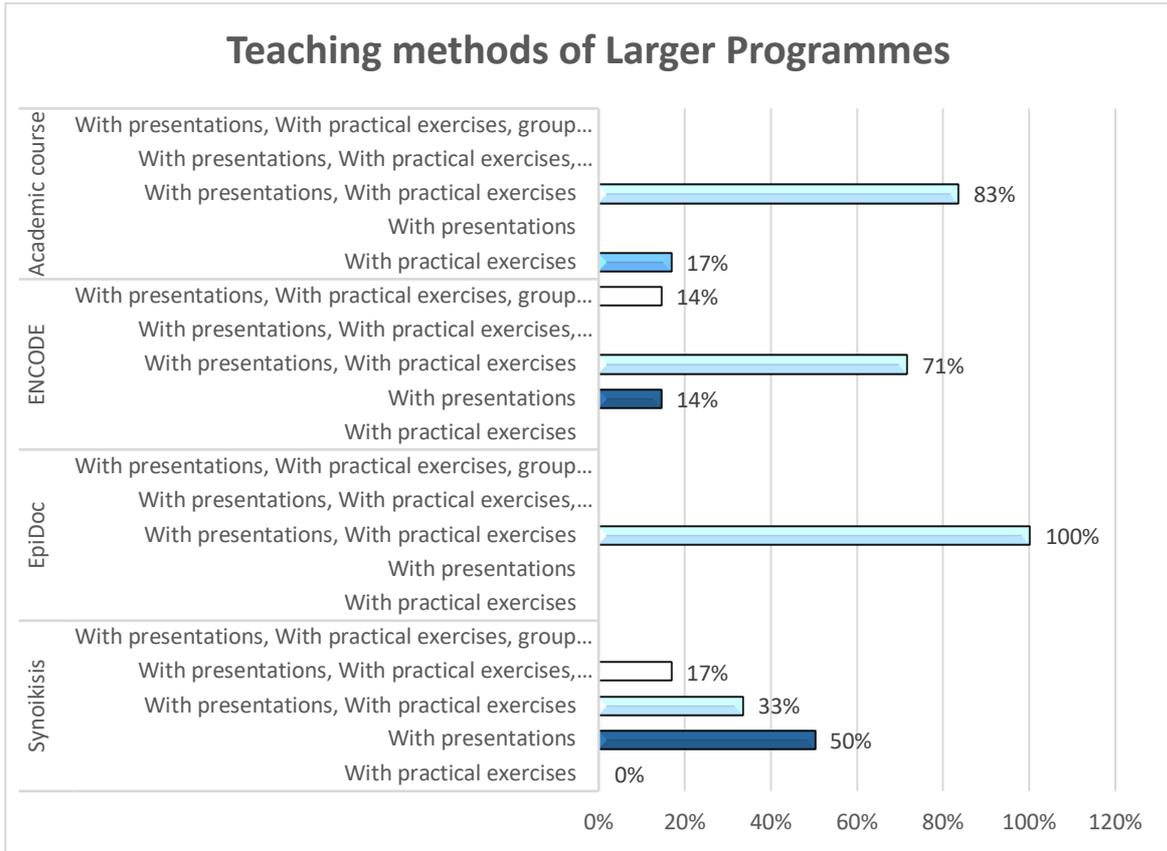


Figure 53: Teaching methods of Larger Programmes.

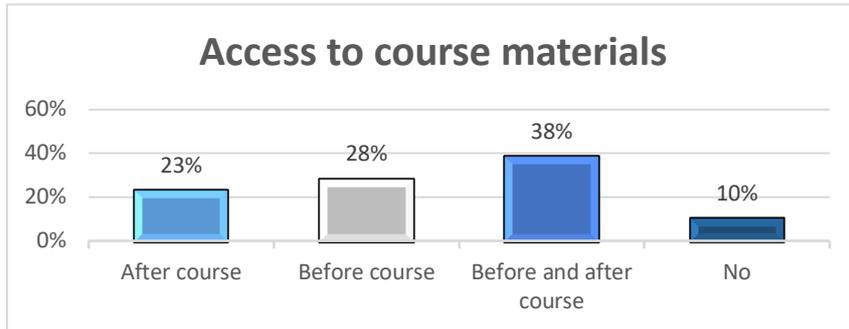


Figure 54: Access to course materials.

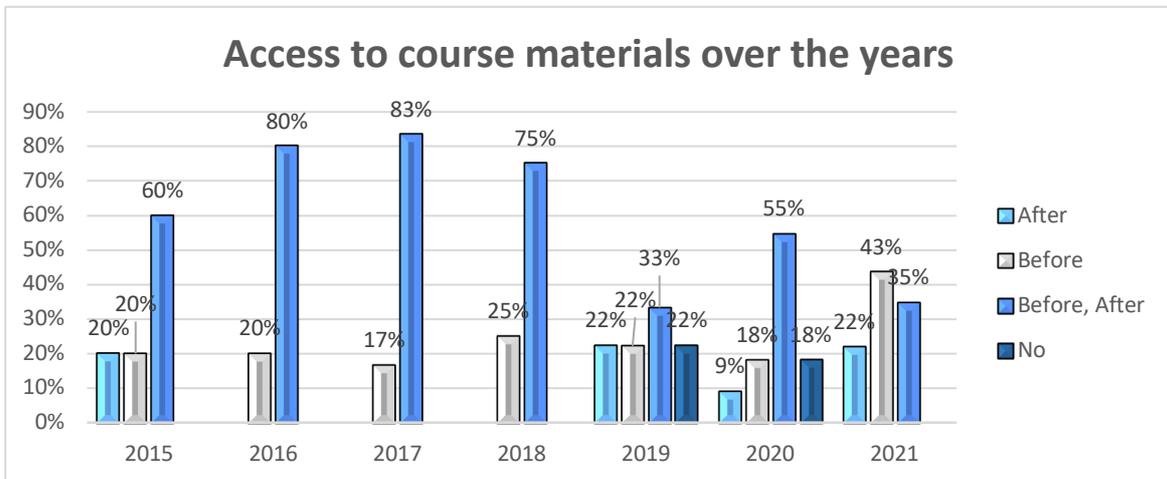


Figure 55: Access to course materials over the years.

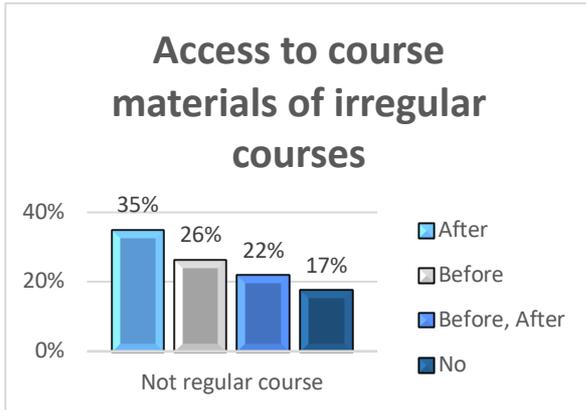


Figure 56: Access to materials (irregular course).

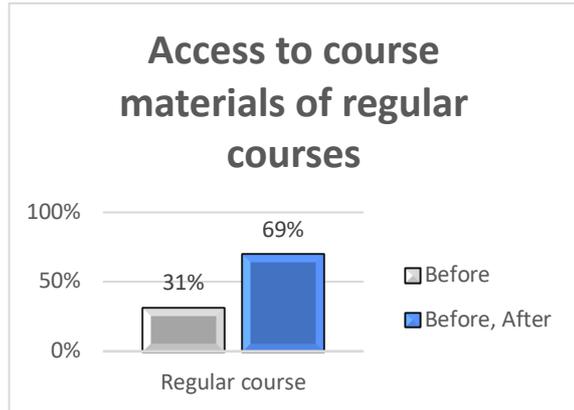


Figure 57: Access to materials (regular course).

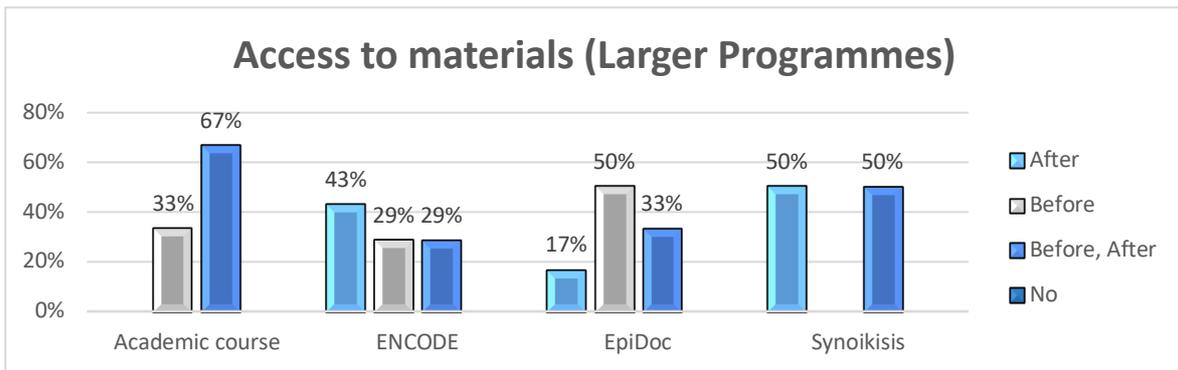


Figure 58: Access to materials (Larger Programmes).

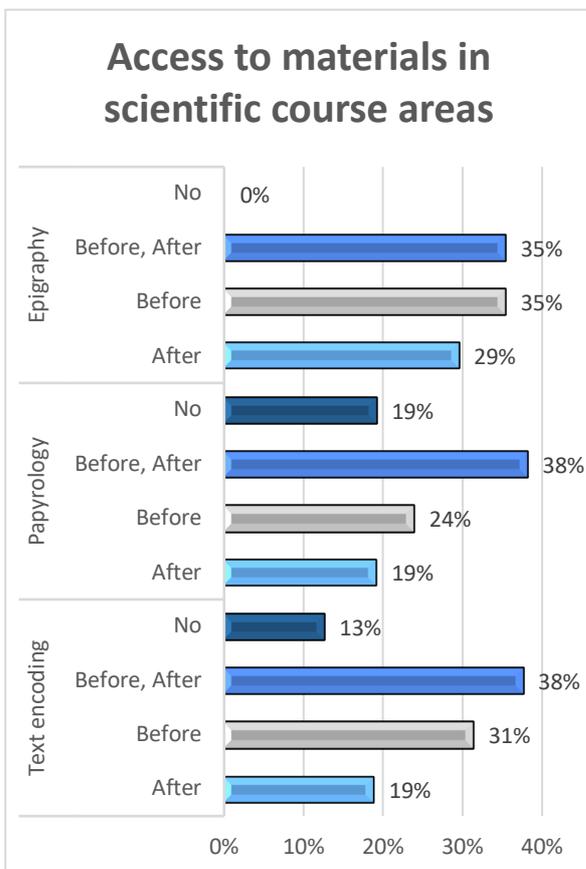


Figure 59: Access to materials (scientific areas).

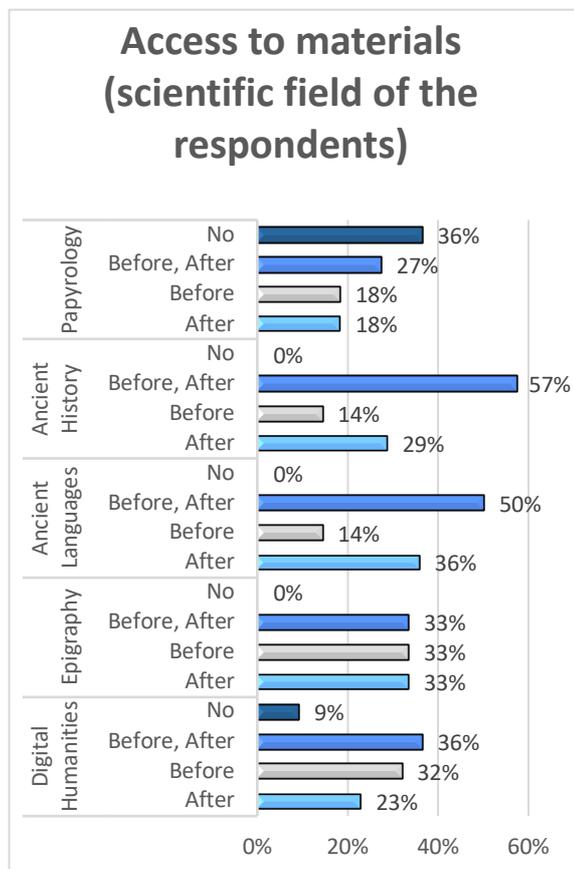


Figure 60: Access to materials (scientific field).

5.5 Competences and skills (section 3.2.4)

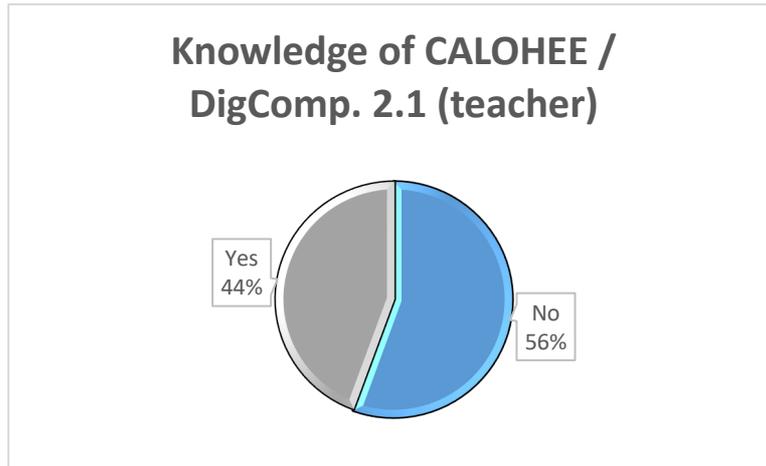


Figure 61: Knowledge of CALOHEE / DigComp. 2.1 (teachers).

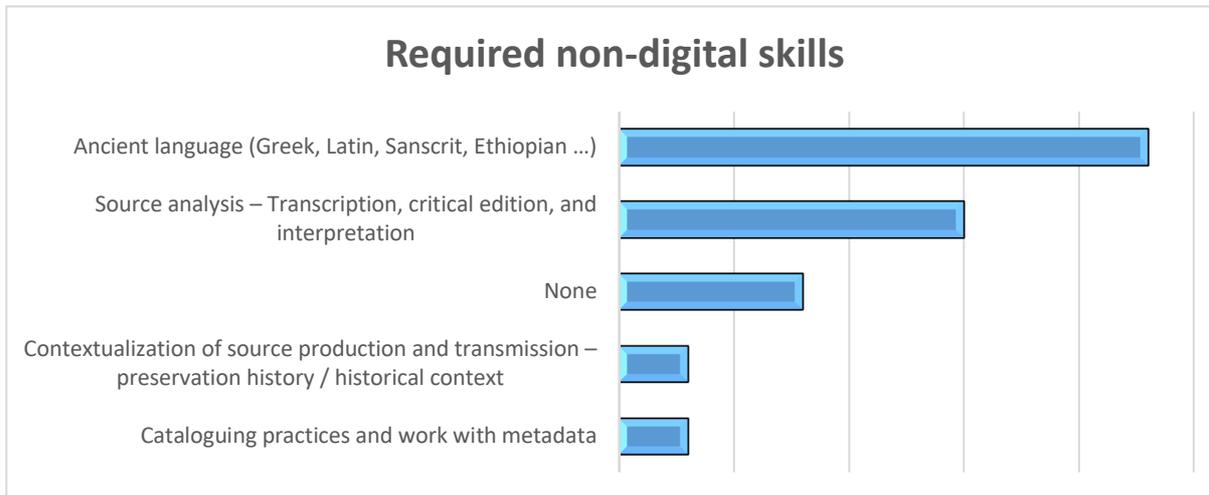


Figure 62: Required non-digital skills.

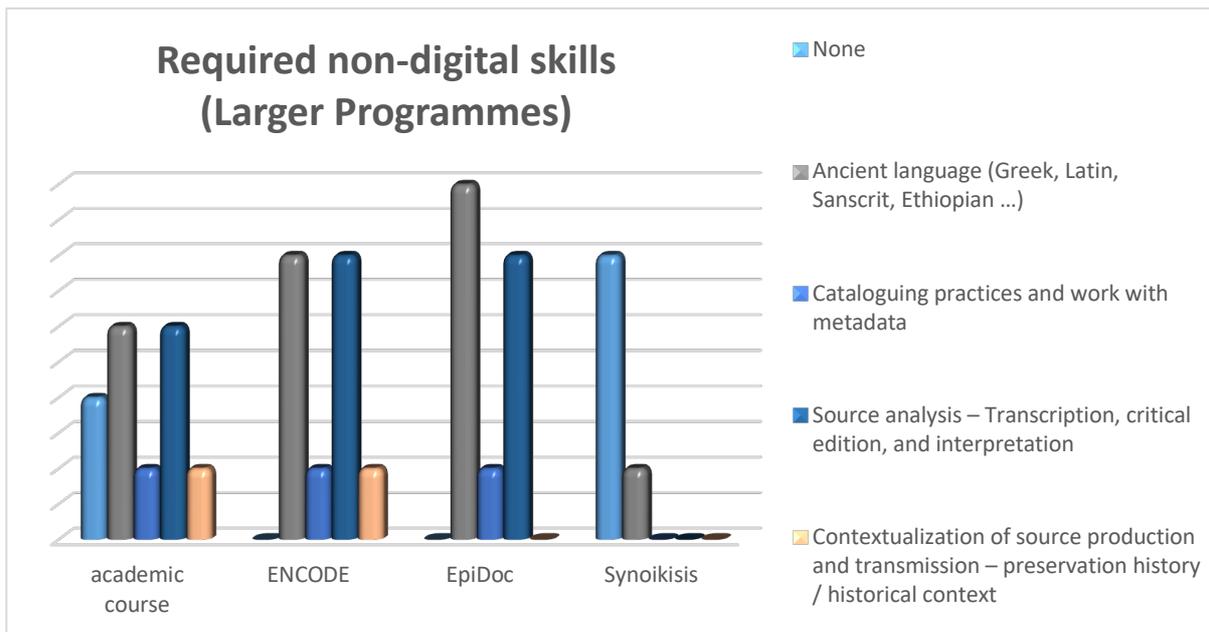


Figure 63: Required non-digital skills (Larger Programmes).

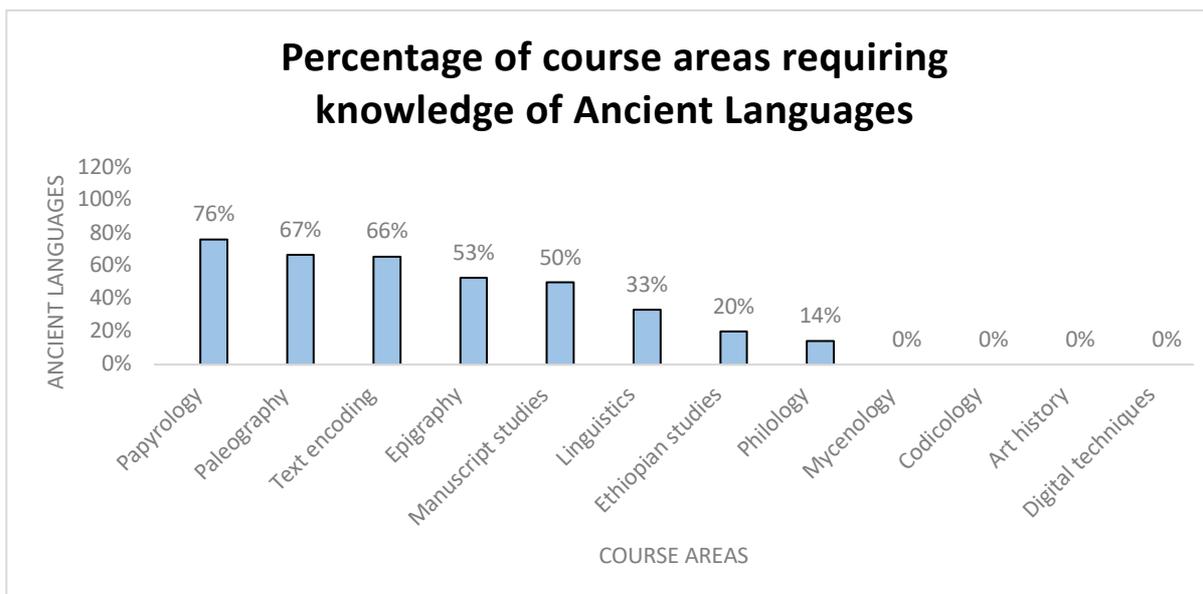


Figure 64: Percentage of course areas requiring knowledge of Ancient languages.

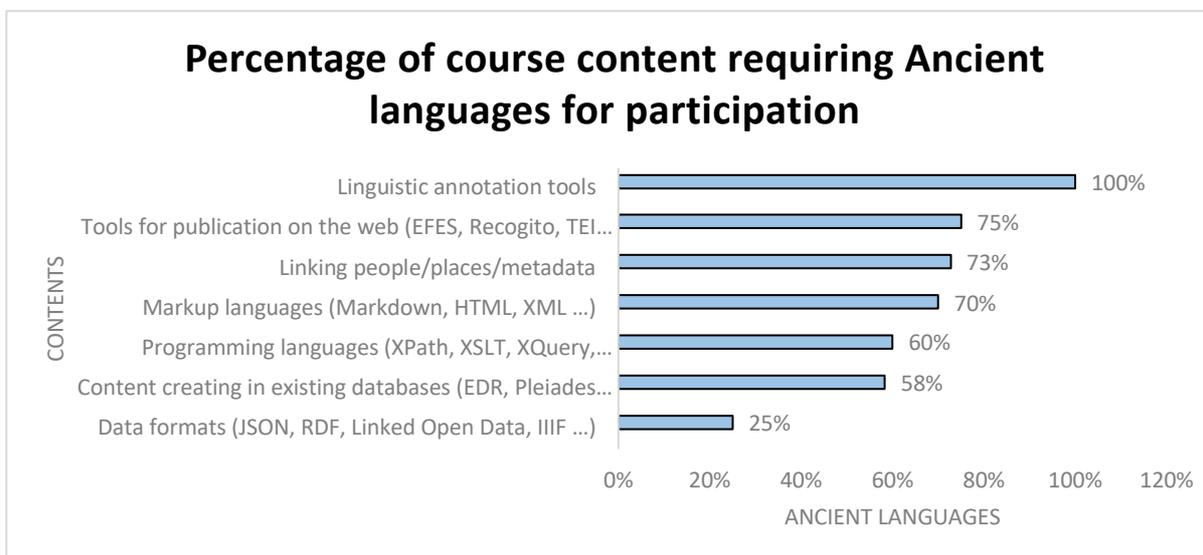


Figure 65: Percentage of course content requiring Ancient Languages for participation.

