



Digital Skills and Jobs Coalition



Digital Skills and Jobs Coalition



In cooperation with



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Foreword



This report presents the results of the research “*What do you think about the future of Digital Education and Training in EU?*”, a self-sustained survey promoted by the European Digital Learning Network – Dlearn - over the past months to collect opinions, doubts, hopes and views about the impact produced on the field of Education & Training by the fast and steady process of digital transformation. We collected more than 1000 ad-hoc questionnaires from people working in VET, Higher, School or Adult Education, with the aim of making their voices be heard by EU institutions and all

the European countries. As an initiative of the European Commission managed by the DG Connect, DLEARN – an active member of the Digital Skills and Jobs Coalition – has been awarded the pledge of promoting this survey through its channels.

DLEARN – *European Digital Learning Network* - is indeed a young reality, but still its journey until today has been outstanding and full of satisfactions. The wide experiences, know-how and strong relations of the involved members – which are actively committed to strengthen the voice of the network – have allowed us to become an acknowledged and influent player in the field of Education & Training. EU authorities and institutions, together with relevant sectorial organisations, look at us as a reliable and competent partner.

We are at the front line when it comes to raise awareness on the key role assumed by digital knowledge, a critical component today for the creation of a competitive economy and of a truly inclusive society. We strongly believe in the educational opportunities brought by digital technologies. Therefore, we created the network, and this is why we keep on working so hard: to produce – and offer – know-how, contents, models and solutions which will shape the future education at all the levels. I am proud of our accomplishments, and even more confident for the future progress of our work.

I invite you to analyse this report and to contact us if you wish to comment and give us your feedback.

To know more about our network, visit our website www.dlearn.eu

Gianluca Coppola, President of the European Digital Learning Network

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1. Executive Summary

The European Digital Learning Network – DLEARN – aims to embrace the challenges brought by the digital transformation in terms of digital skills mismatch and digital learning opportunities. The 47% of Europeans is not properly digitally skilled, yet in the near future 90% of jobs will require some level of digital skills.

We believe in the value of SHARING, CONNECTING, MULTIPLYING and ENHANCING the potential of our members, local territories and people.

Constant changes in economy and society have been urging governments to emphasize the contribution of education to a wide range of newly required skills and competencies. 21st Century skills are considered to be key enablers of responsible citizenship in a ICT-based economy.

A Successful education and training in our knowledge society depends increasingly on the confident, competent and innovative use of ICT.

DLEARN wants to bring closer the experiences and voices of local territories and people to EU policies. Nowadays this process is hindered by the presence of bigger interests, notably big corporations or umbrella organizations. With our activities and through our network we want to minimize this gap, through the promotion of bottom up initiatives, such as:

- Closer cooperation and enhancement of our activities to a higher level through periodic project labs;
- Tight networking activities and lobbying to achieve a fruitful accreditation of local needs to the relevant EU Commission DGs;
- Improving existing experiences and knowledge of digital learning through sharing of practices and creation of efficient business opportunities.

Dlearn is a network made of members based all over Europe, related to the field of Education & Training and ICT. In the framework of our activities, DLEARN – in cooperation with some of the most influent stakeholders in Europe in the sector of education and training– promoted a survey to collect trends and ideas about the future development in Education & Training, in the era of digital transformation. The initiative is part of the Digital Skills and Job Coalition’s pledge awarded to Dlearn, not granted by any public funds. Every professional acting in the fields of Adult education, School, Higher Education or VET has been invited to take up the survey.

With the survey *“What do you think about the future of digital Education and Training in EU?”*, our objective was to understand the point of view of professionals in Education & Training adopting a bottom-up approach, thus to collect a feedback that will be shared among all European Countries and EU institutions from people that daily deals with improvements and changes in Education & Training.

We asked organizations in the field of Education to share their point of view through a bottom-up approach, and this report aims to share their ideas among all EU countries and institutions, analysing the 4 main sectors of education.