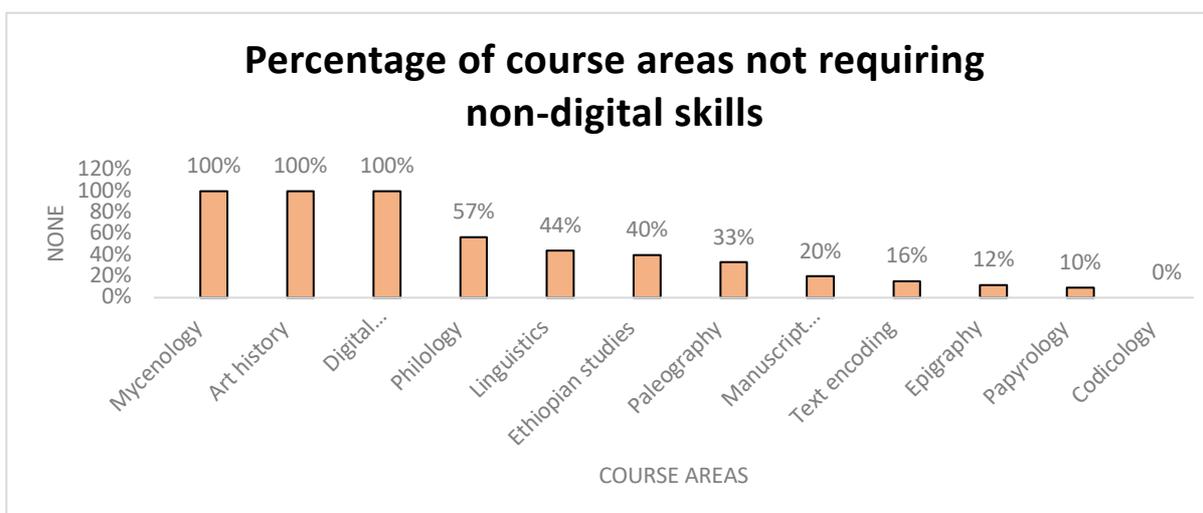


Figure 66: Percentage of course areas not requiring non-digital skills

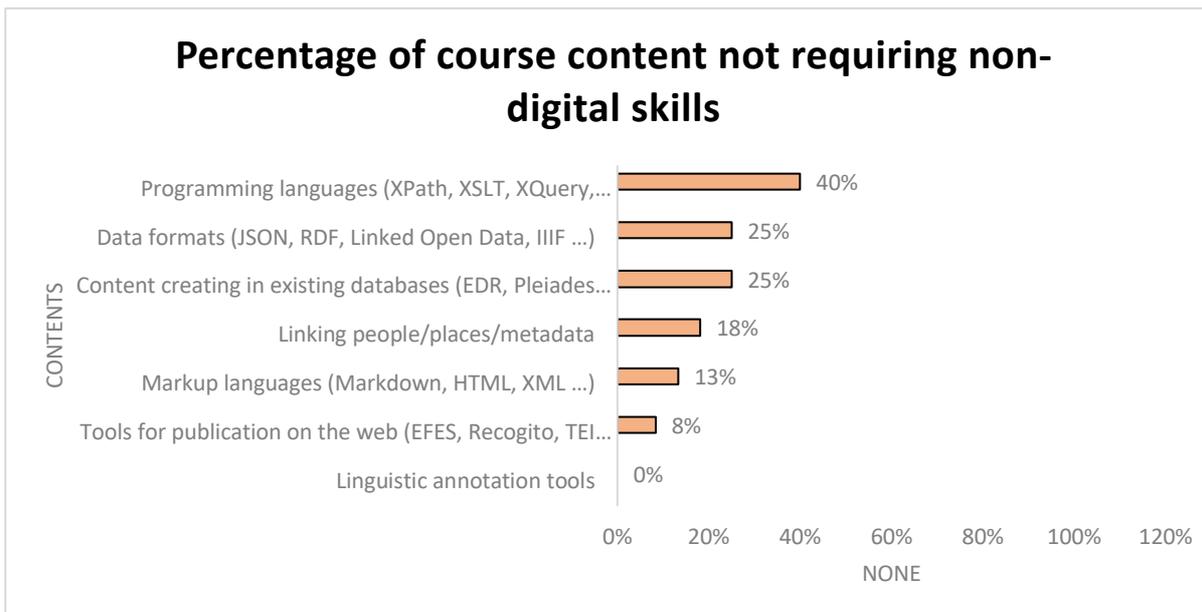


Figure 67: Percentage of course content not requiring non-digital skills.

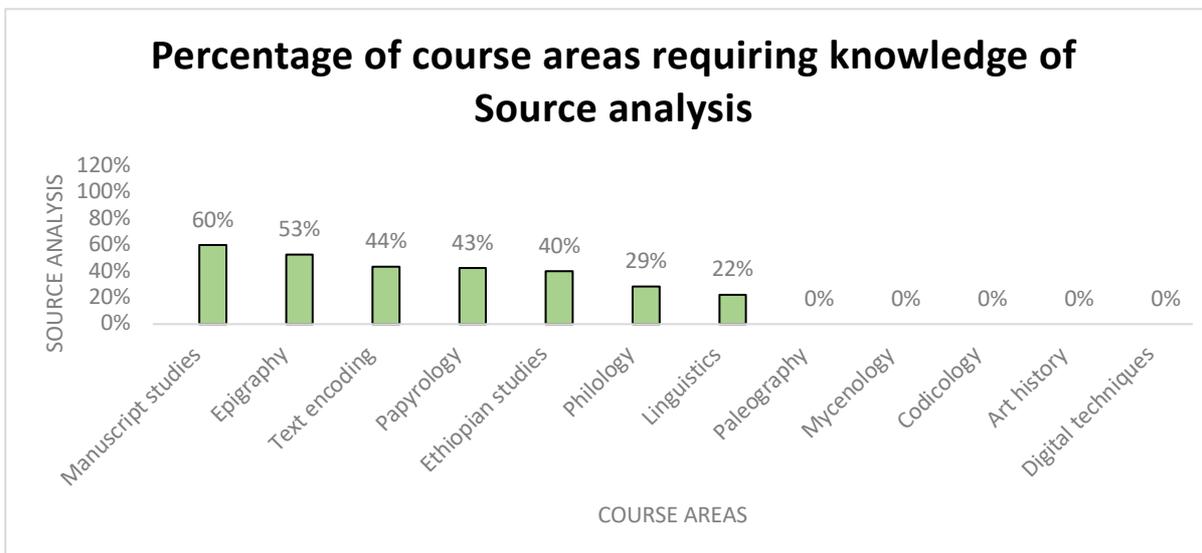


Figure 68: Percentage of course areas requiring knowledge of Source analysis.

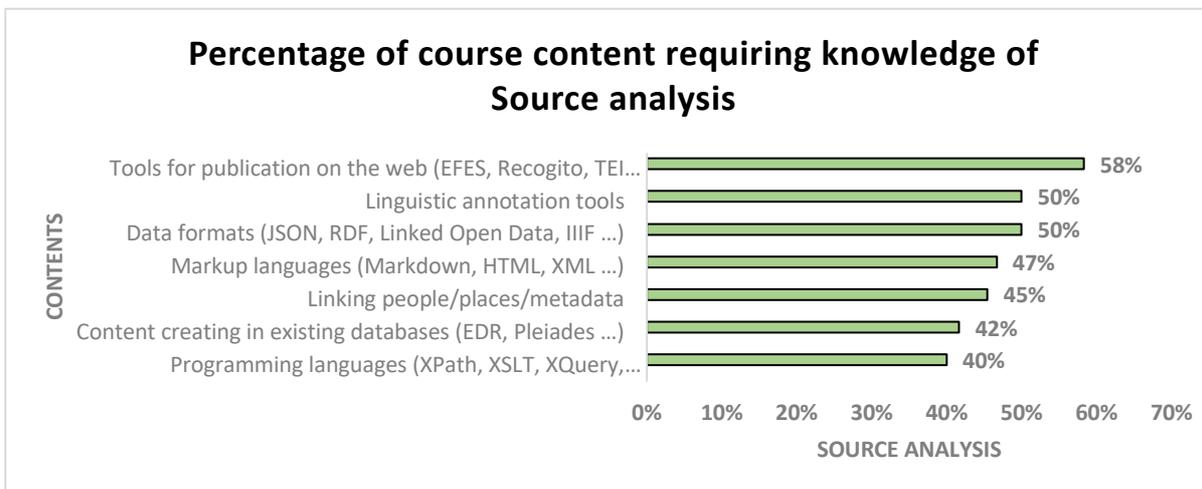


Figure 69: Percentage of course content requiring knowledge of Source analysis.

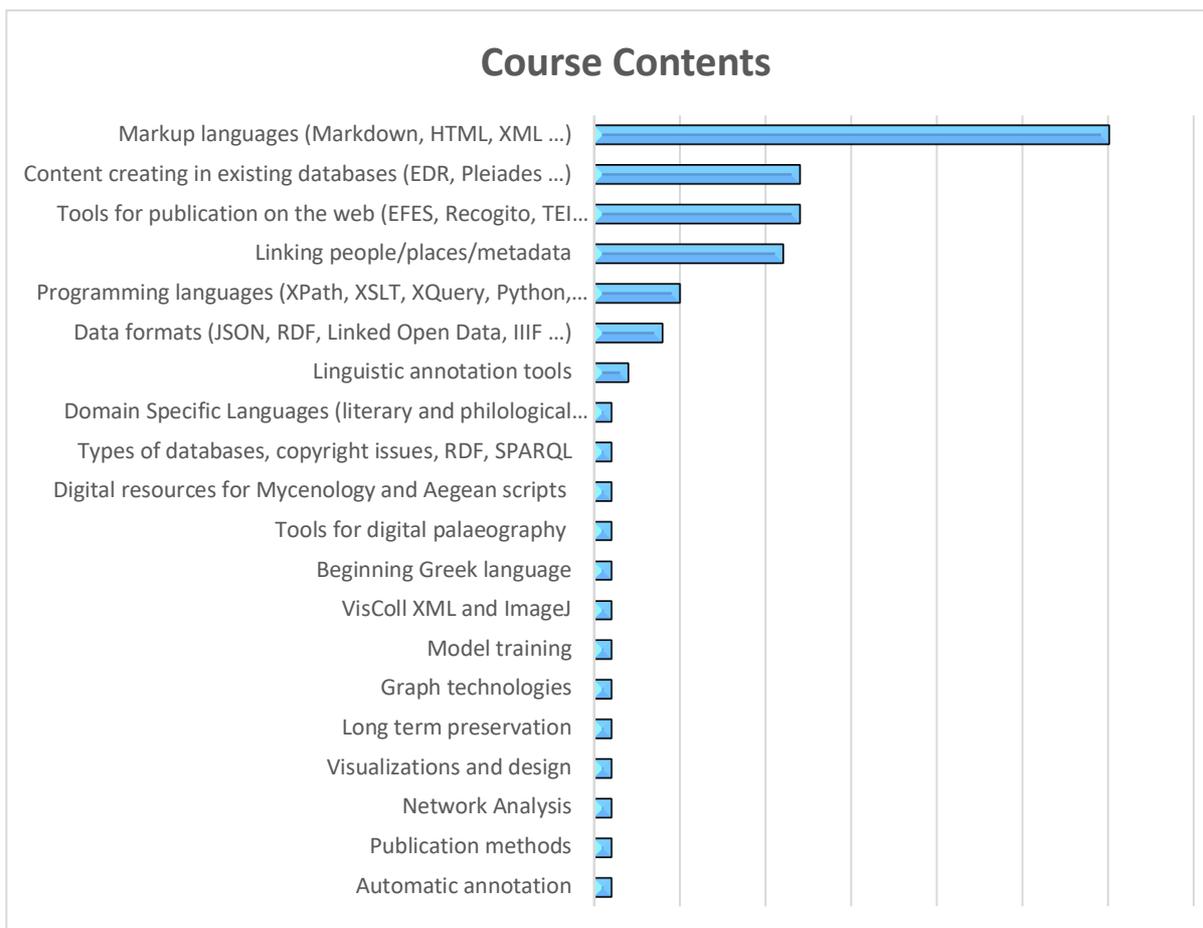


Figure 70: Course contents.

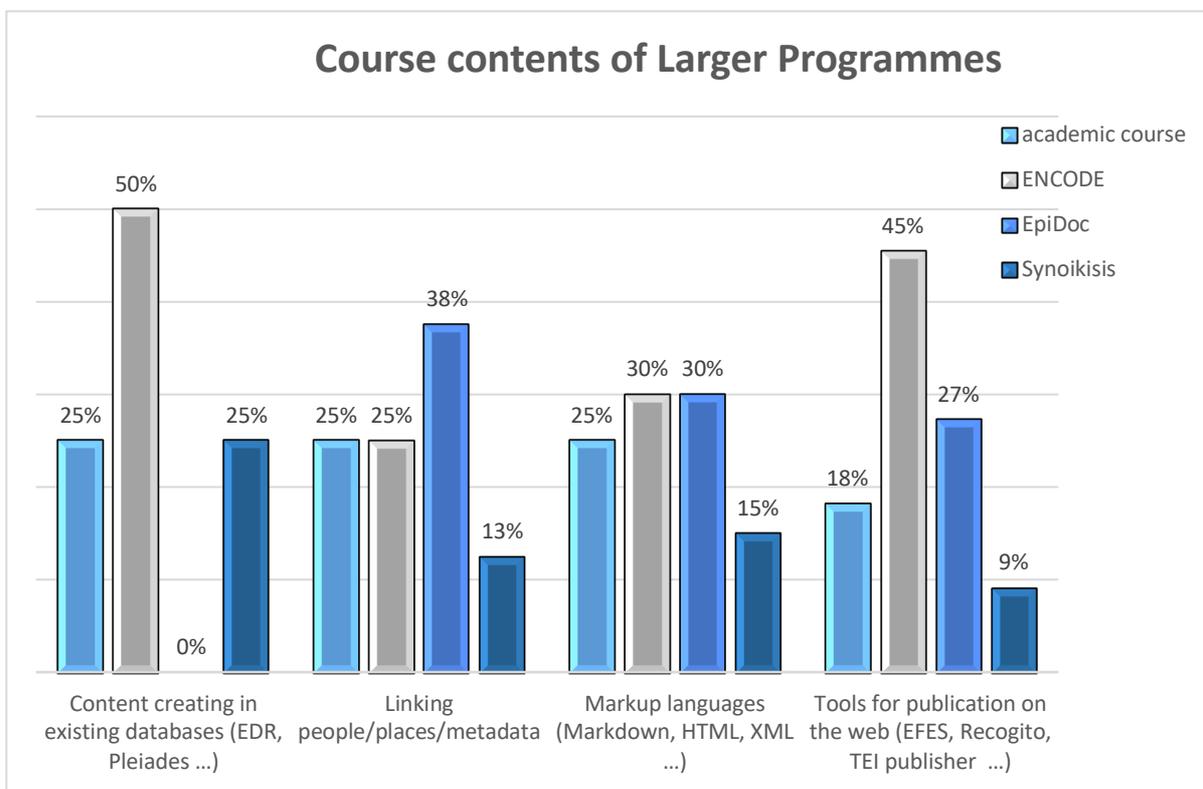


Figure 71: Course contents of Larger Programmes.

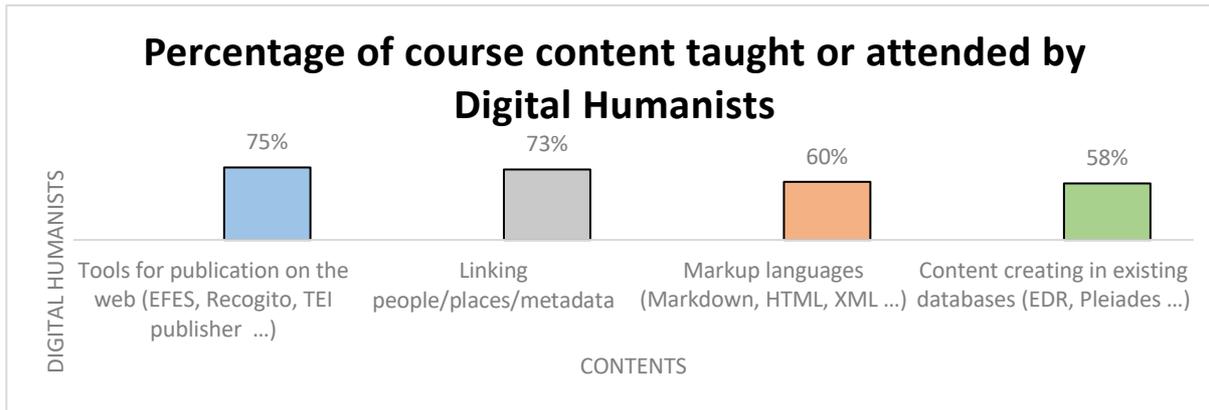


Figure 72: Percentage of content taught or attended by Digital Humanists.

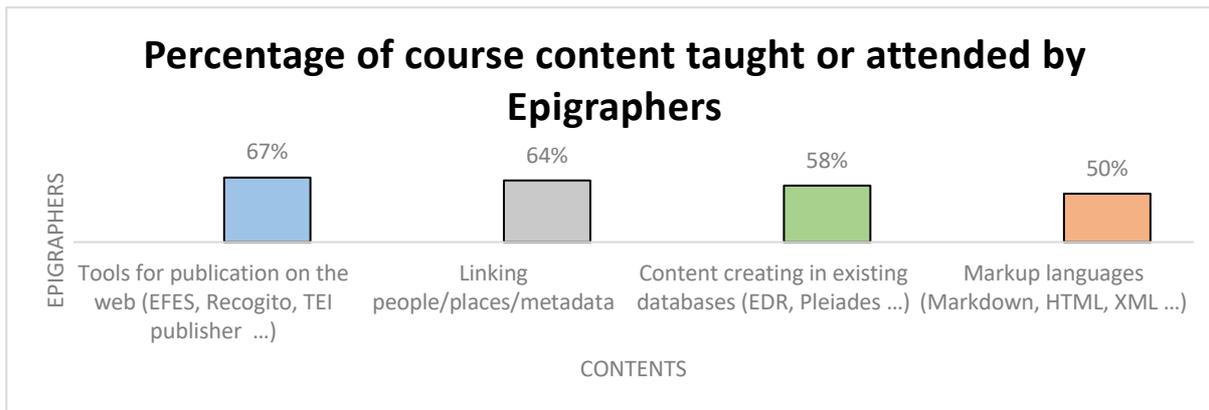


Figure 73: Percentage of content taught or attended by Epigraphers.

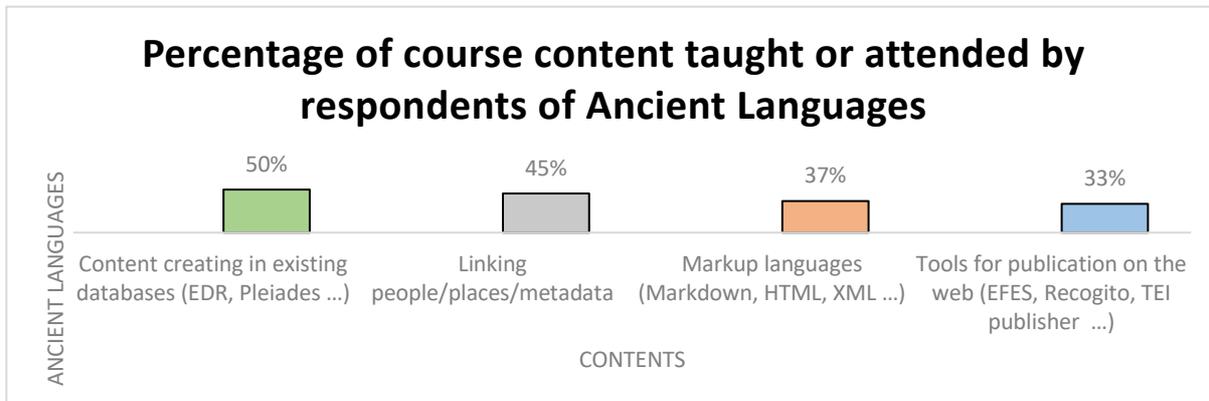


Figure 74: Percentage of content taught or attended by respondents of Ancient Languages.

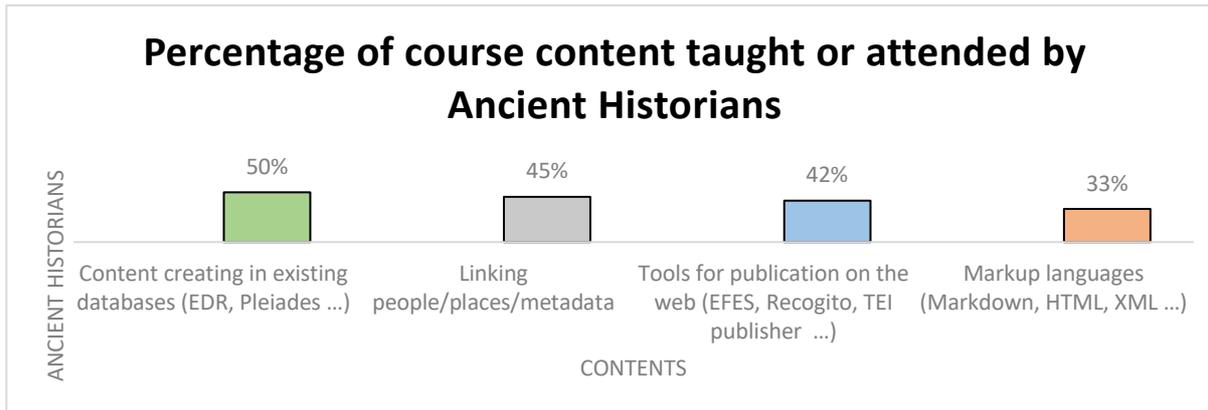


Figure 75: Percentage of content taught or attended by Ancient Historians.

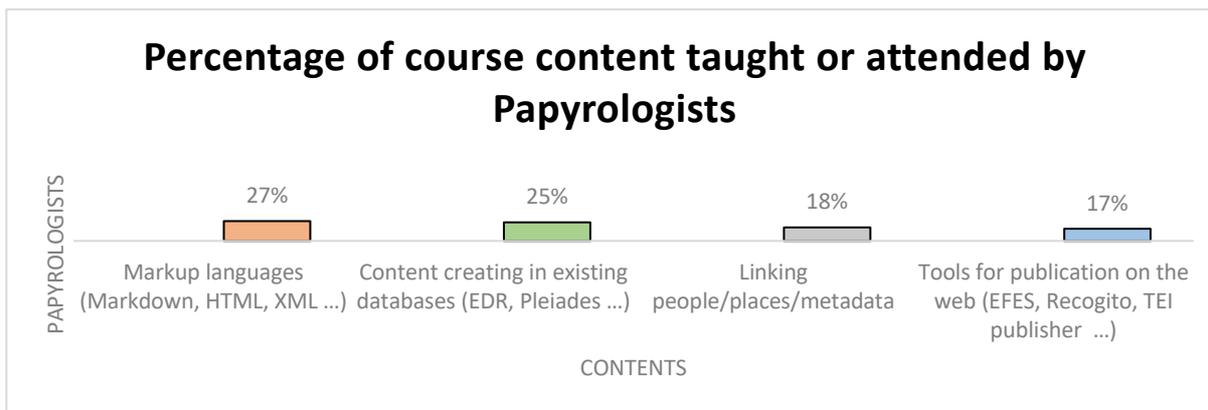


Figure 76: Percentage of content taught or attended by Papyrologists.

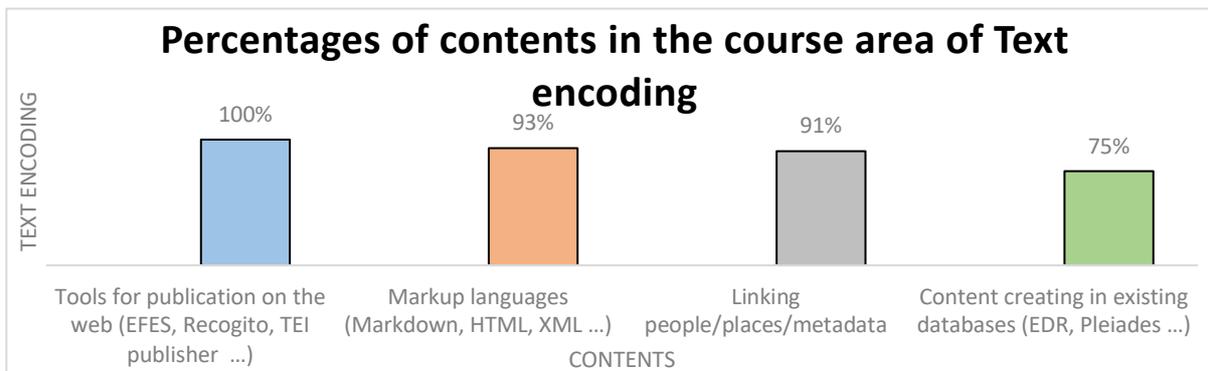


Figure 77: Percentages of contents in the course area of Text encoding.

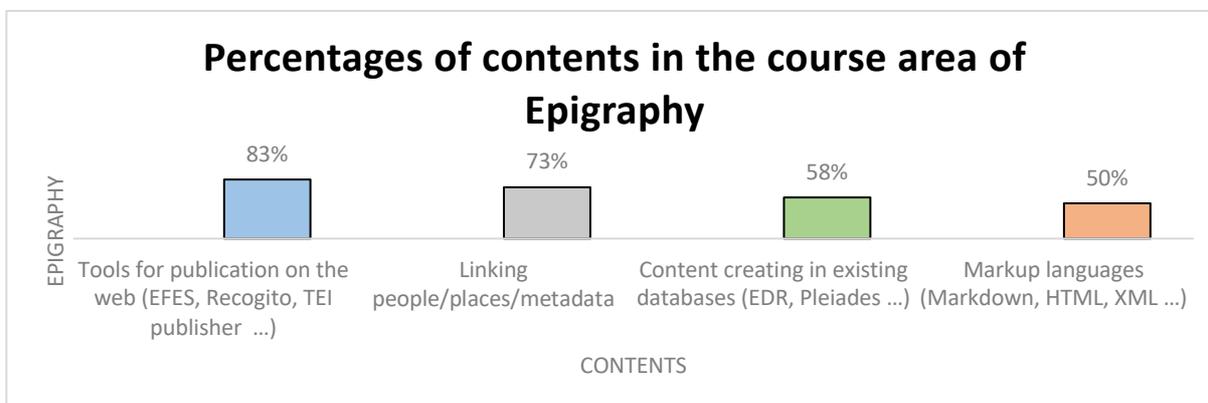


Figure 78: Percentages of contents in the course area of Epigraphy.

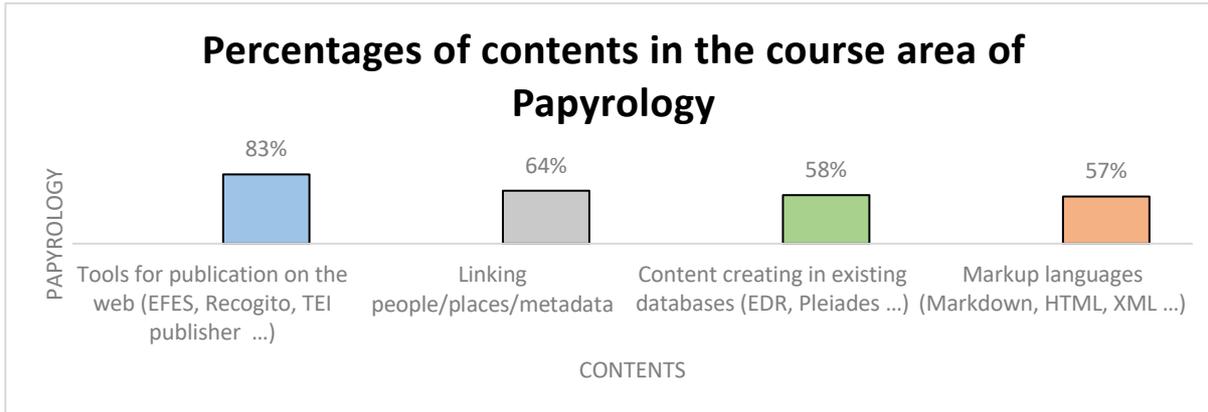


Figure 79: Percentage of contents in the course area of Papyrology.

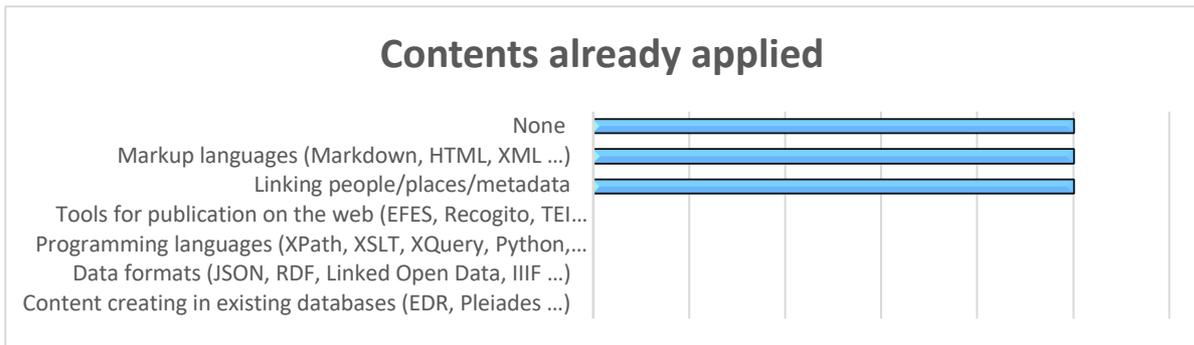


Figure 80: Contents already applied by the participants.

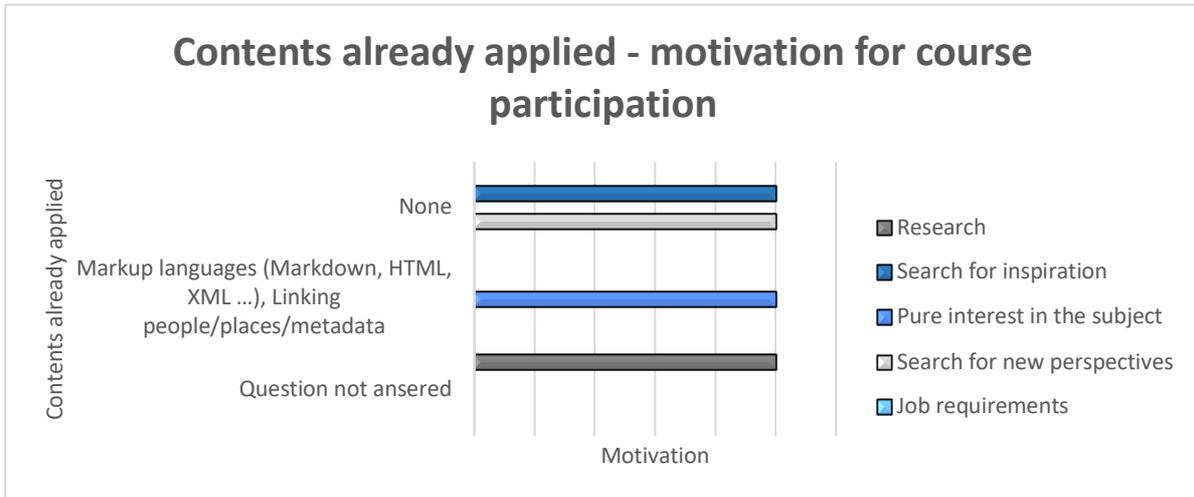


Figure 81: Contents already applied - motivation for course participation.



Figure 82: Reasons for skipping (initial level).



Figure 83: Reasons for skipping (final level).

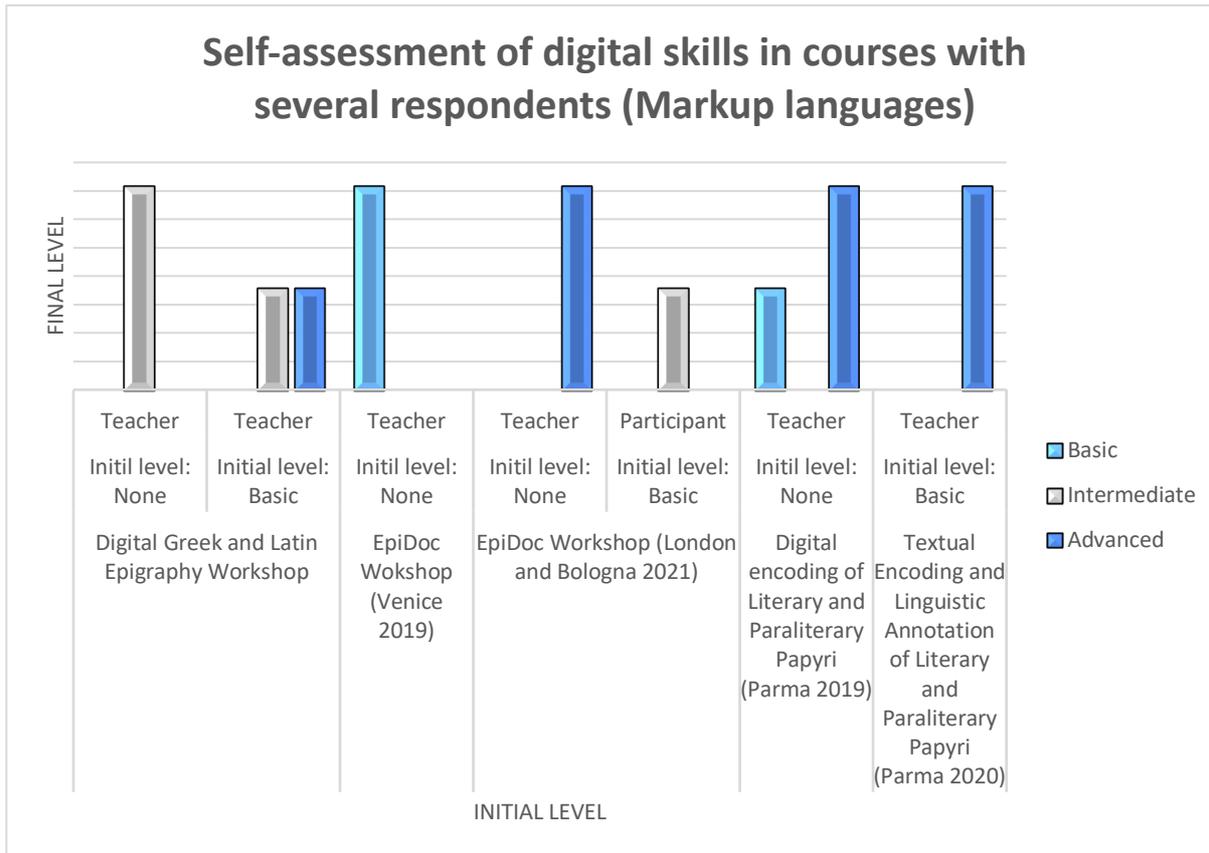


Figure 84: Self-assessment of digital skills in courses with several respondents (Markup languages).

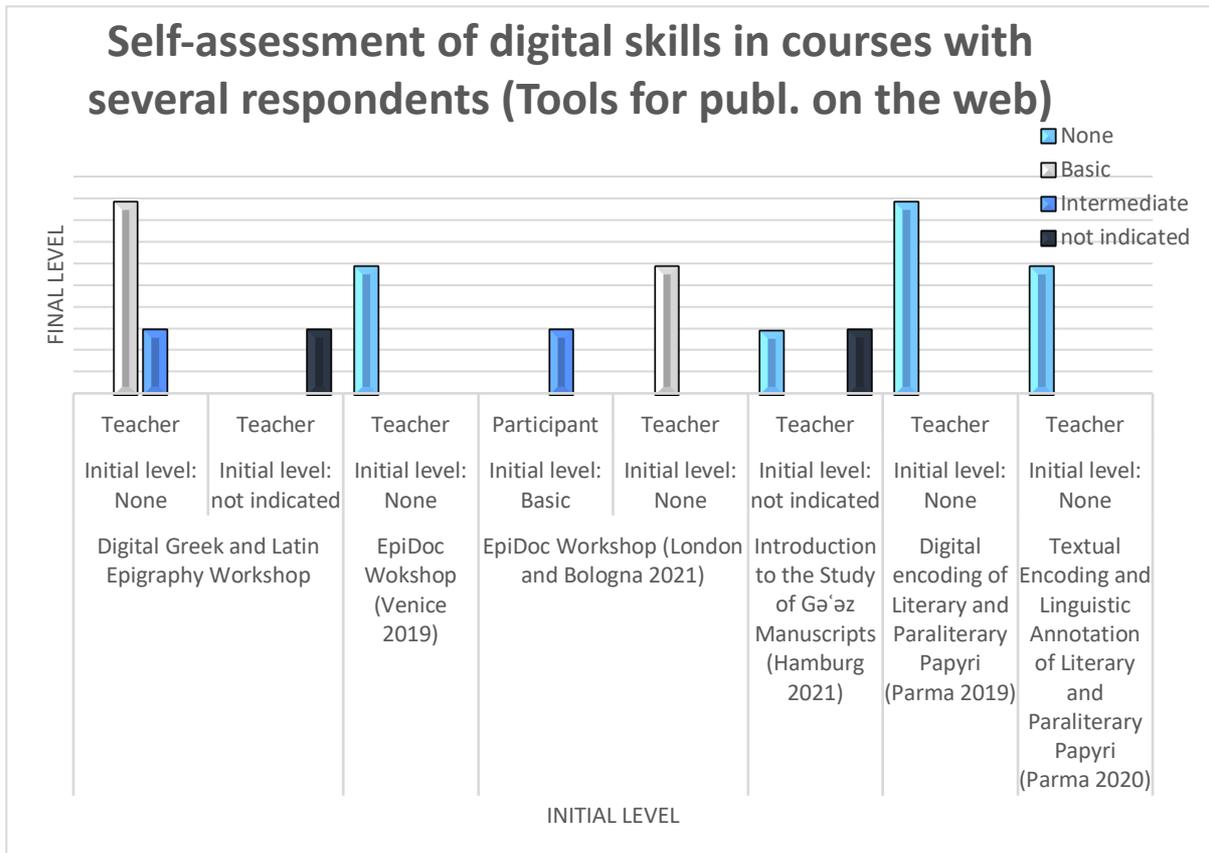


Figure 85: Self-assessment of digital skills in courses with several respondents (Tool for publication on the web).

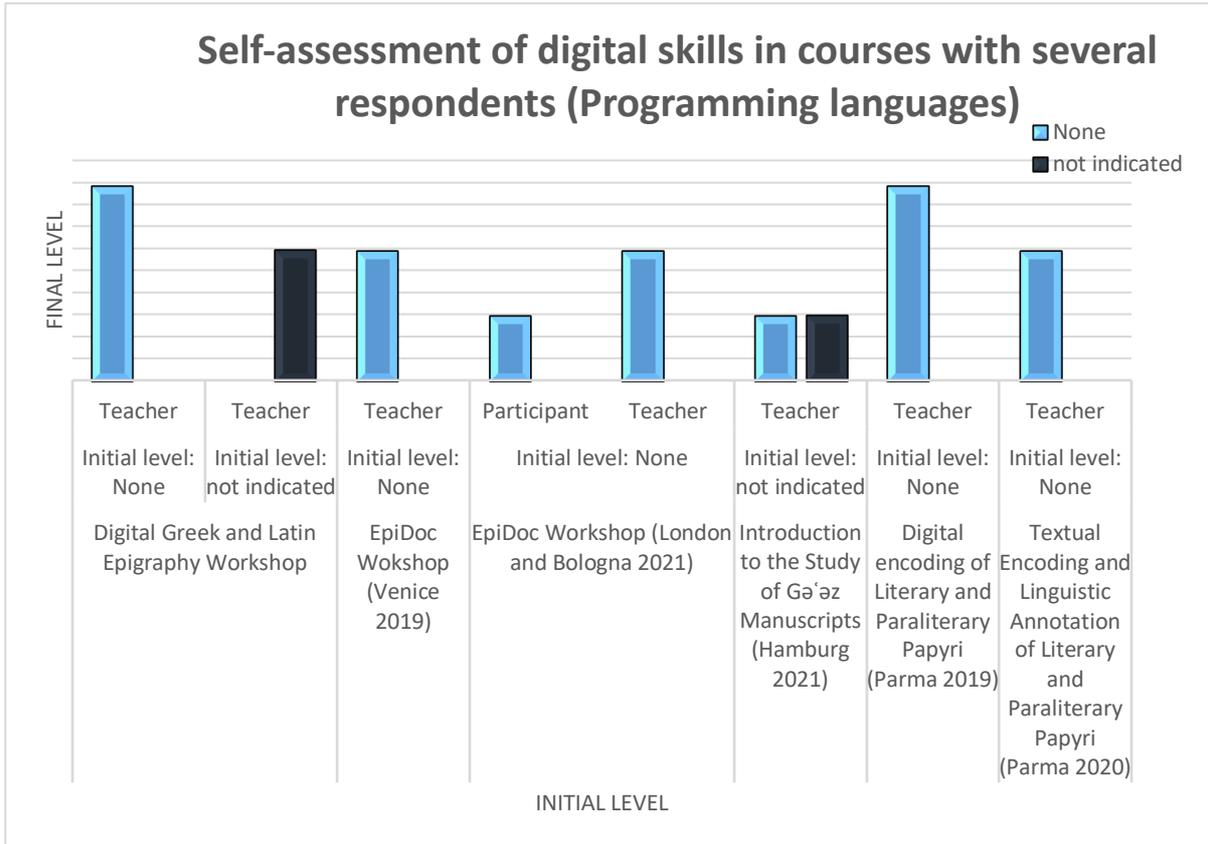


Figure 86: Self-assessment of digital skills in courses with several respondents (Programming languages).

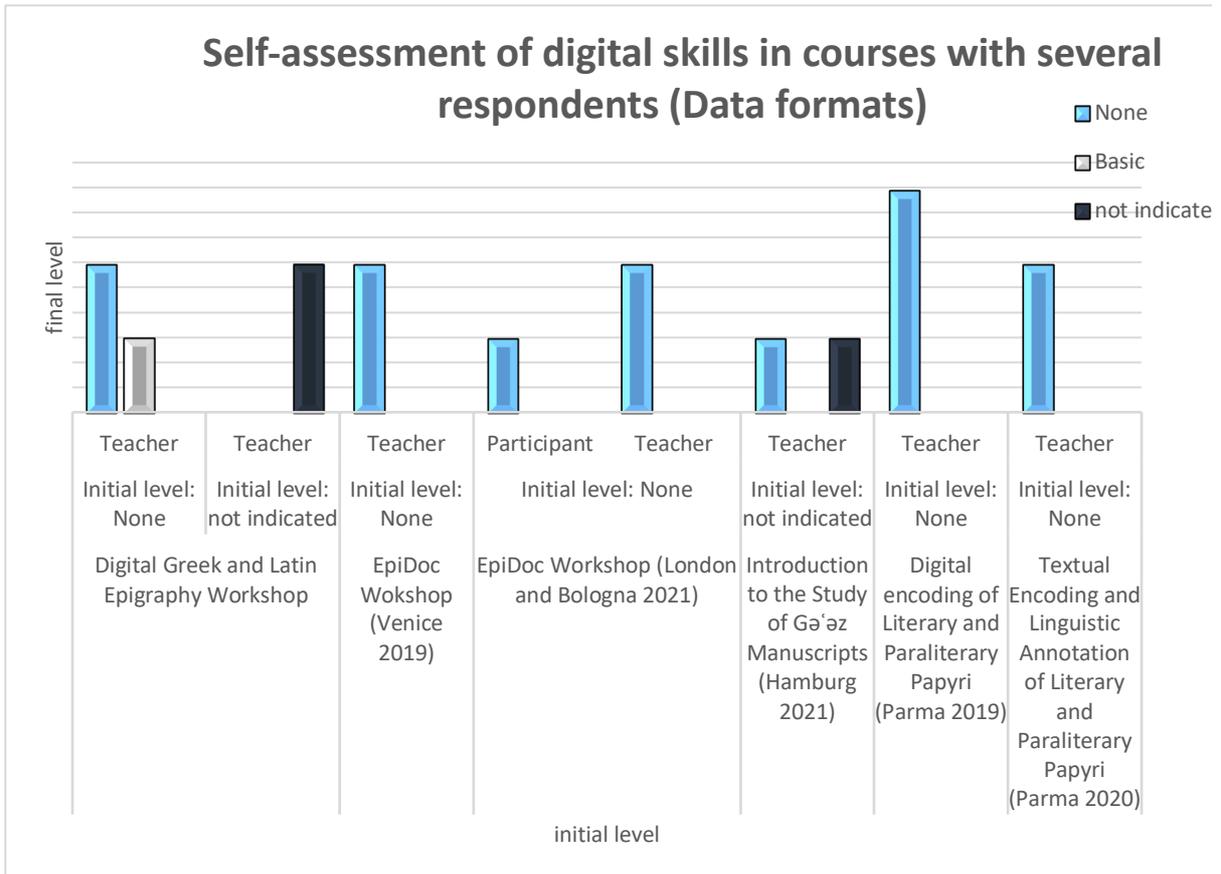


Figure 87: Self-assessment of digital skills in courses with several respondents (Data formats).