1.1 Methodology

The survey was promoted to collect trends, ideas, practices and opinions in the framework of digital education, from the organizations belonging to the education sector. The questionnaire investigated different issues which are shaping education nowadays:

- The extent to which digital tools are used in education;
- The level of digital skills among education providers
- The extent to which organizations are equipped to embrace digital transformation
- The most used or known methodologies to adopt ICT tools for educational purposes
- The most used practices or methodologies to help the transition to employment
- The extent to which ICT tools can help students'/learners' retention

The investigation interested 4 main education sectors:

1. Adult Education
2. Higher Education
3. School education
4. Vocational Education and Training

Each respondent had the possibility to answer questions specifically related to its sector of interest, allowing for an in-depth insight of the current situation in education and future developments.

Ultimately, our aim was to deliver a comprehensive picture of the situation in these four sectors, so to understand needs, problems, practices and possible improvements. The statistical results, both from a qualitative and quantitative point of view, have been analysed with the purpose of drafting recommendations for the education sector and, most importantly, for that of digital education. The recommendations, together with the analysis of the results, will be addressed to all private and public stakeholders playing a leading role in shaping education today and in the future.

1.2 Data gathering

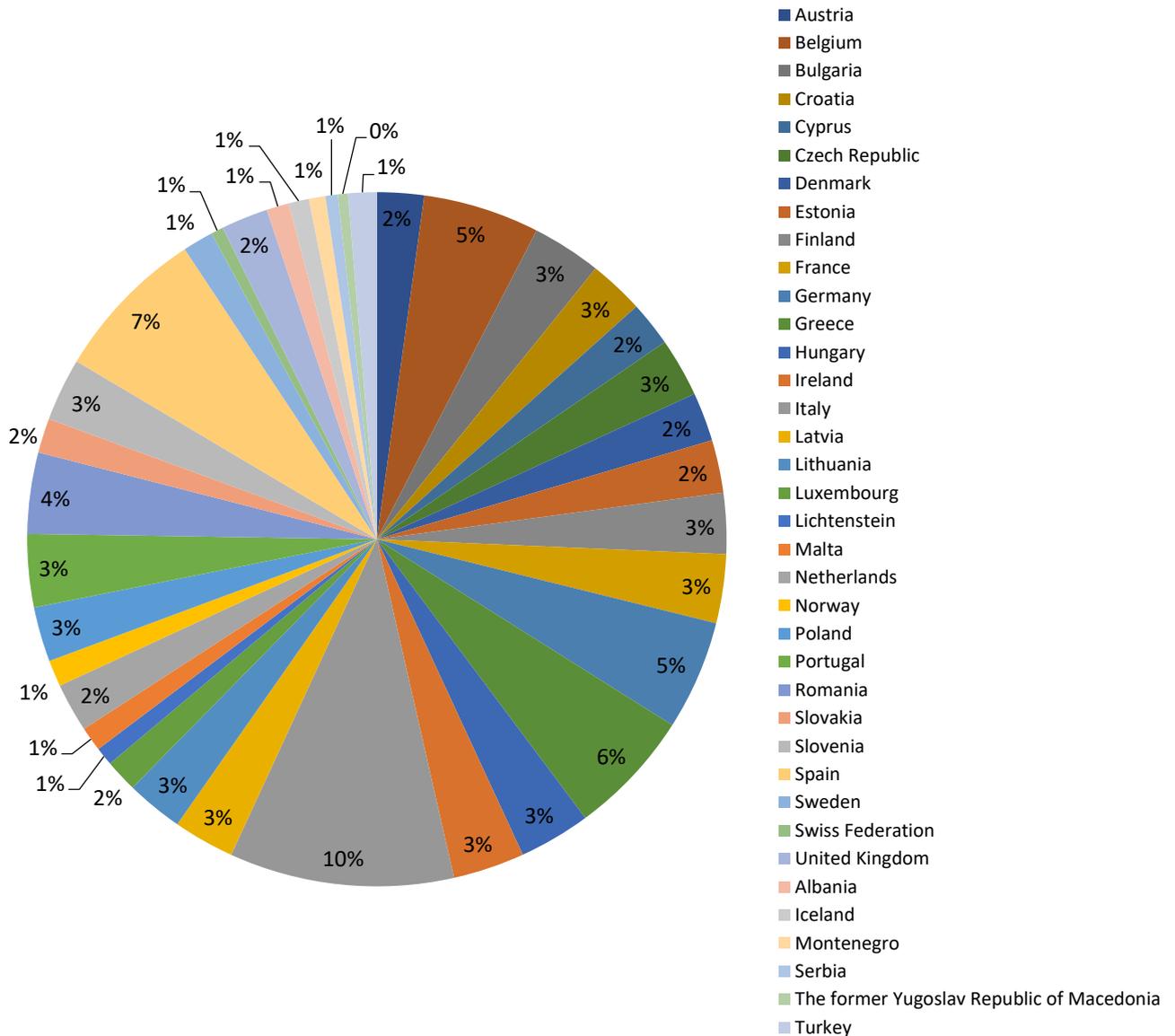
The European Digital Learning Network, together with its partners in this activity, as described above, has promoted the survey through different channels. The most used have been:

- Social Media, such as Facebook, Twitter and LinkedIn
- Newsletters
- Blog Posts
- Websites
- Emails

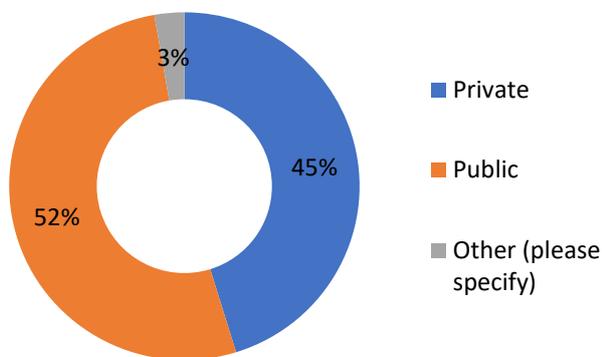
The contacts used are those of the network, together with the partners' mailing list and social media contacts.

This approach allowed the survey to be spread all over Europe, and especially to very different education organizations. The total number of respondents is 1059.

In the graph below, you can see how the different European Countries are represented.



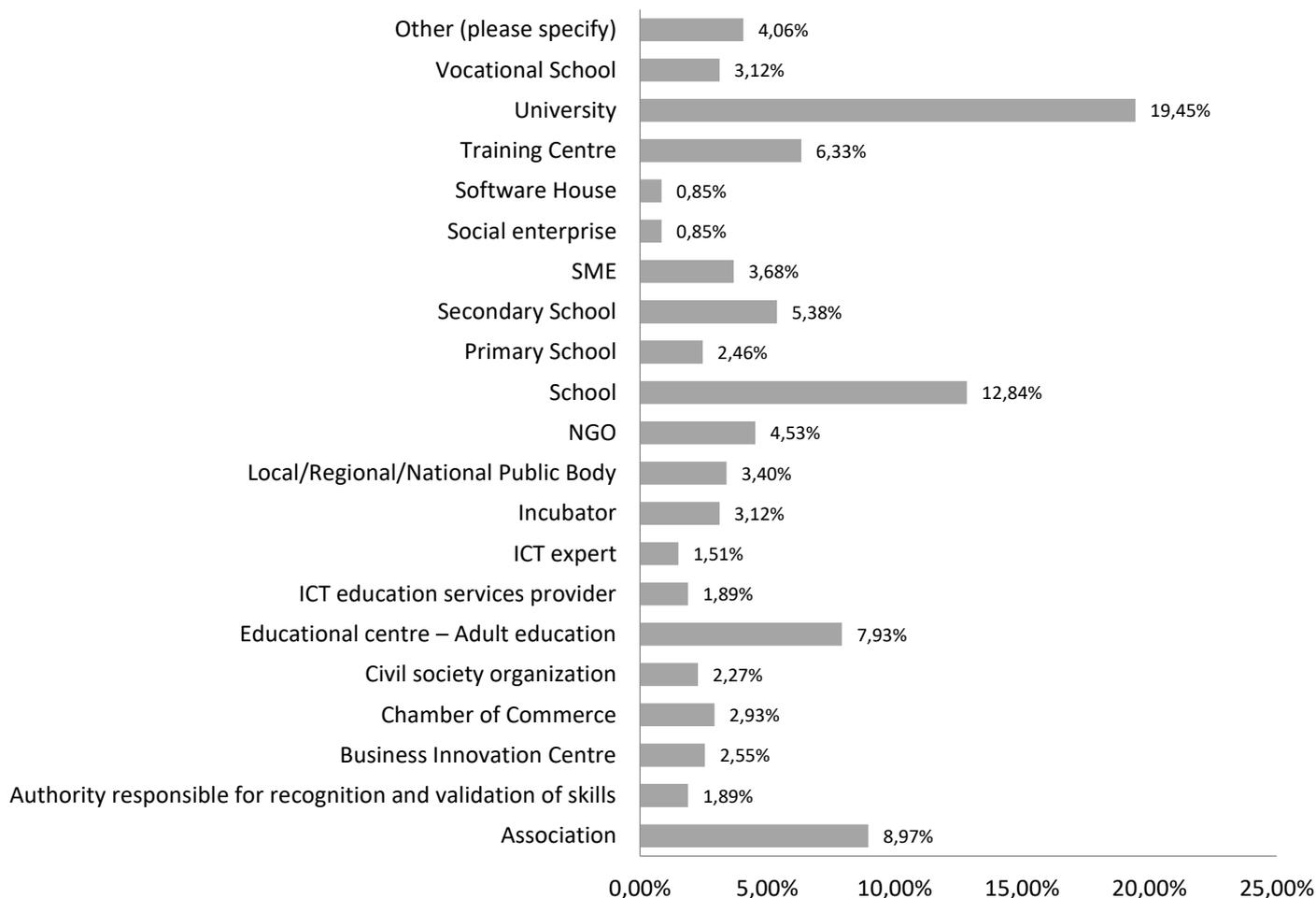
The countries which participated the most to the survey were: Italy 10,39%, Spain 7,18%; Germany 5,10%, Portugal 3,40%, France 3,21%, Latvia 2,83% etc. Furthermore, all the countries listed in the survey are represented even with a small percentage.