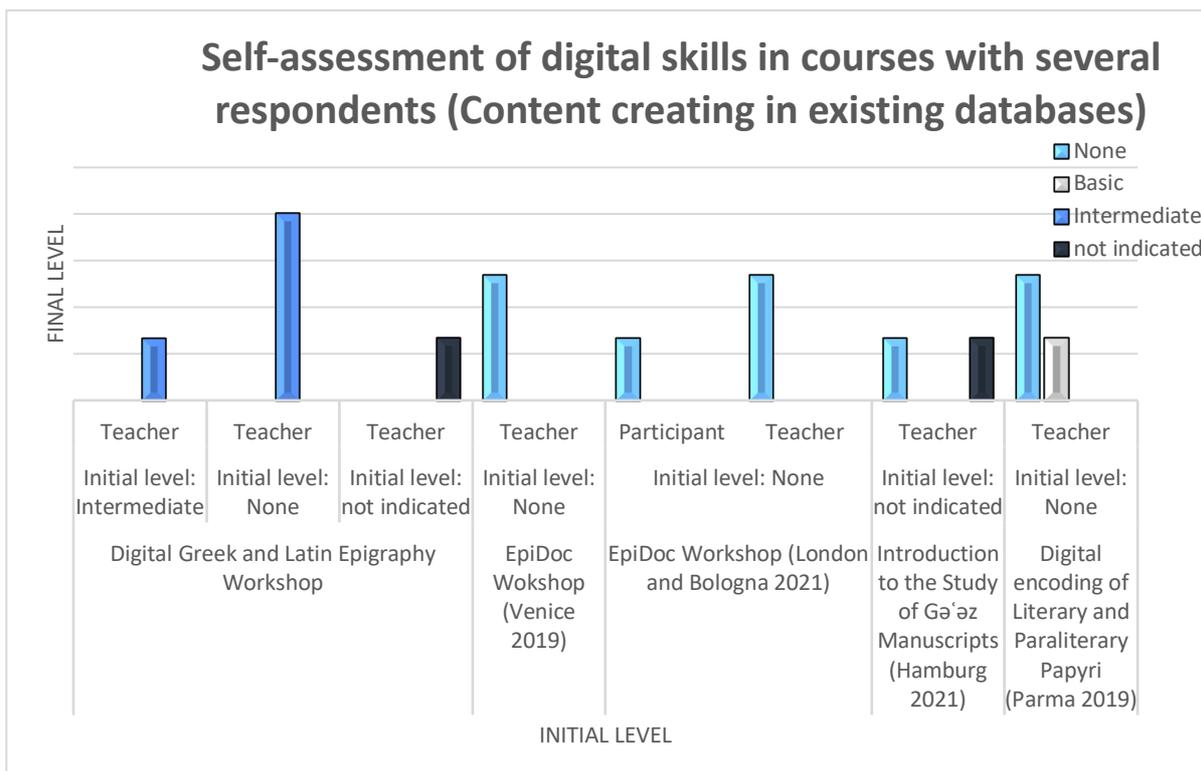


Figure 88: Self-assessment of digital skills in courses with several respondents (Content creating in existing databases).

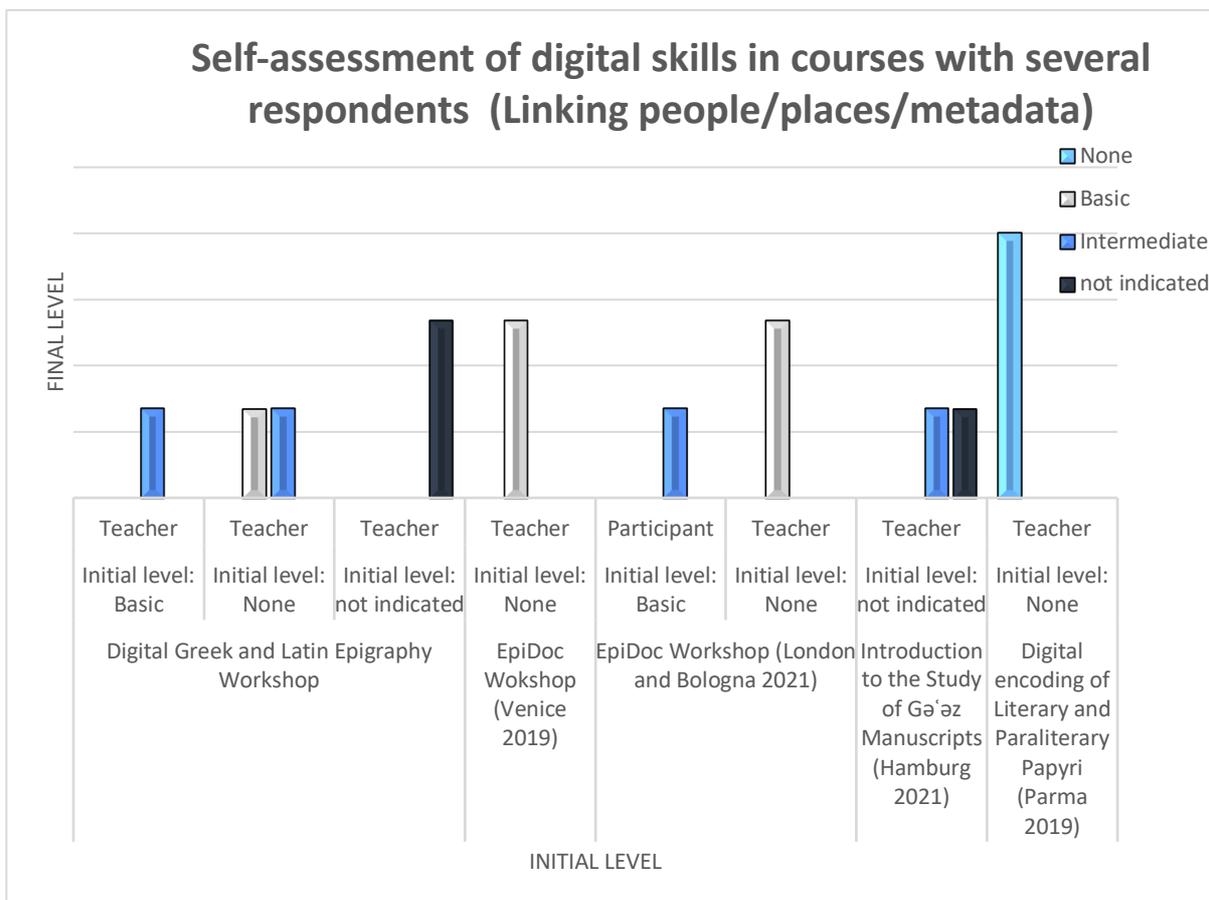


Figure 89: Self-assessment of digital skills in courses with several respondents (Linking people/places/metadata).

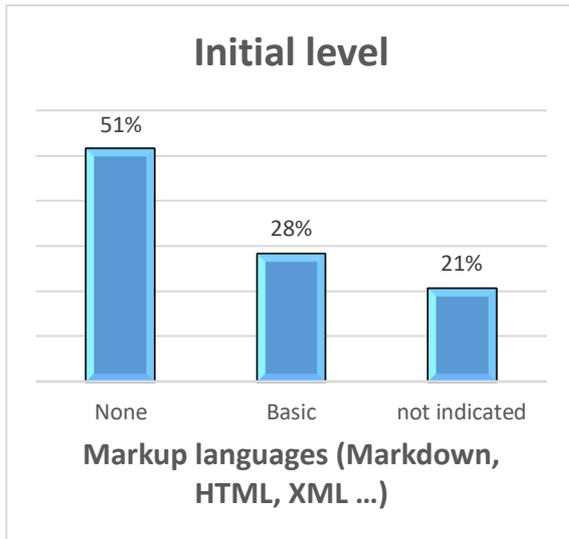


Figure 90: Initial level: Markup languages.

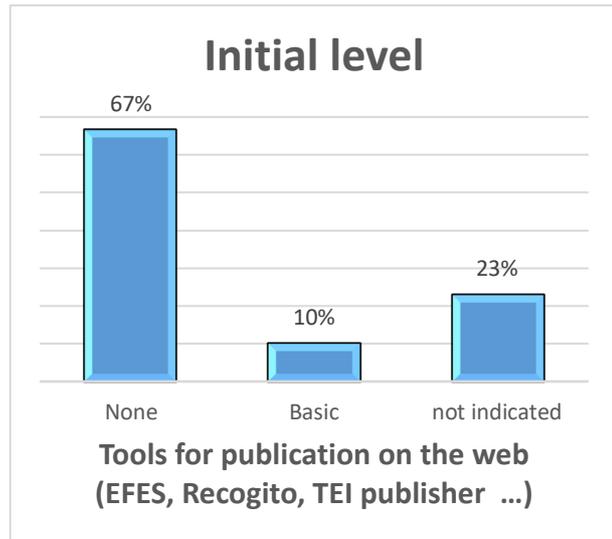


Figure 91: Initial level: Tool for publication on the web.

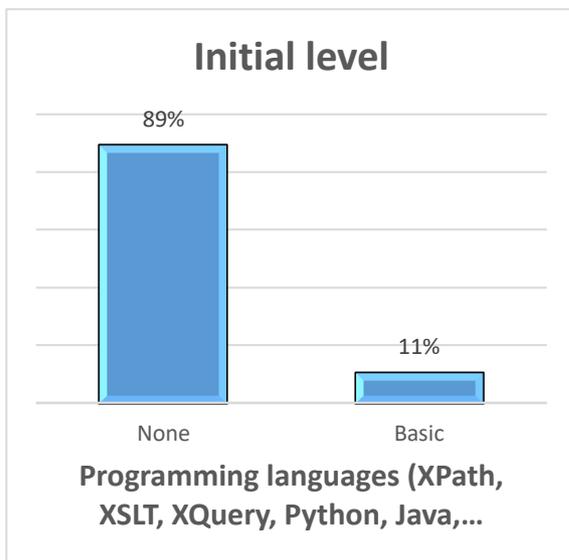


Figure 92: Initial level: Programming languages.

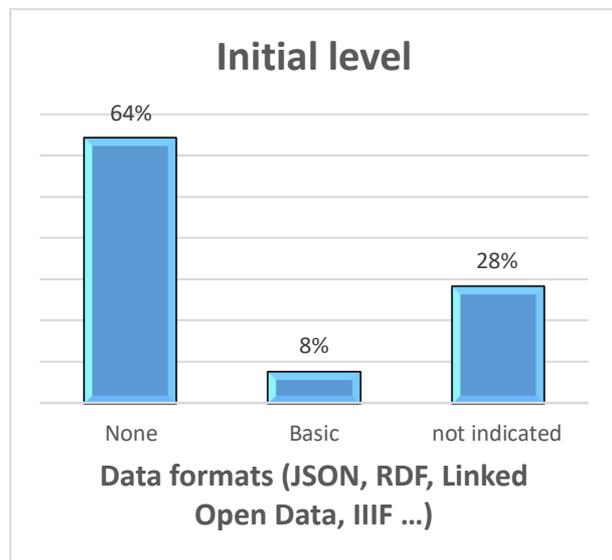


Figure 93: Initial level: Data formats.

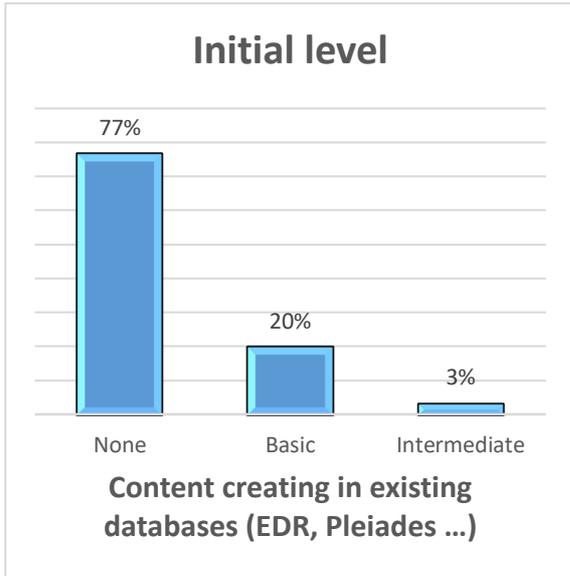


Figure 94: Initial level: Content creating.

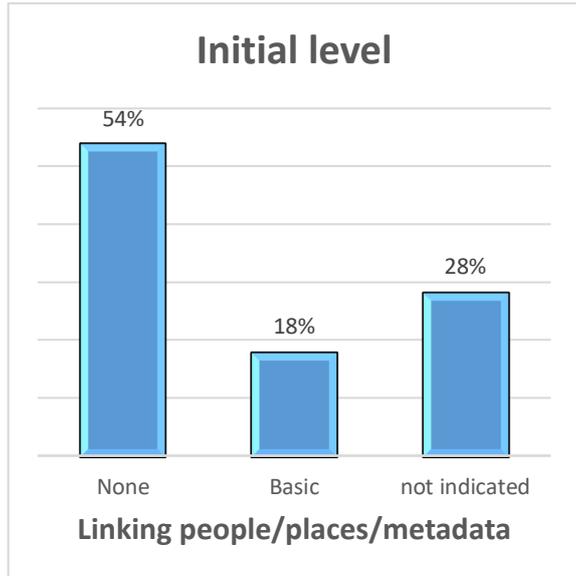


Figure 95: Initial level: Linking people/places/metadata.

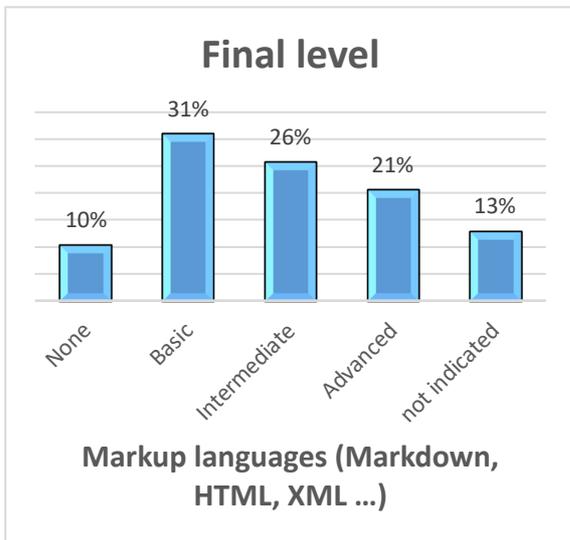


Figure 96: Final level: Markup languages.

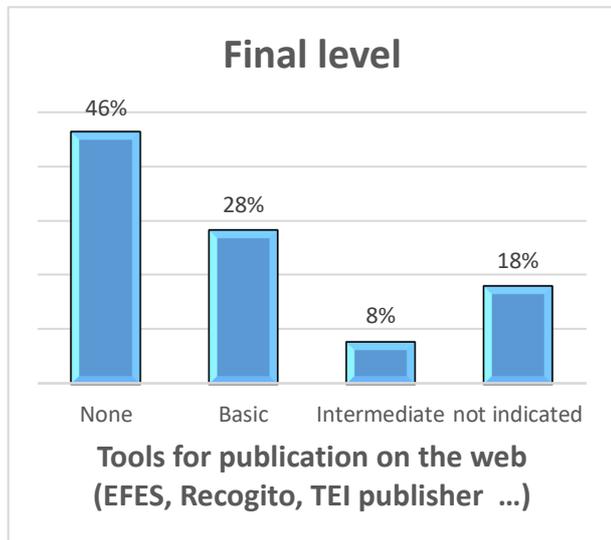


Figure 97: Final level: Tools for publication on the web.

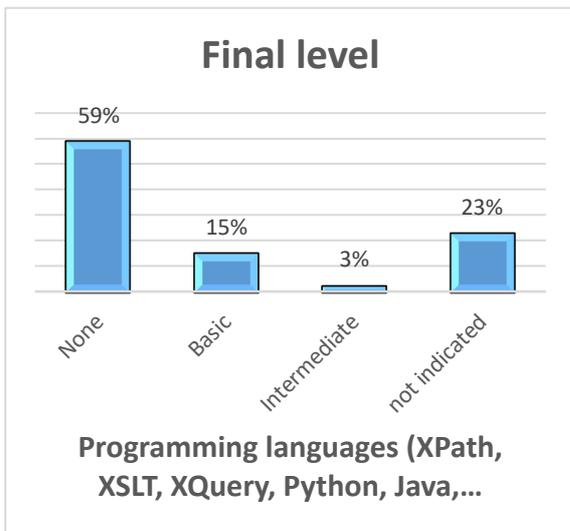


Figure 98: Final level: Programming languages.

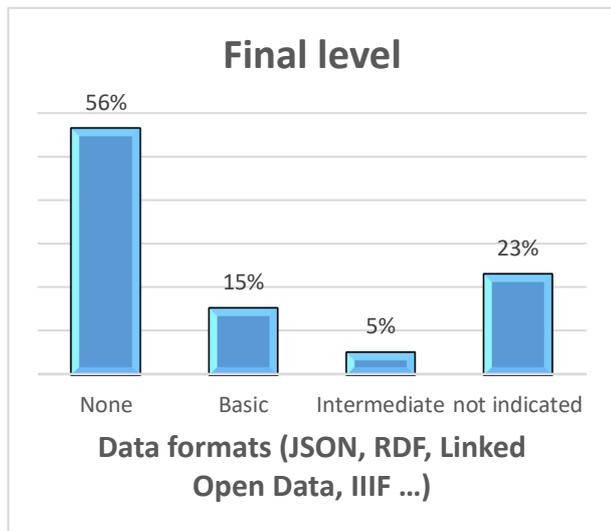


Figure 99: Final level: Data formats.

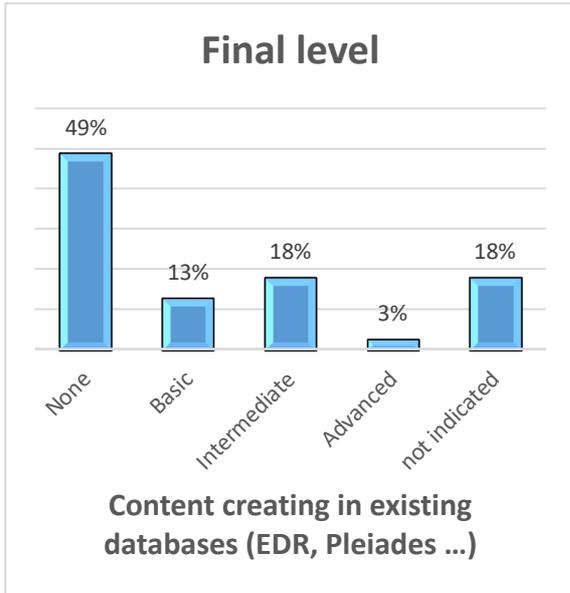


Figure 100: Final level: Content creating.

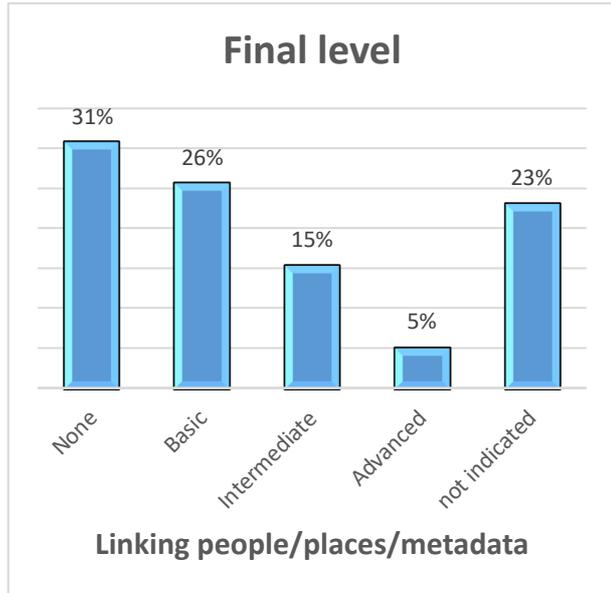


Figure 101: Final level: Linking people/places/metadata.

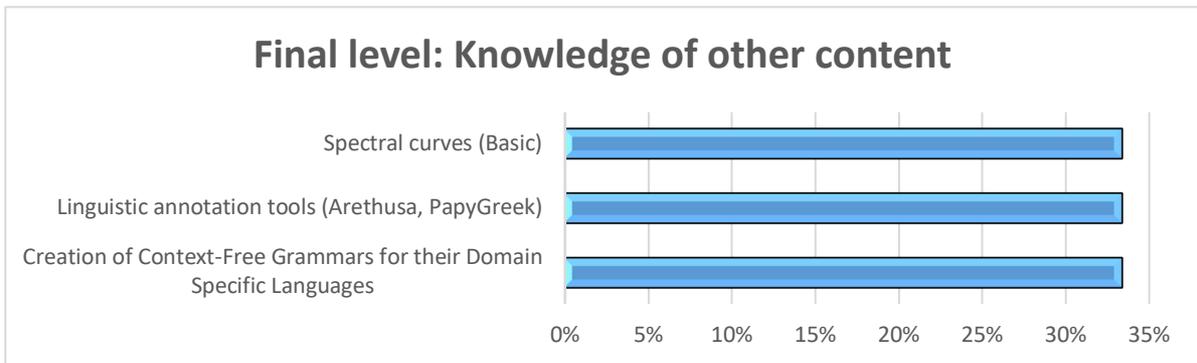


Figure 102: Final level: Knowledge of other content.

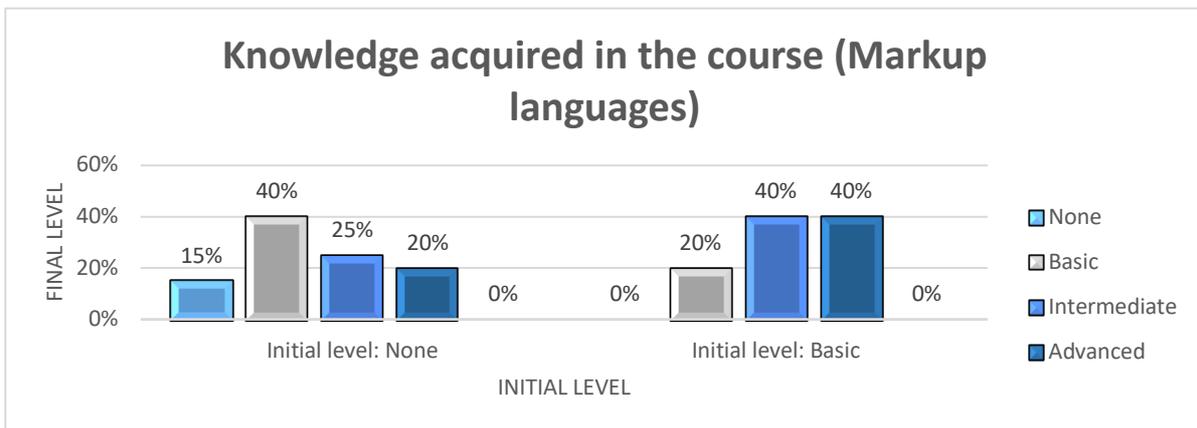


Figure 103: Knowledge acquired in the course (Markup languages).

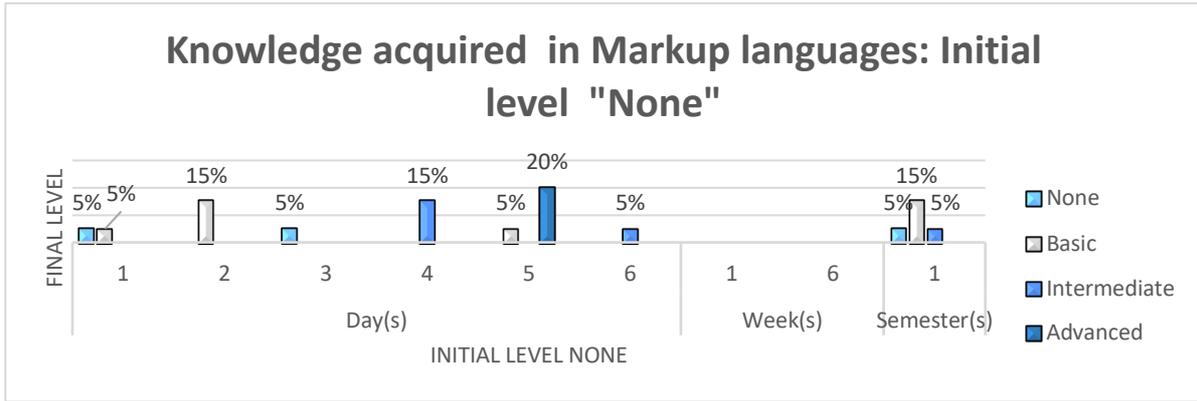


Figure 104: Knowledge acquired in Markup languages: Initial level "None".

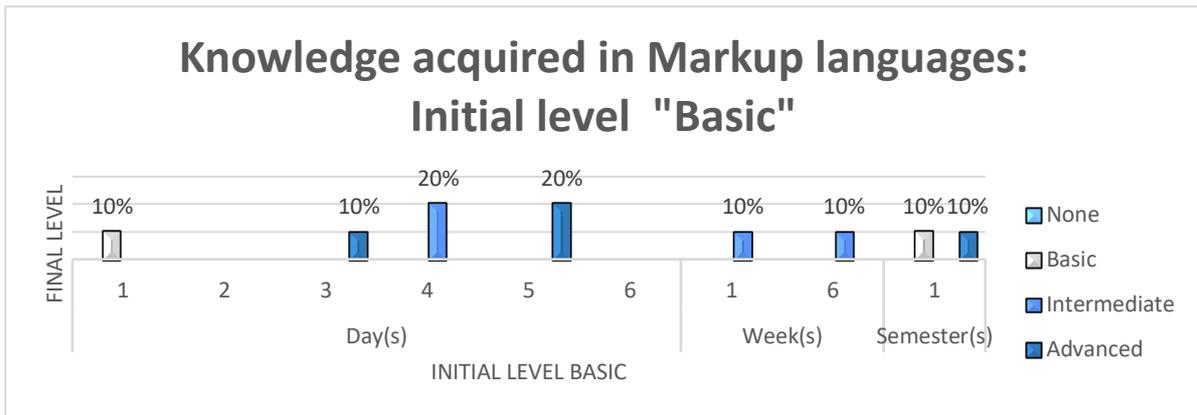


Figure 105: Knowledge acquired in Markup languages: Initial level "Basic".

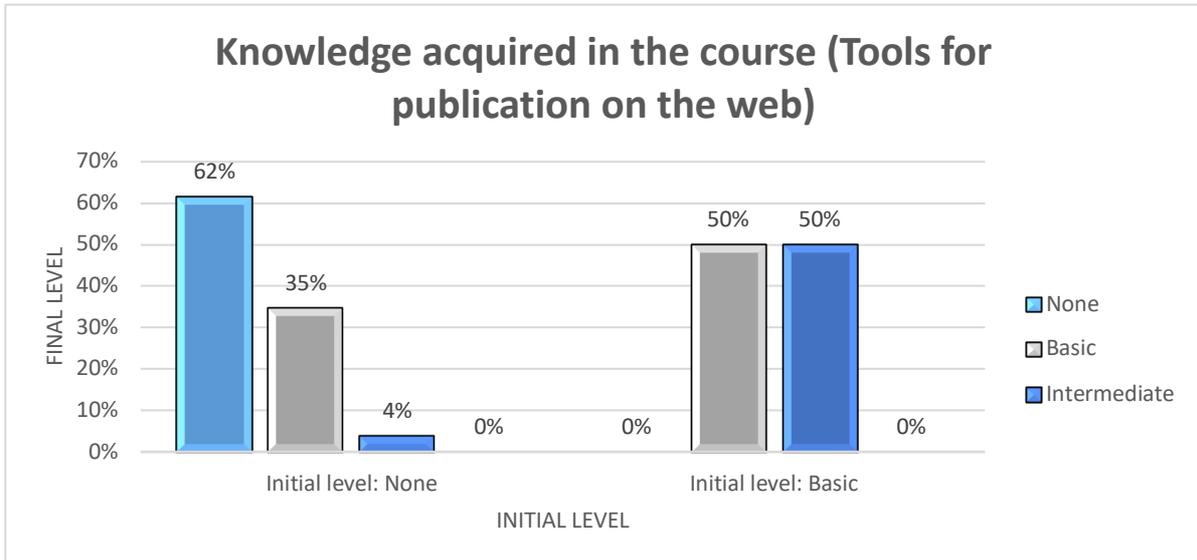


Figure 106: Knowledge acquired in the course (Tools for publication on the web).

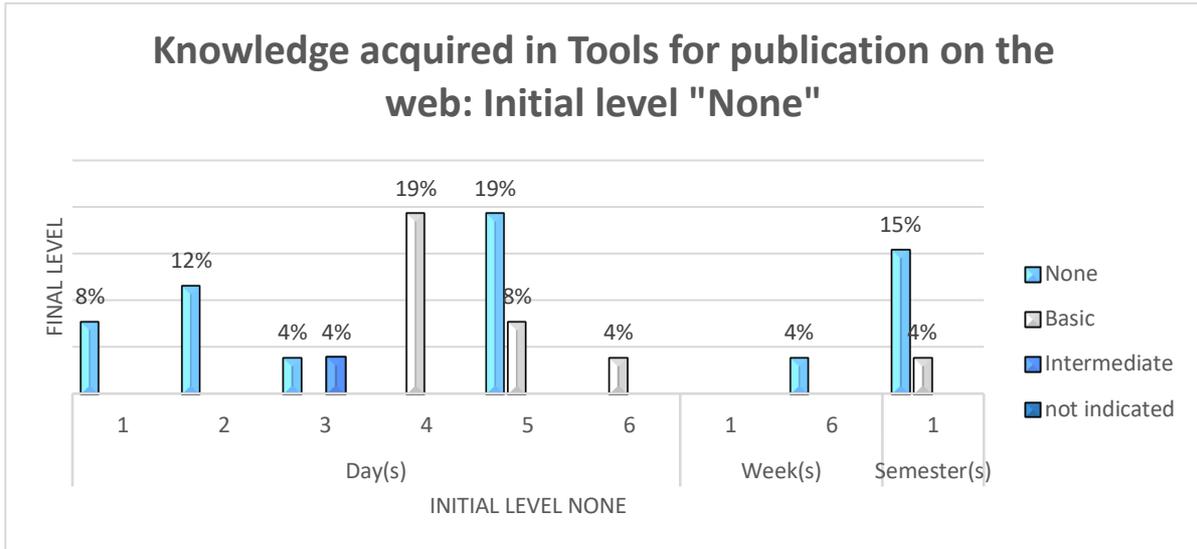


Figure 107: Knowledge acquired in Tools for publication on the web: Initial level "None".

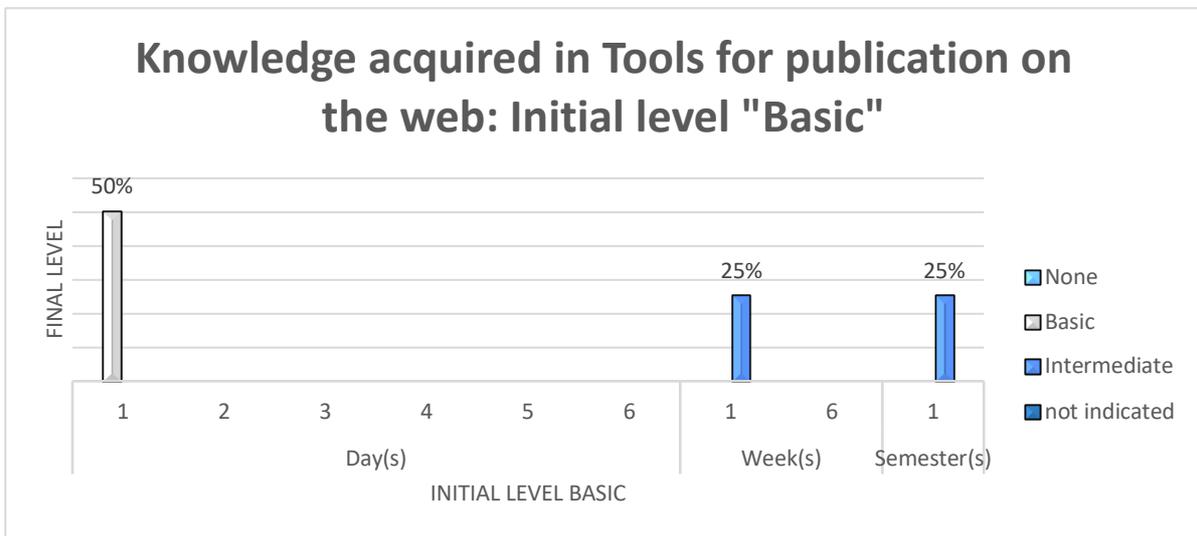


Figure 108: Knowledge acquired in Tools for publication on the web: Initial level "Basic".

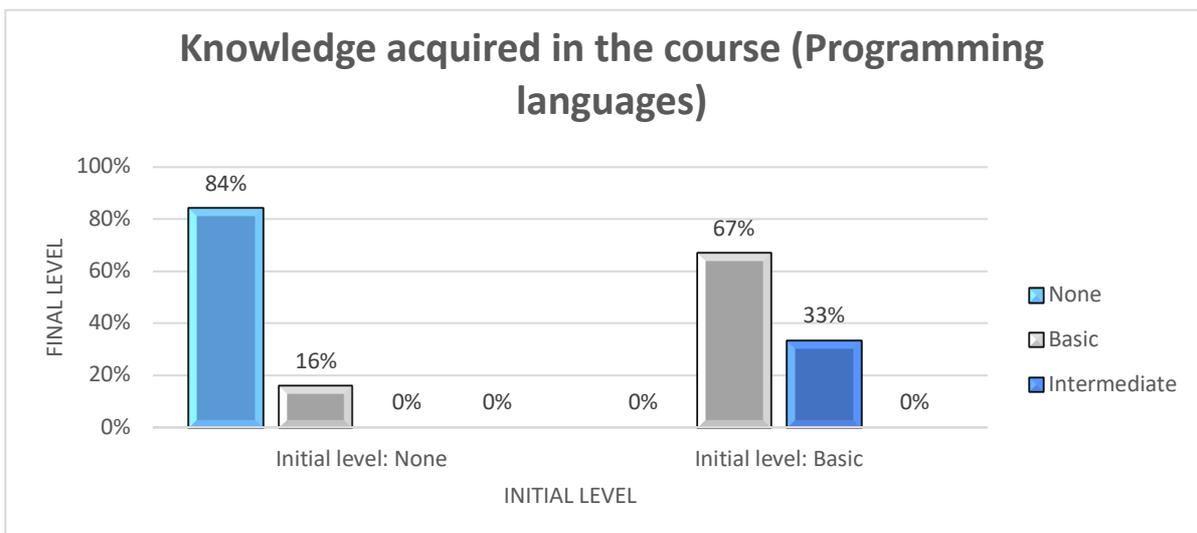


Figure 109: Knowledge acquired in the course (Programming languages).

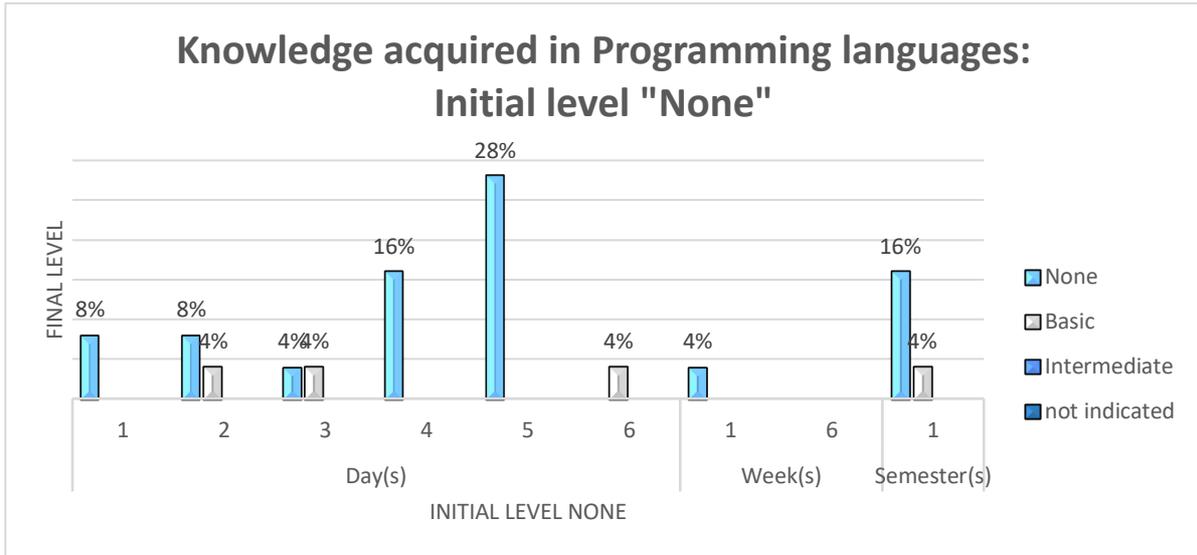


Figure 110: Knowledge acquired in Programming languages: Initial level "None".

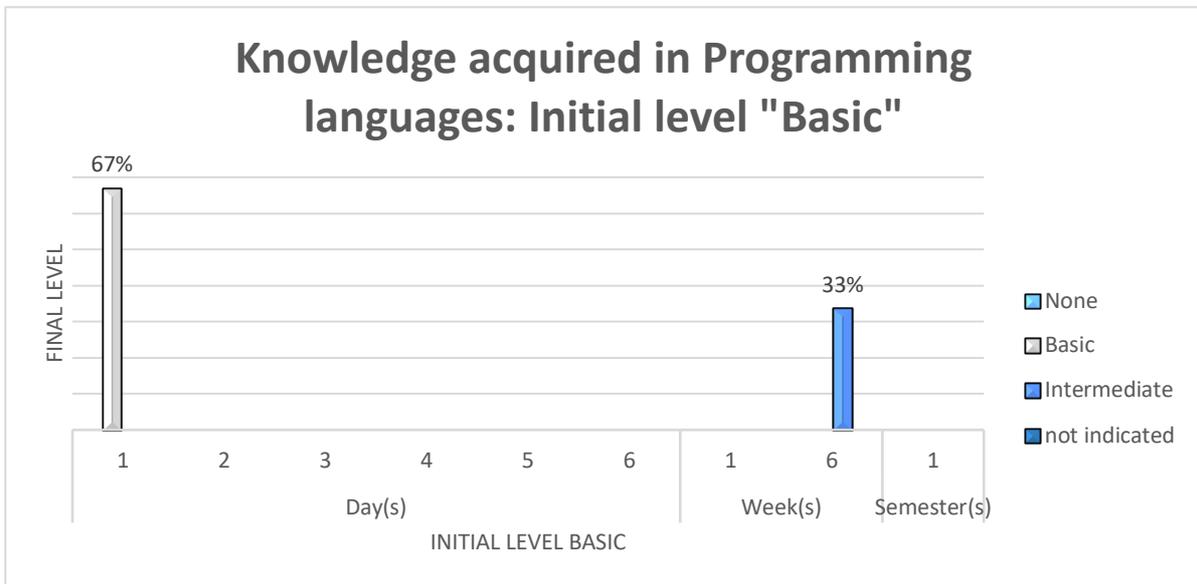


Figure 111: Knowledge in Programming languages: Initial level "Basic".

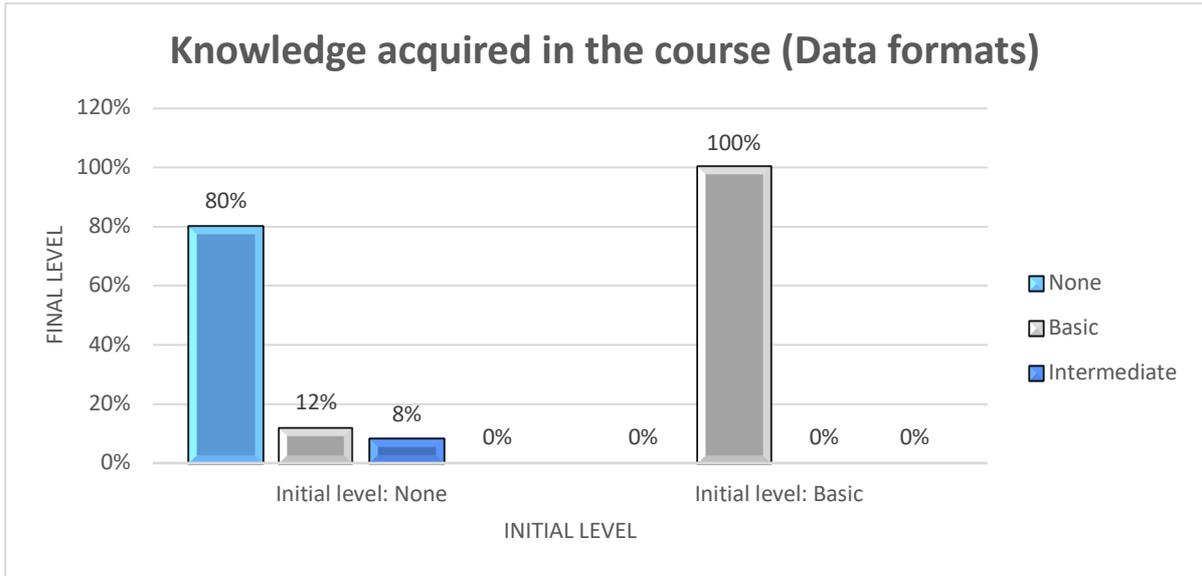


Figure 112: Knowledge acquired in the course (Data formats).

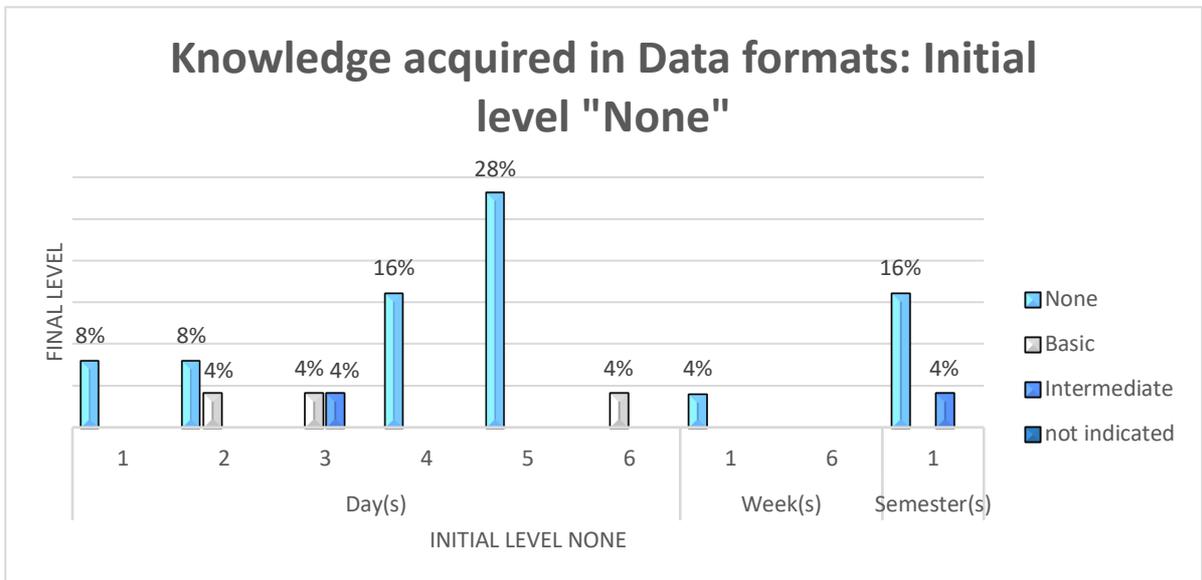


Figure 113: Knowledge acquired in Data formats: Initial level "None".

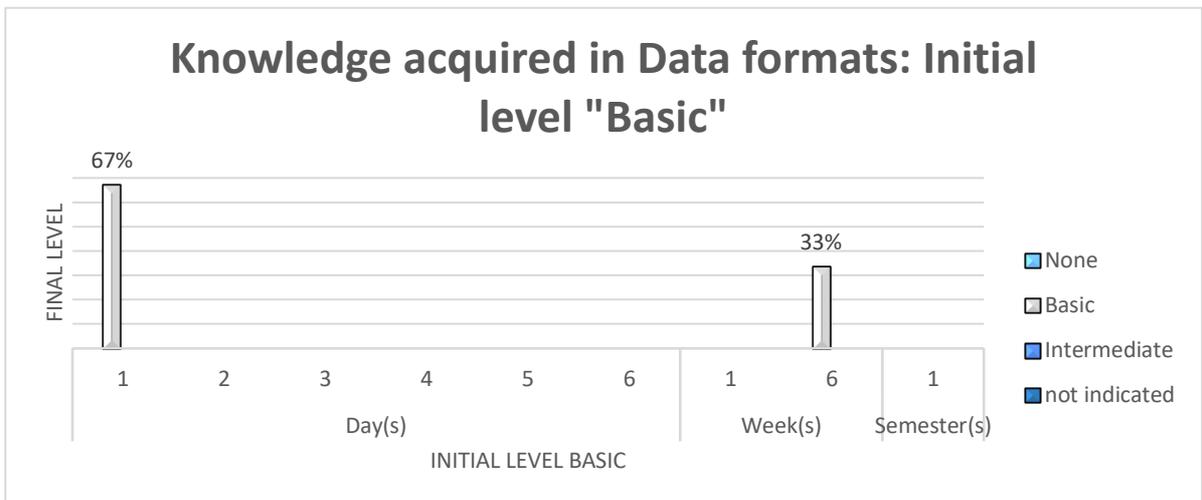


Figure 114: Knowledge acquired in Data formats: Initial level "Basic".

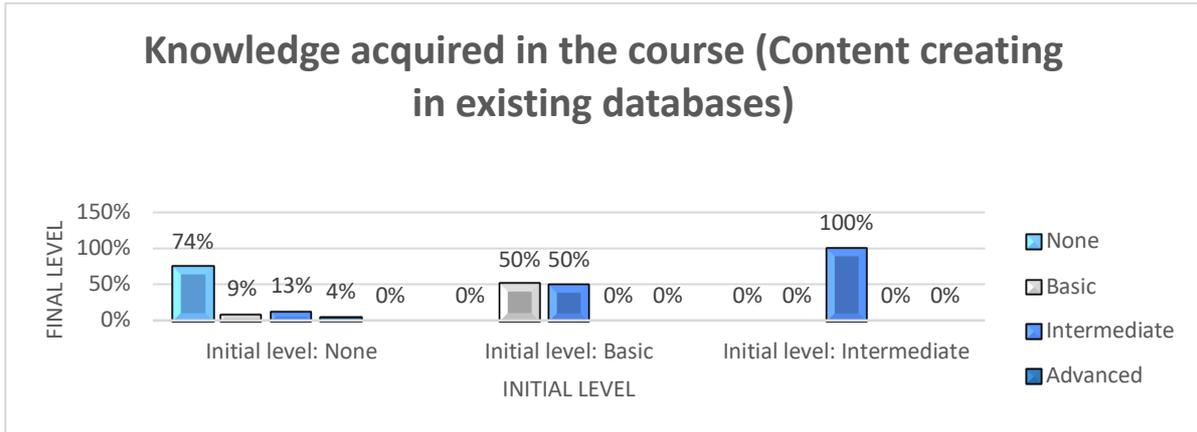


Figure 115: Knowledge acquired in the course (Content creating).

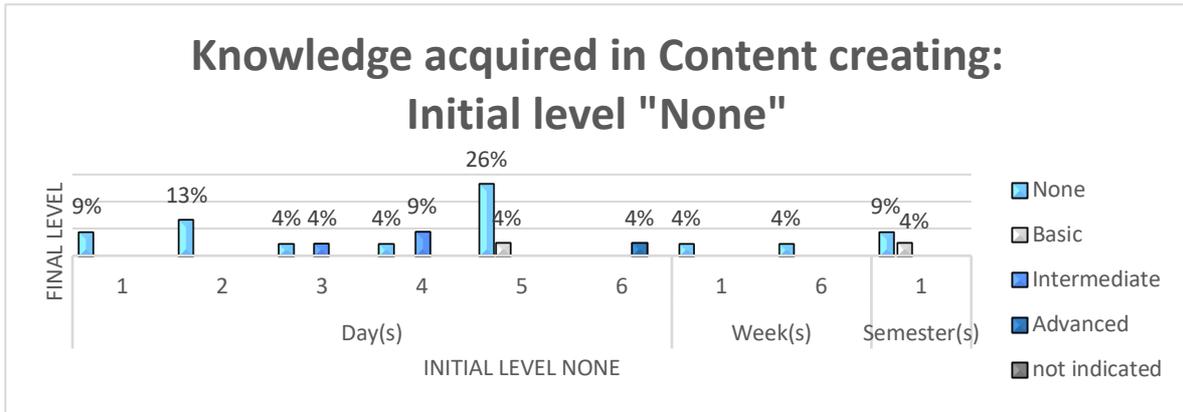


Figure 116: Knowledge acquired in Content creating: Initial level "None".

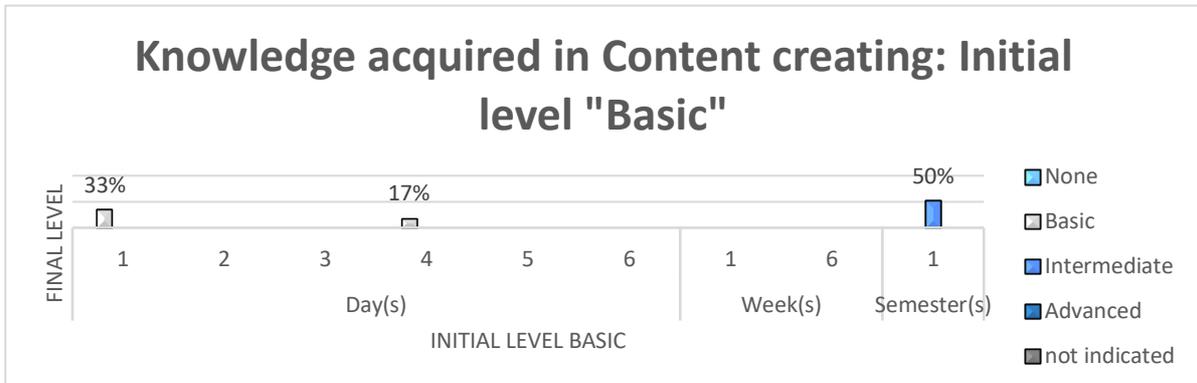


Figure 117: Knowledge acquired in Content creating: Initial level "Basic".

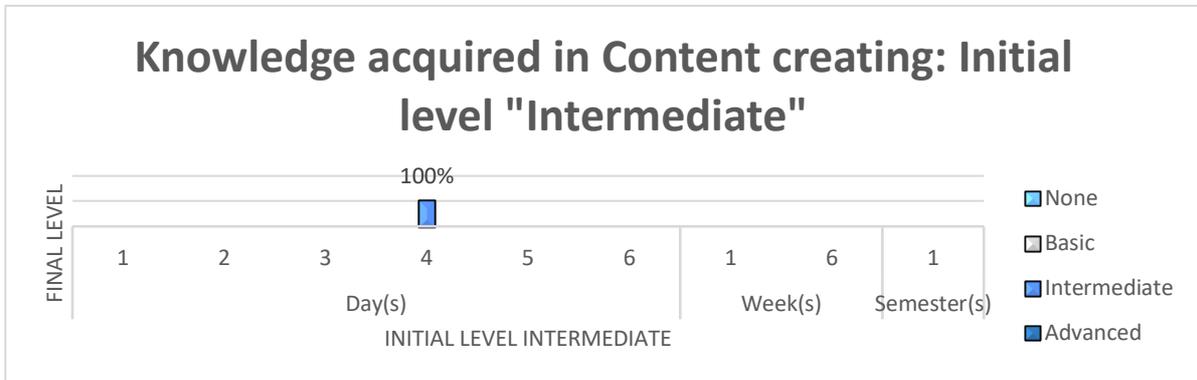


Figure 118: Knowledge acquired in Content creating: Initial level "Intermediate".

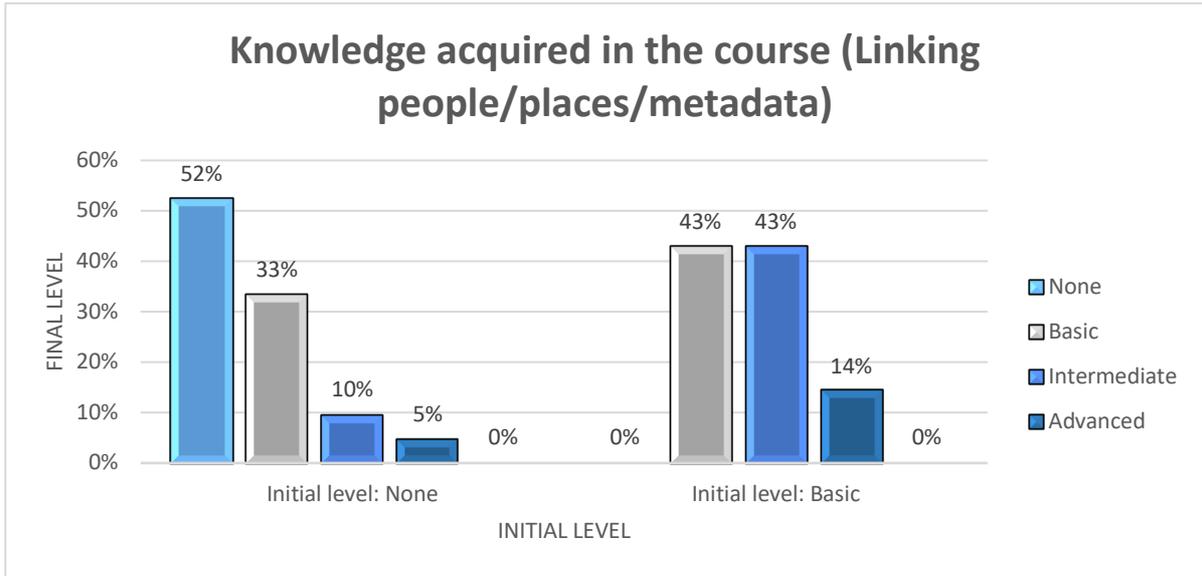


Figure 119: Knowledge acquired in the course (Linking people/places/metadata).

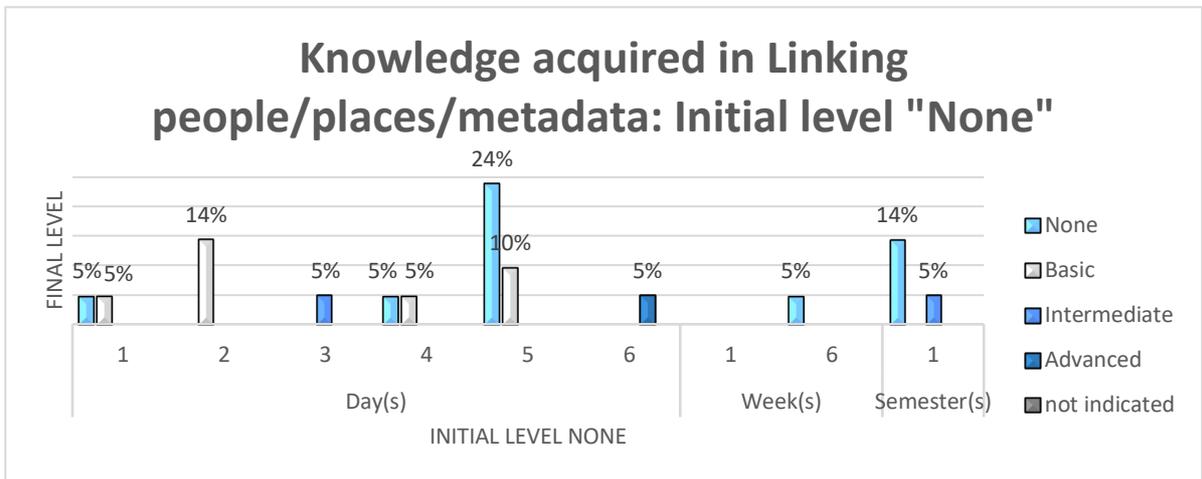


Figure 120: Knowledge acquired in Linking people/places/metadata: Initial level "None".

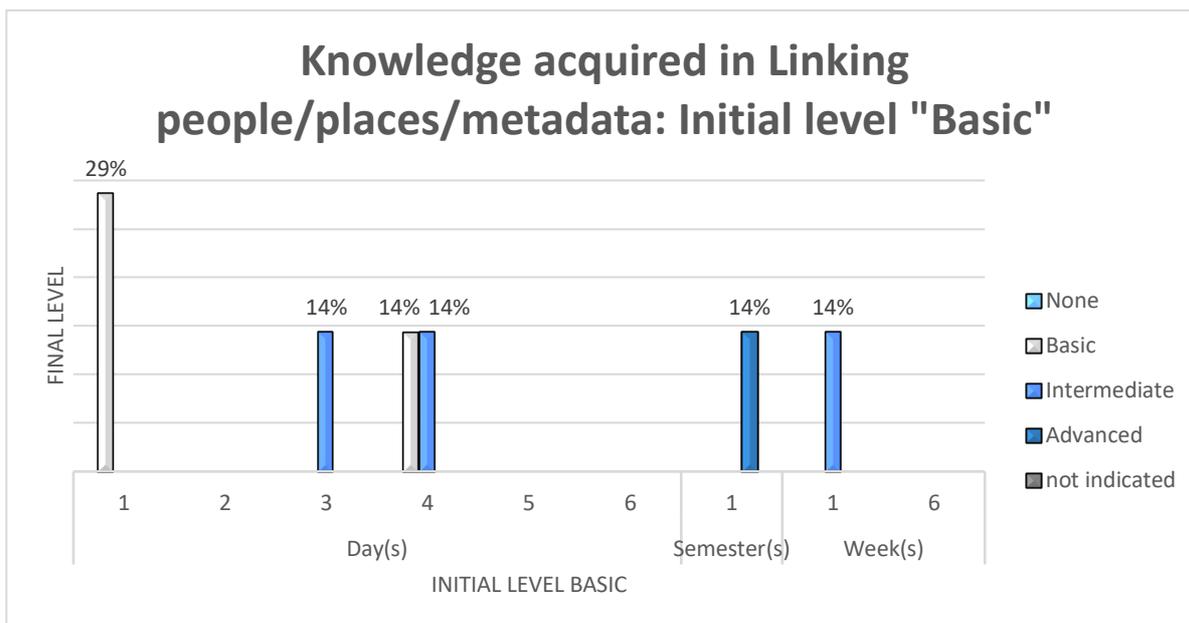


Figure 121: Knowledge acquired in Linking people/places/metadata: Initial level "Basic".

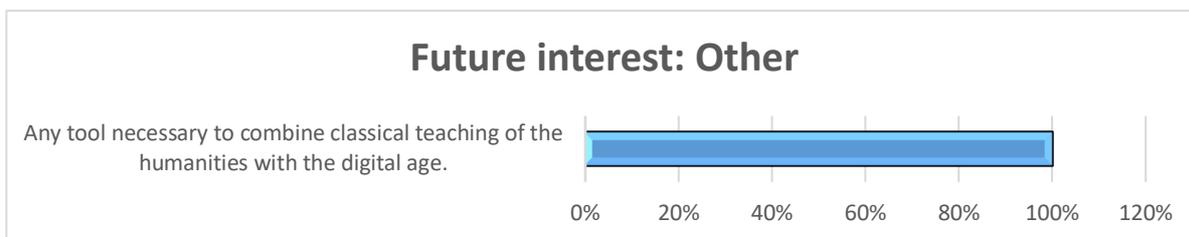


Figure 122: Future interest (Other).

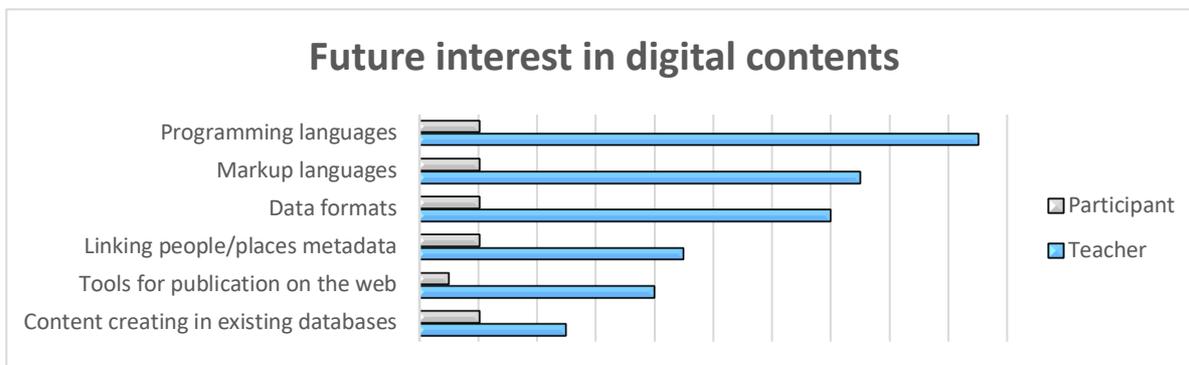


Figure 123: Future interest in digital contents.

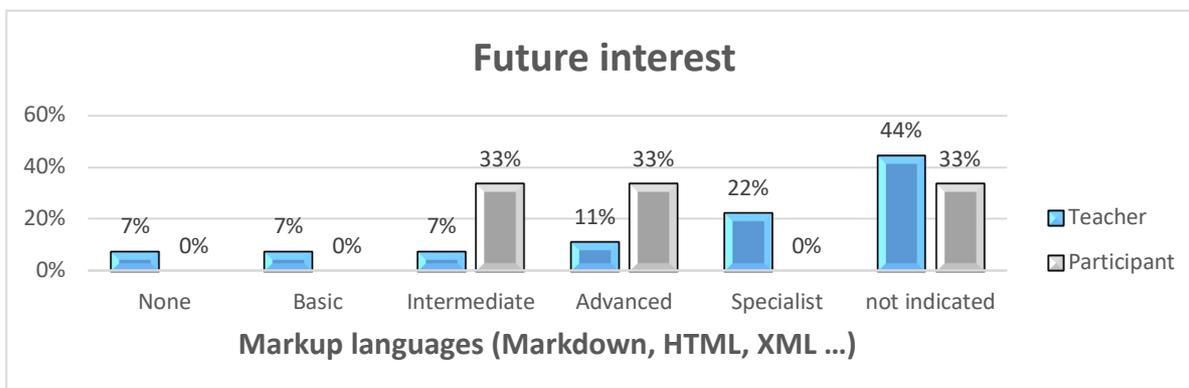


Figure 124: Future interest: Markup languages.

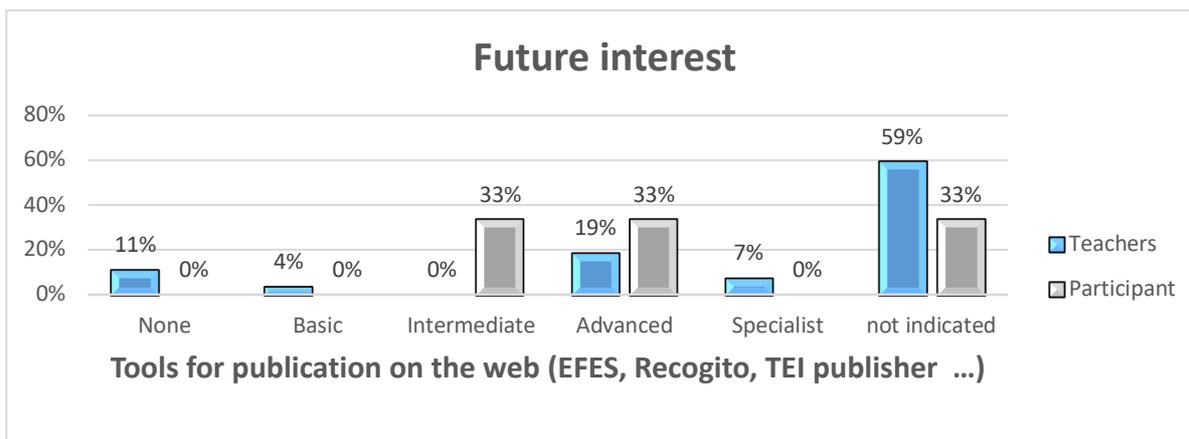


Figure 125: Future interest: Tools for publication on the web.

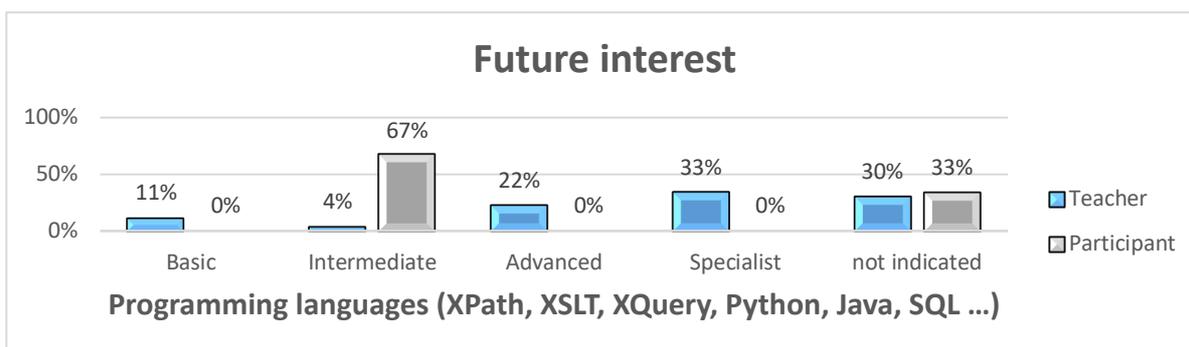


Figure 126: Future interest: Programming languages.

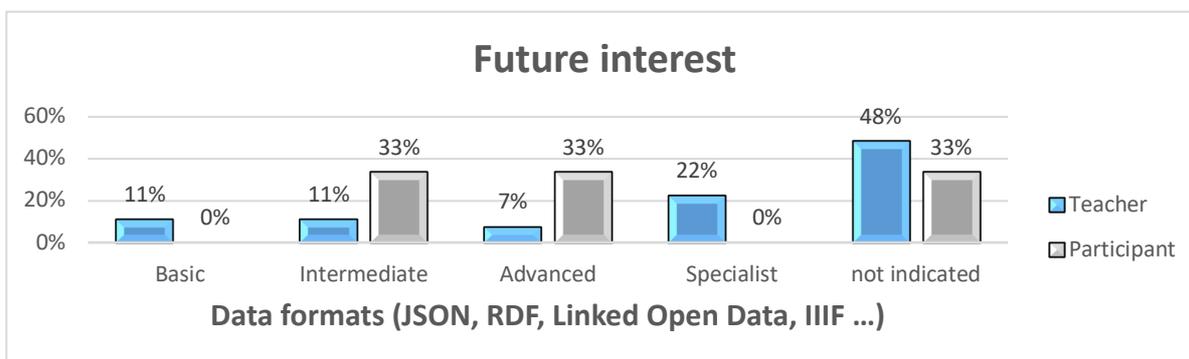


Figure 127: Future interest: Data formats.

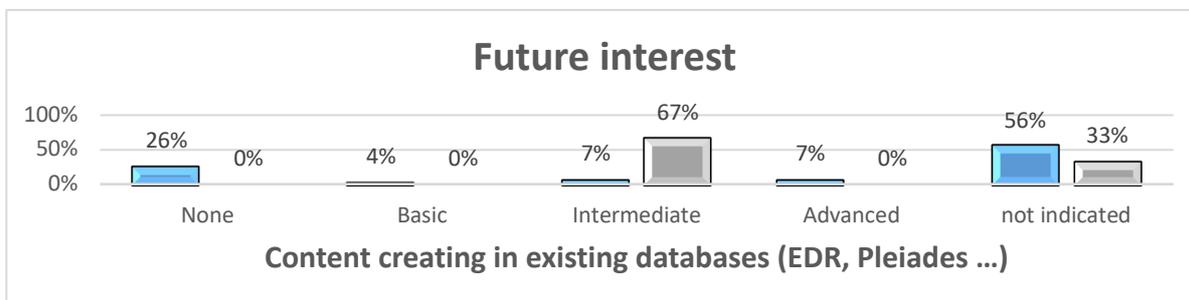


Figure 128: Future interest: Content creating in existing databases.

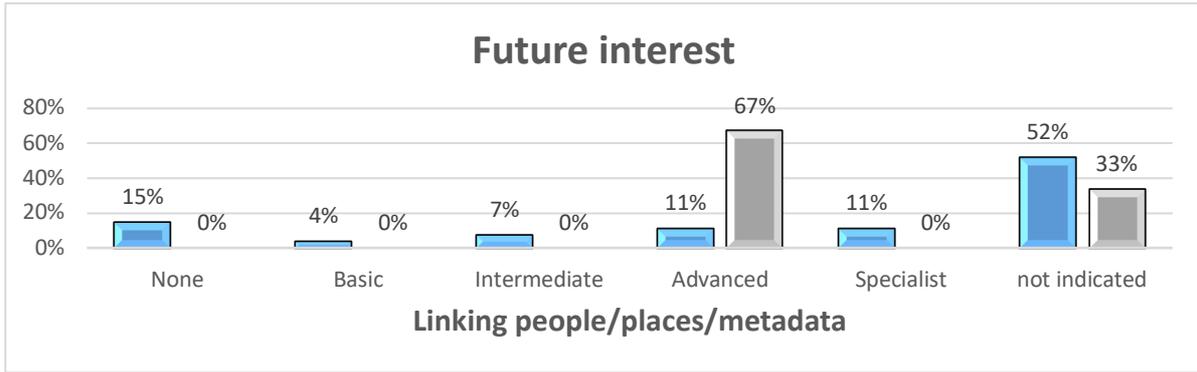


Figure 129: Future interest: Linking people/places/metadata.

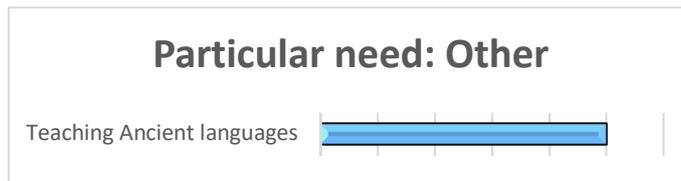


Figure 130: Particular need: Other.

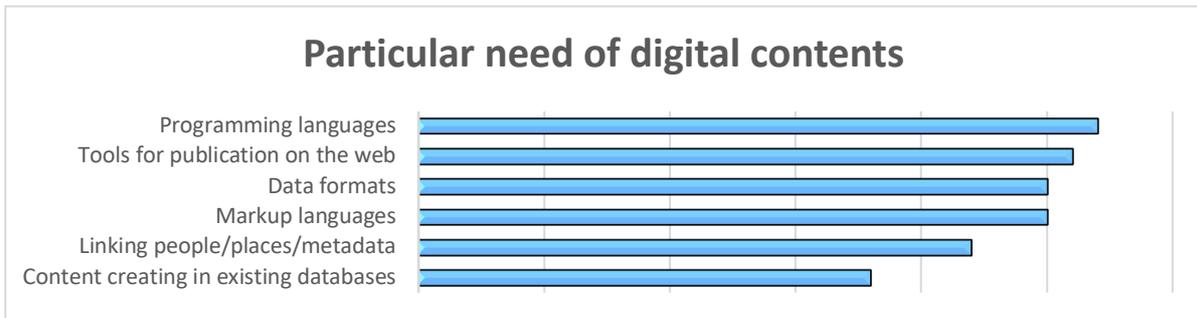


Figure 131: Particular need of digital contents.

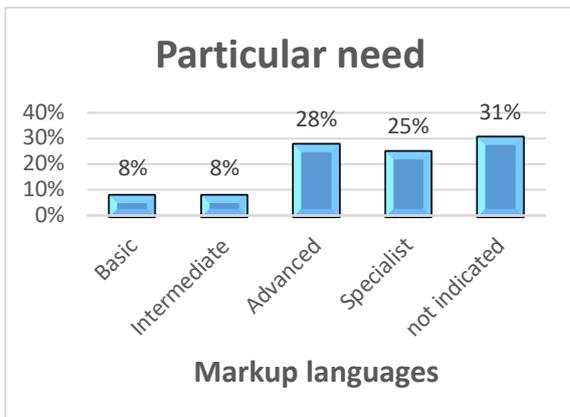


Figure 132: Particular need: Markup languages.

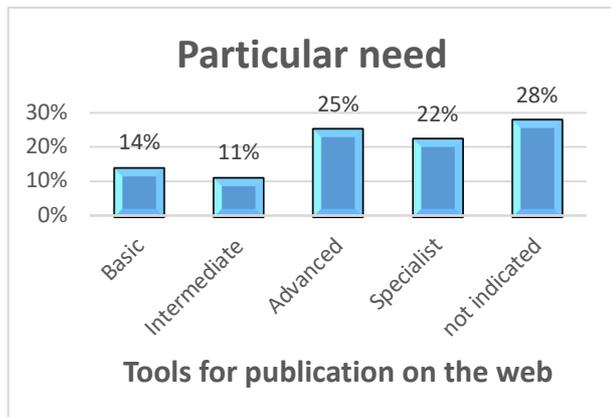


Figure 133: Particular need: Tools for publication on the web.

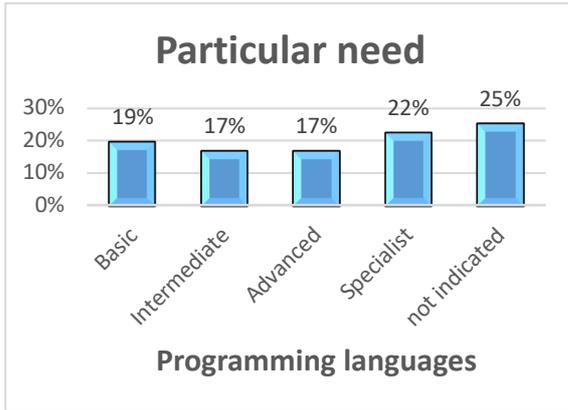


Figure 134: Particular need: Programming languages.

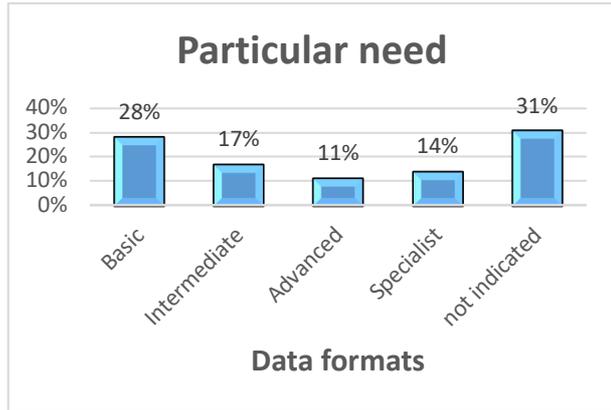


Figure 135: Data formats.

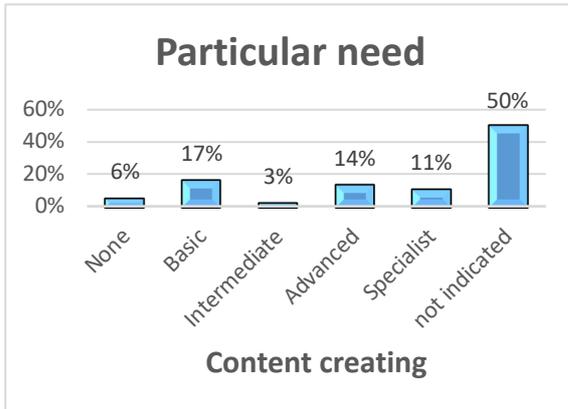


Figure 136: Particular need: Content creating.

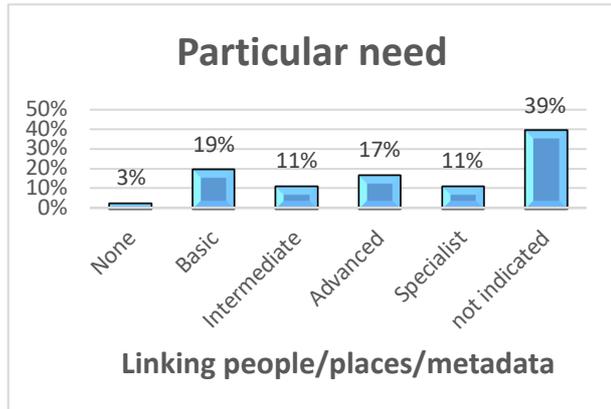


Figure 137: Particular need: Linking people / places / metadata.

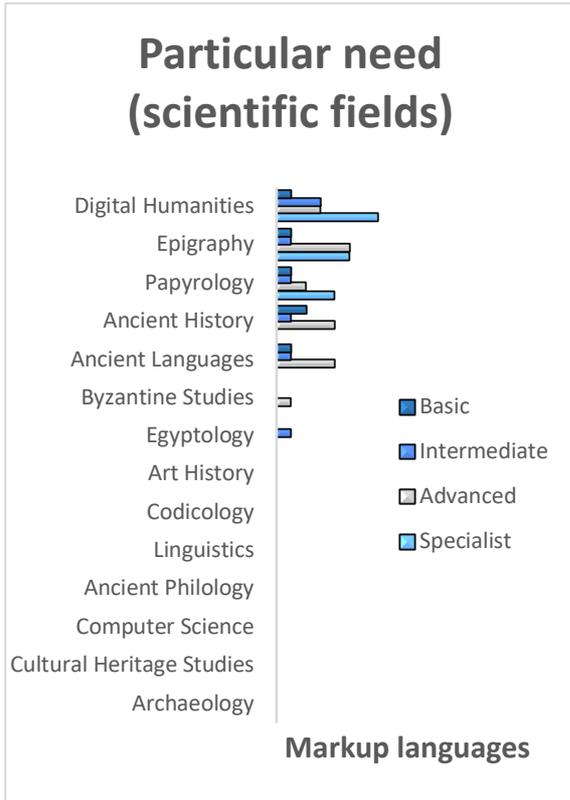


Figure 138: Particular need (scientific fields): Markup languages.

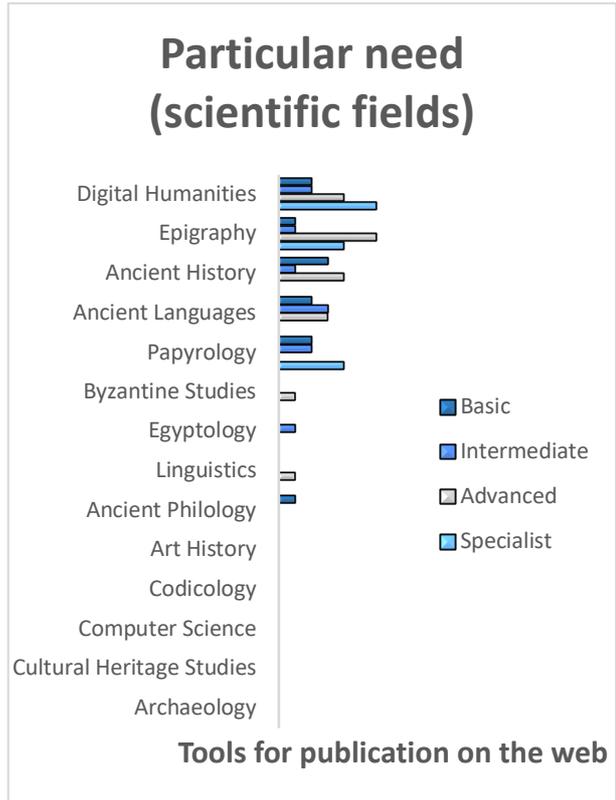


Figure 139: Particular need (scientific fields): Tools for publication on the web.

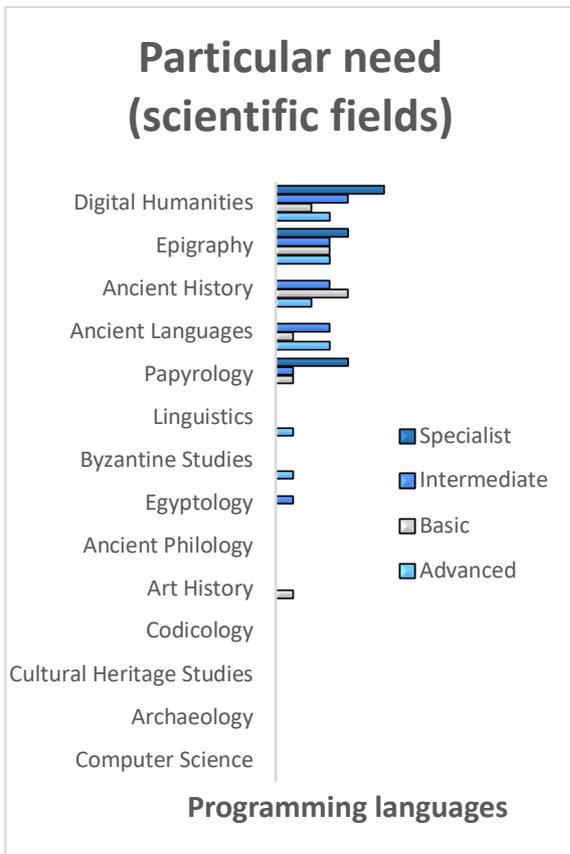


Figure 140: Particular need (scientific fields): Programming languages.

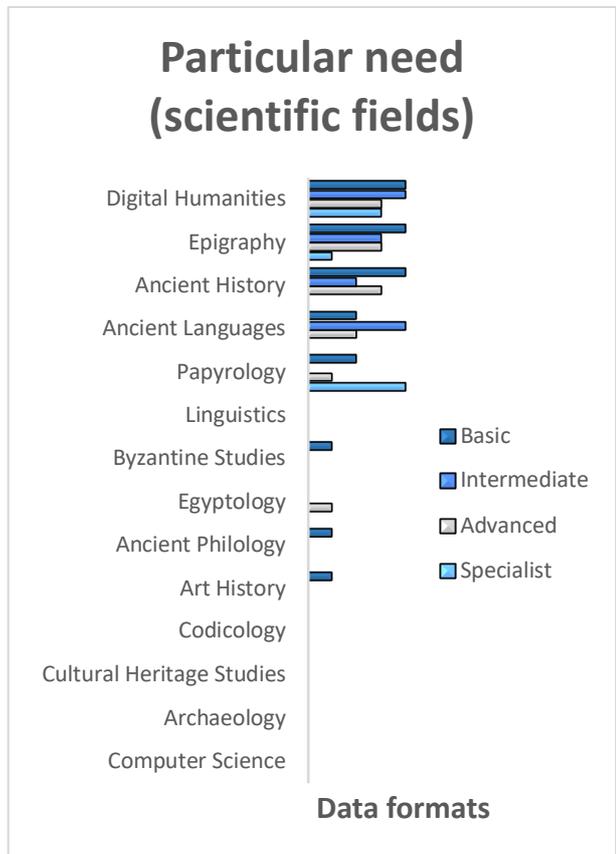


Figure 141: Particular need (scientific fields): Data formats.



Figure 142: Particular need (scientific fields): Content creating in existing databases.

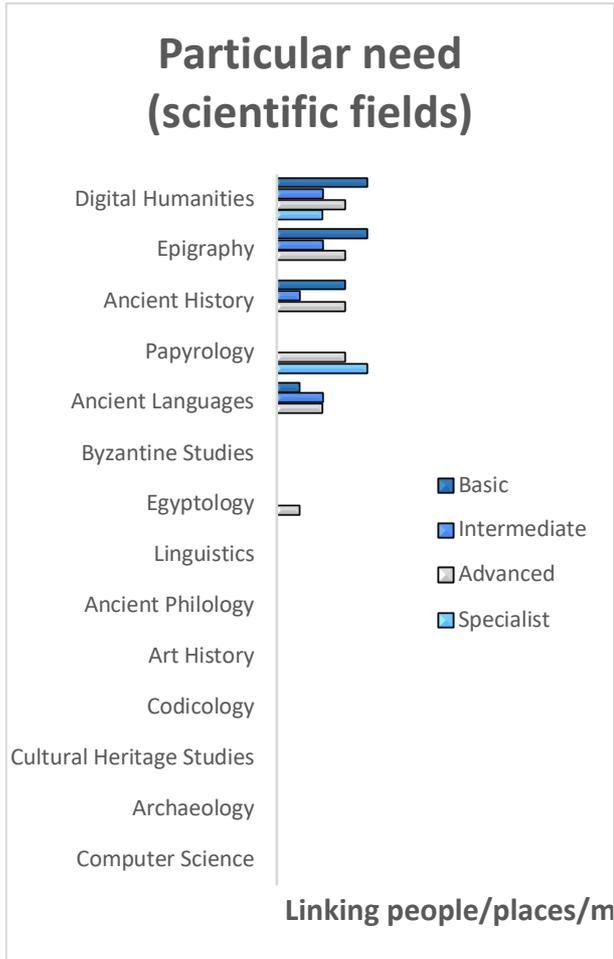


Figure 143: Particular need (scientific fields): Linking people/places/metadata.

5.6 Assessment (section 3.2.5)

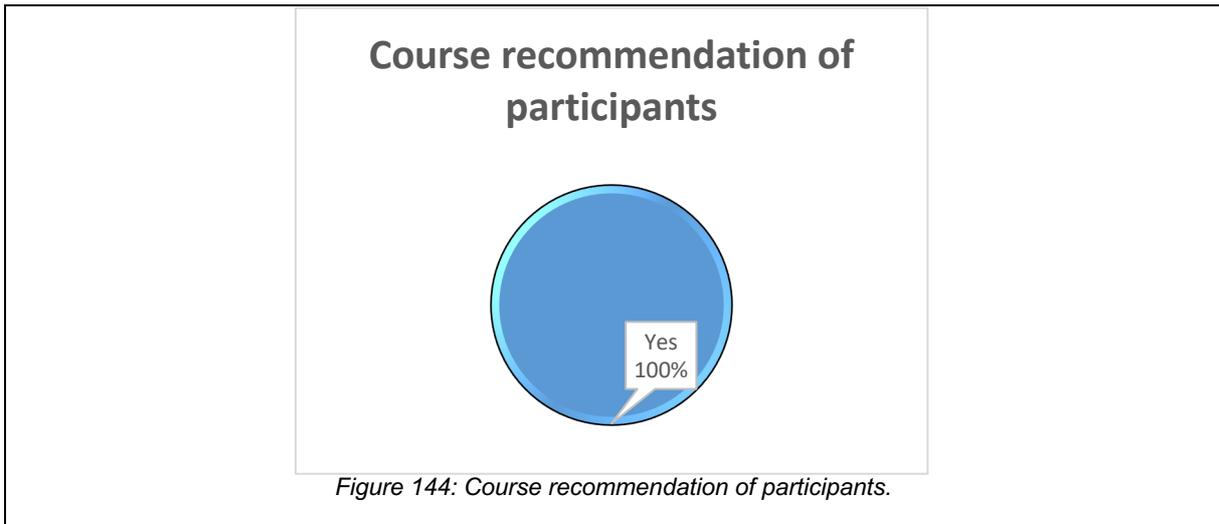


Figure 144: Course recommendation of participants.

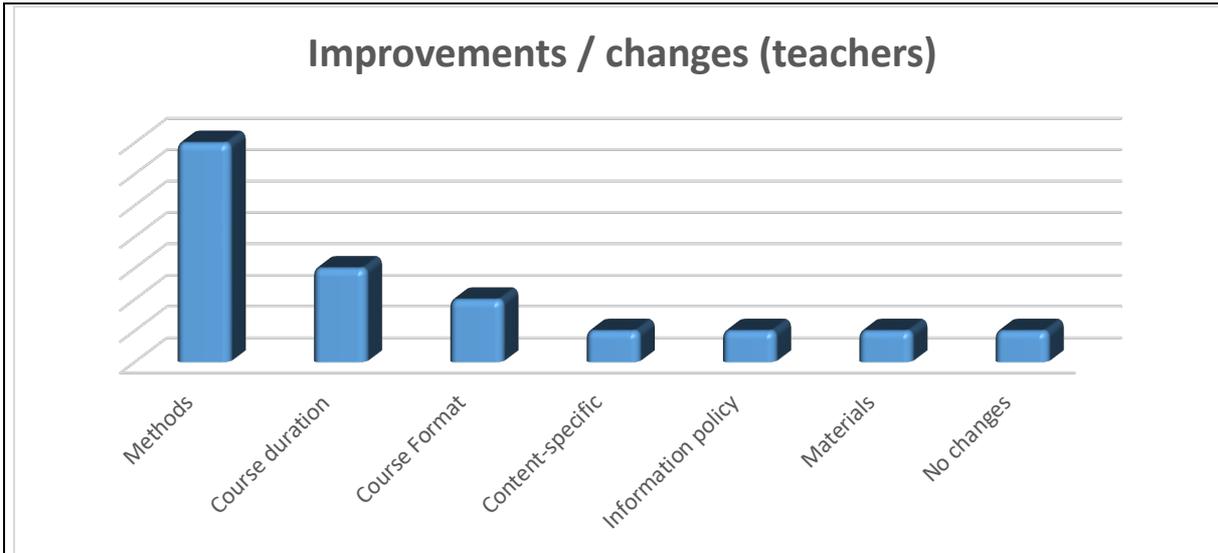


Figure 145: Improvements / changes (teachers).

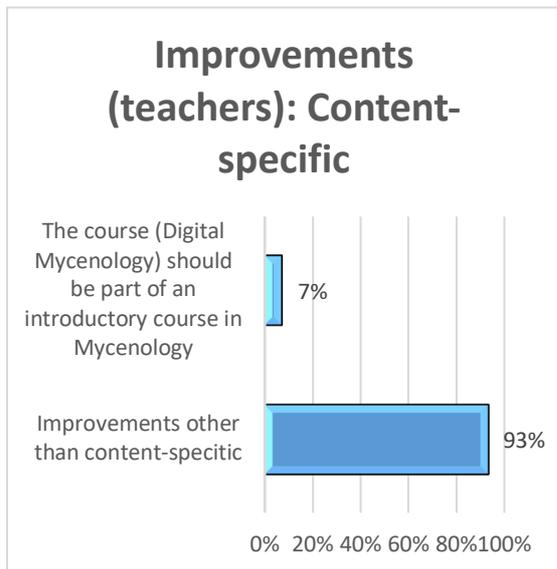


Figure 146: Improvements (teachers): Content-specific.

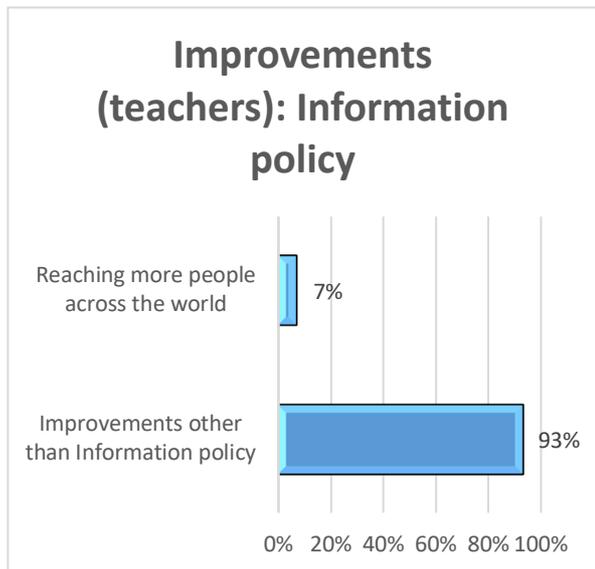


Figure 147 Improvements (teachers): Information policy.

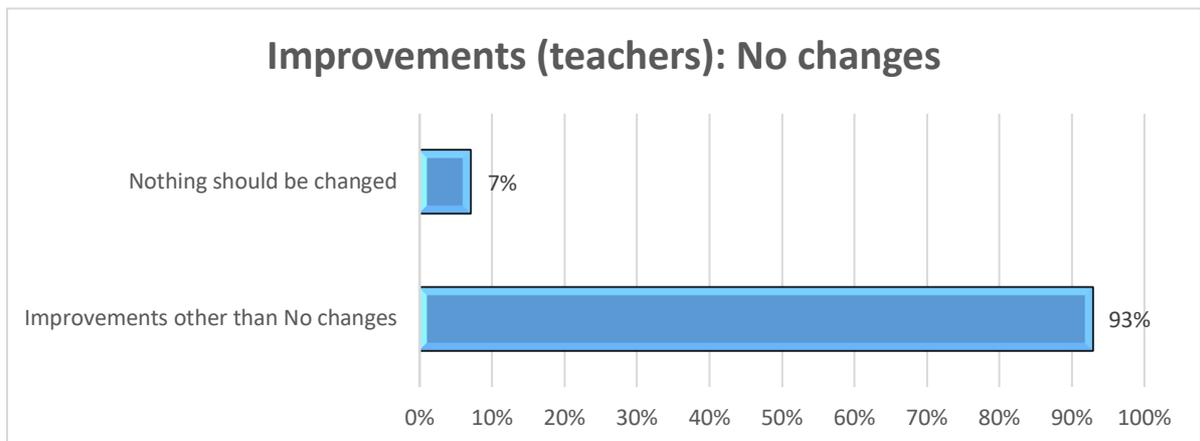


Figure 148: Improvements (teachers): No changes.

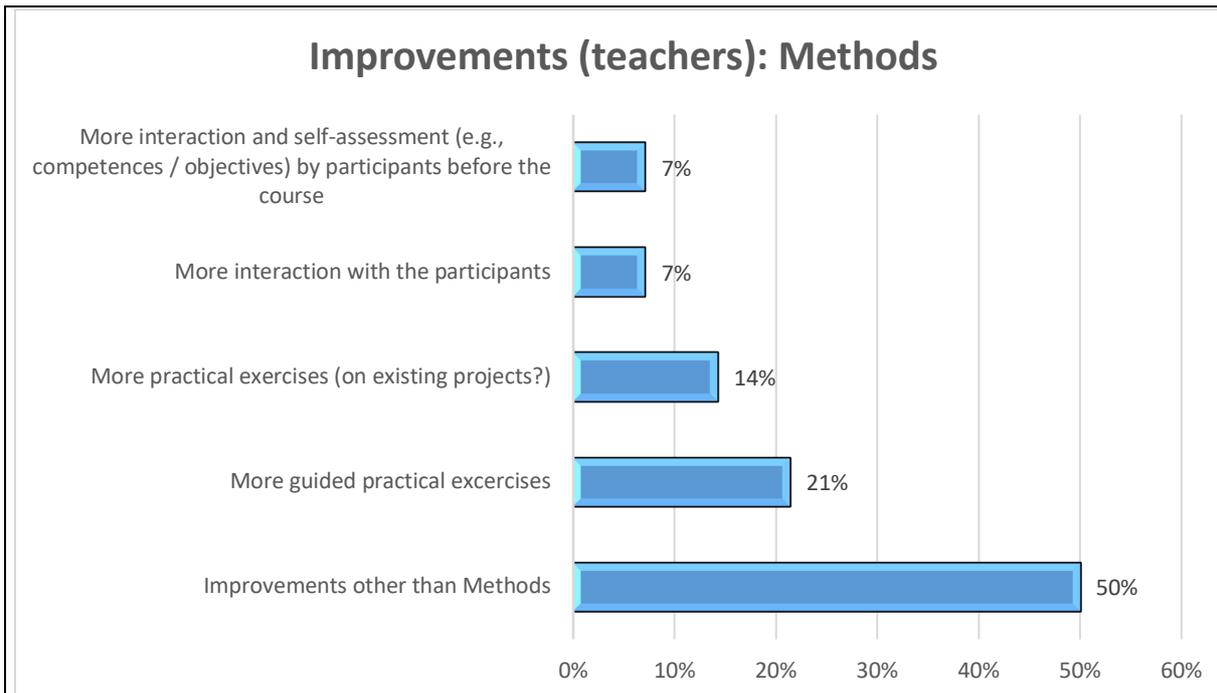


Figure 149: Improvements (teachers): Methods.

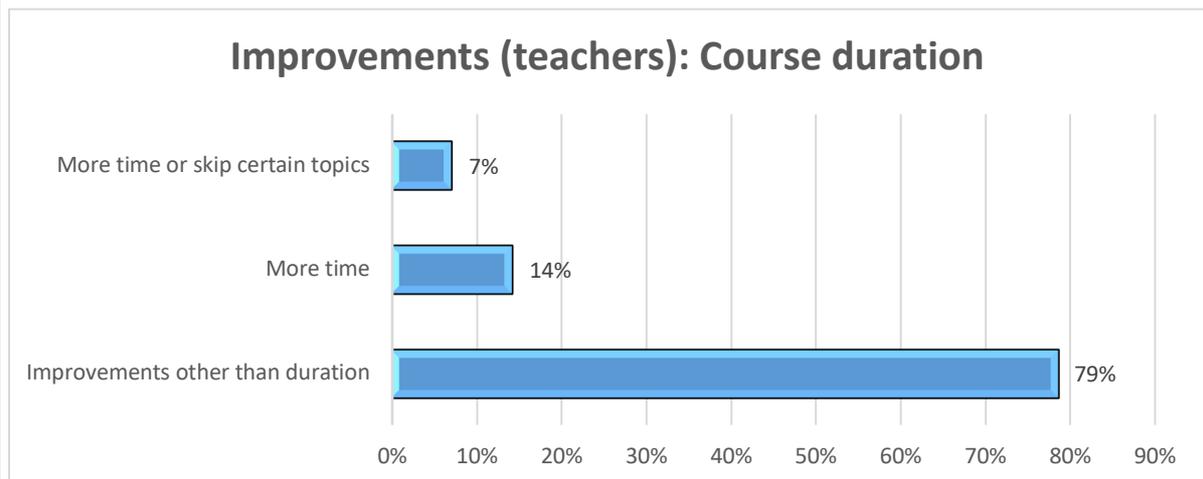


Figure 150: Improvements (teachers): Course duration.

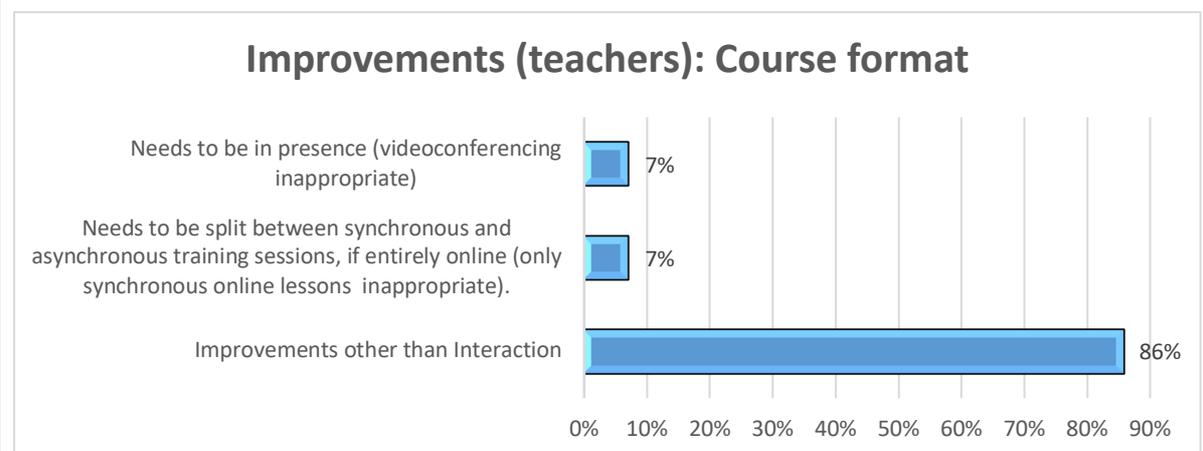


Figure 151: Improvements (teachers): Course format.

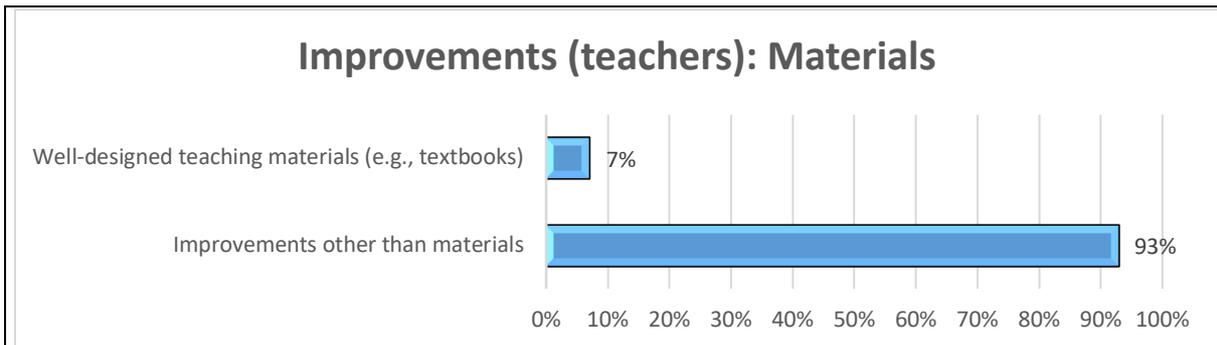


Figure 152: Improvements (teachers): Materials.

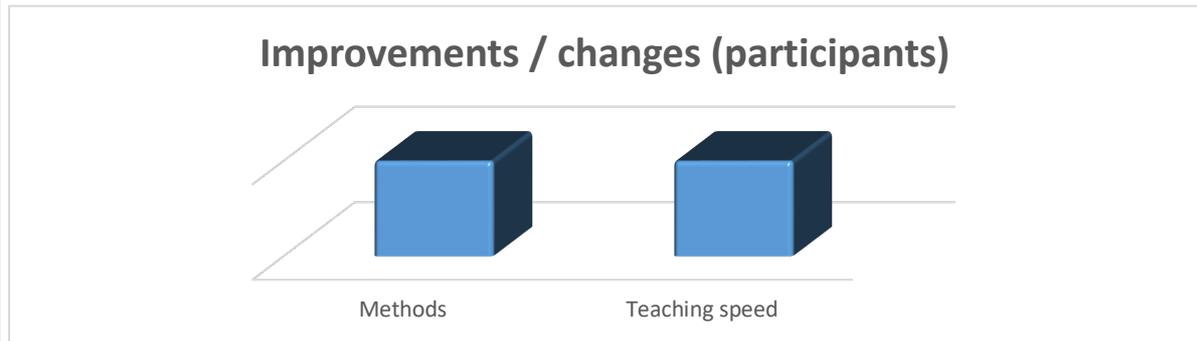


Figure 153: Improvements / changes (participants).

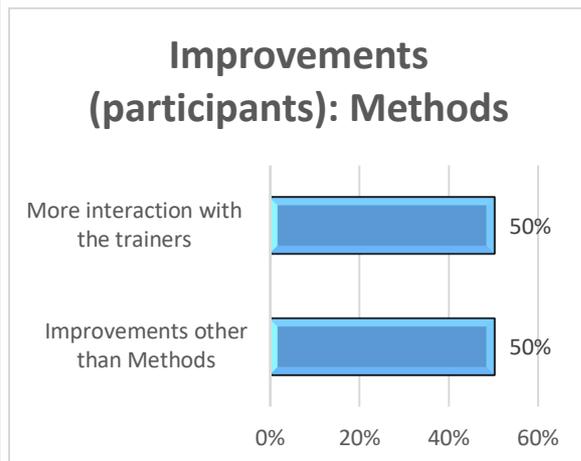


Figure 154: Improvements (participants): Methods.

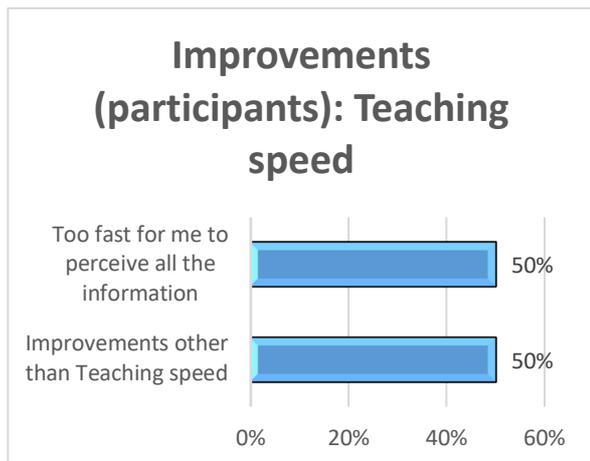


Figure 155: Improvements (participants): Teaching speed.

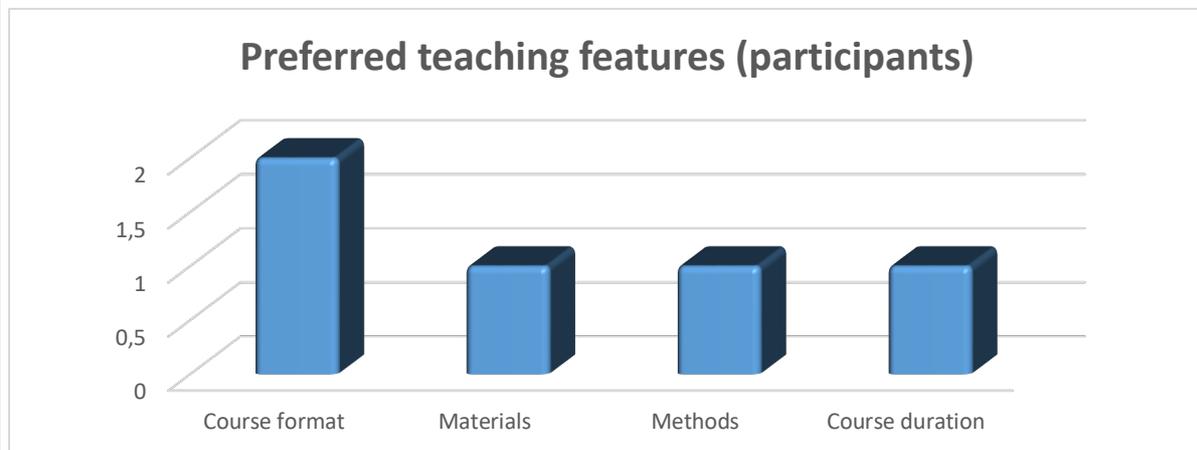


Figure 156: Preferred teaching features (participants).

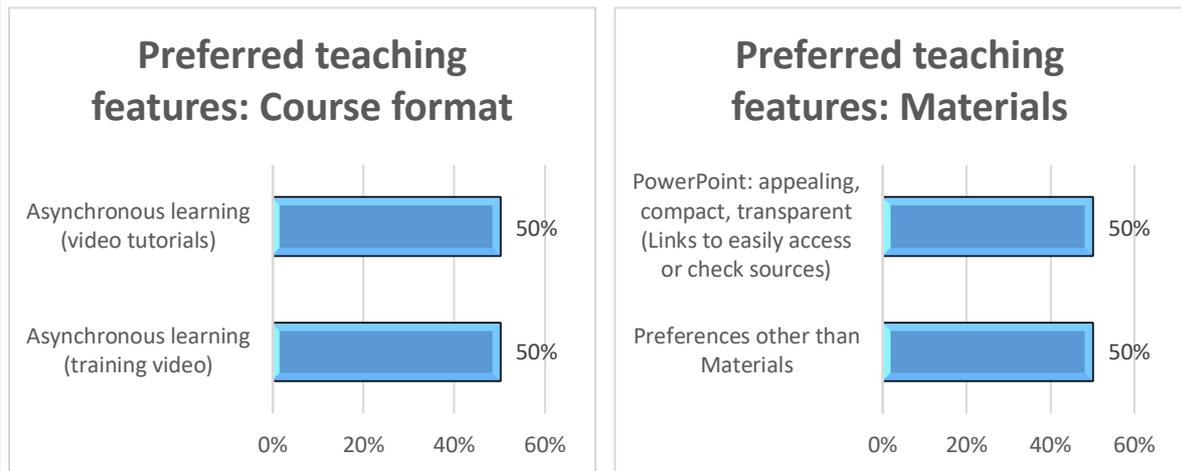


Figure 157: Preferred teaching features: Course format.

Figure 158: Preferred teaching features: Materials.

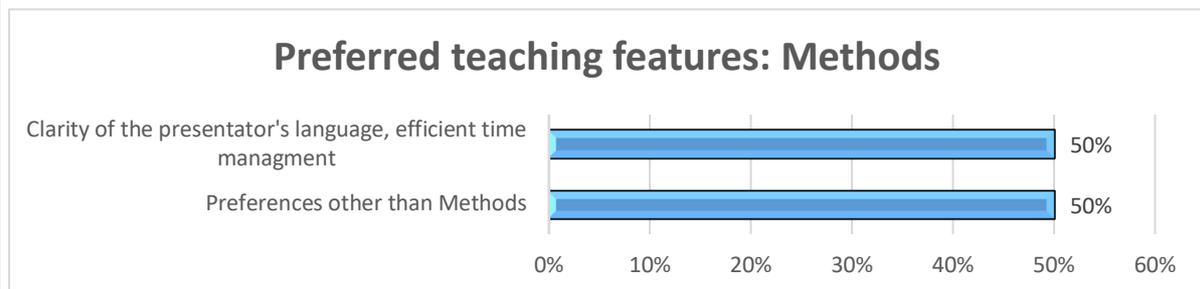


Figure 159: Preferred teaching features: Methods.

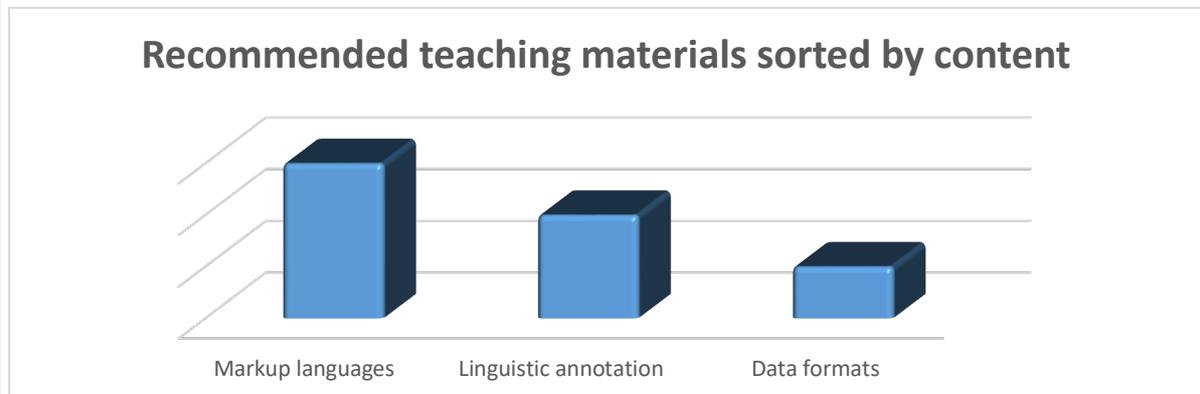


Figure 160: Recommended teaching materials sorted by content.

### Recommended materials (Markup languages)

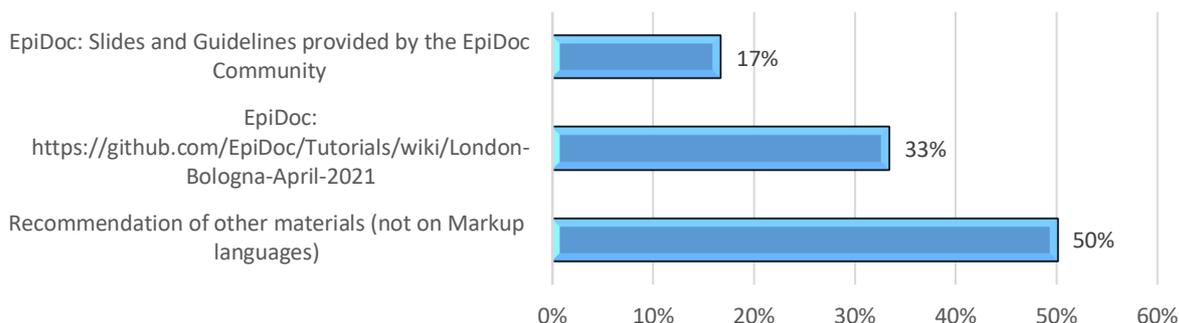


Figure 161: Recommended materials (Markup languages).

### Recommendation of Markup materials: Initial and final course level

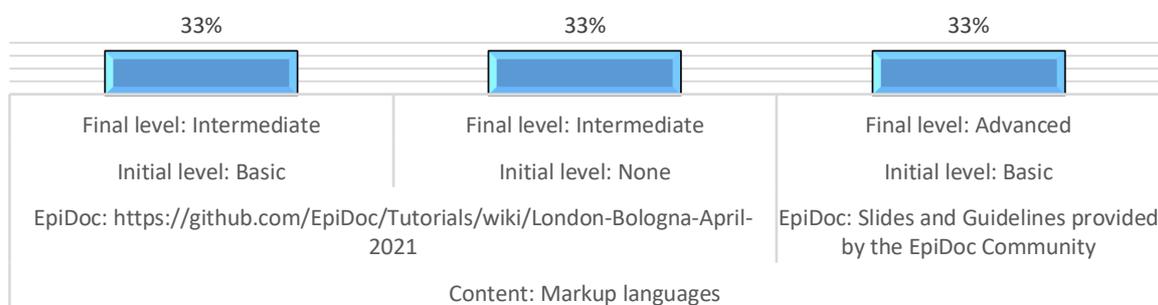


Figure 162: Recommendation of Markup materials: Initial and final course level.

### Recommended materials (Linguistic annotation)

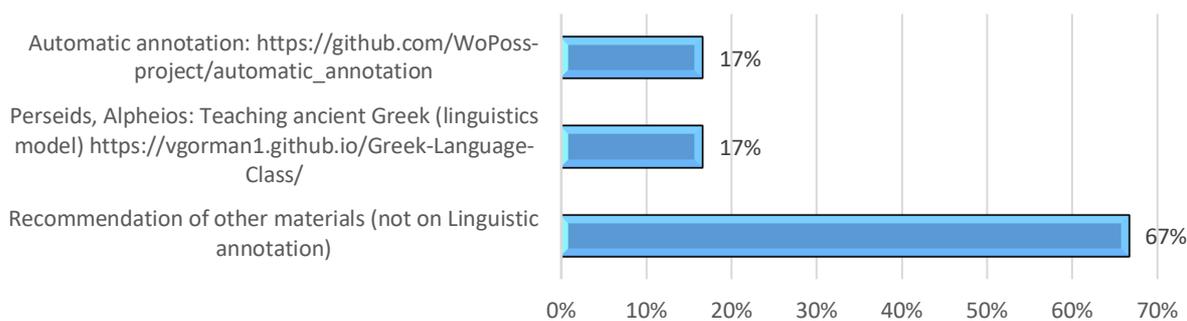
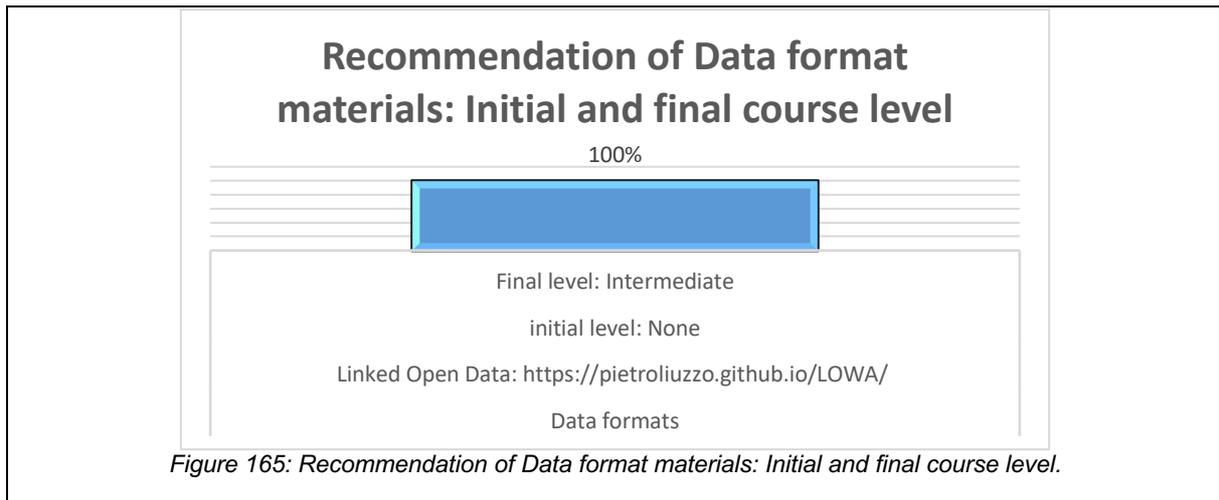


Figure 163: Recommended materials (Linguistic annotation).

### Recommended materials (Data formats)



Figure 164: Recommended materials (Data formats).



## 6 Bibliography

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Li, L. / Grion, V., *The Power of Giving Feedback and Receiving Feedback in Peer Assessment*, AISHE-J (11/2) 2019, 1-17.

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Project summary (Erasmus+)

<https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2020-1-IT02-KA203-079585>