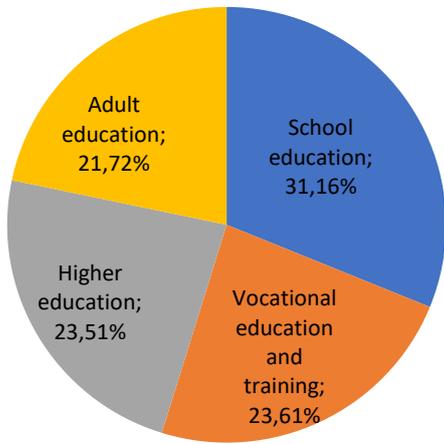


The questionnaire investigates also on the nature of the respondents. The 52,03% are from the public sector and the 45,23% are from private sector. Some of the surveyed answered "other", as they explained to belong to:

NGO
Consultant company
EU network
Charity
Semi-public
An umbrella organisation of 20 associations of Singing teachers
Social education and workforce enablement
Non-for profit private university
Freelancer
A network of national governmental organisations
Private but with public funds
Self-governing state granted
Corporate
Hellenic Federation of Enterprises
Private established by the public body
European level not for profit
Cooperation between public and private organisation

In the graph below, you can see also the characteristics of the organizations which took part in the survey.





Finally, as what concerns the number of respondents per sector, we have reached the following amounts.

There is a slight majority of respondents - 31,16% - belonging to the School sector, while the other sectors are represented with 23,61% for Vocational Education and Training, 23,51% Higher education, 21,72% Adult Education.

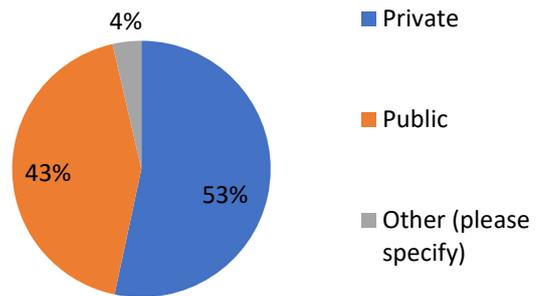
2. Analysis of the four sectors

2.1 Adult education

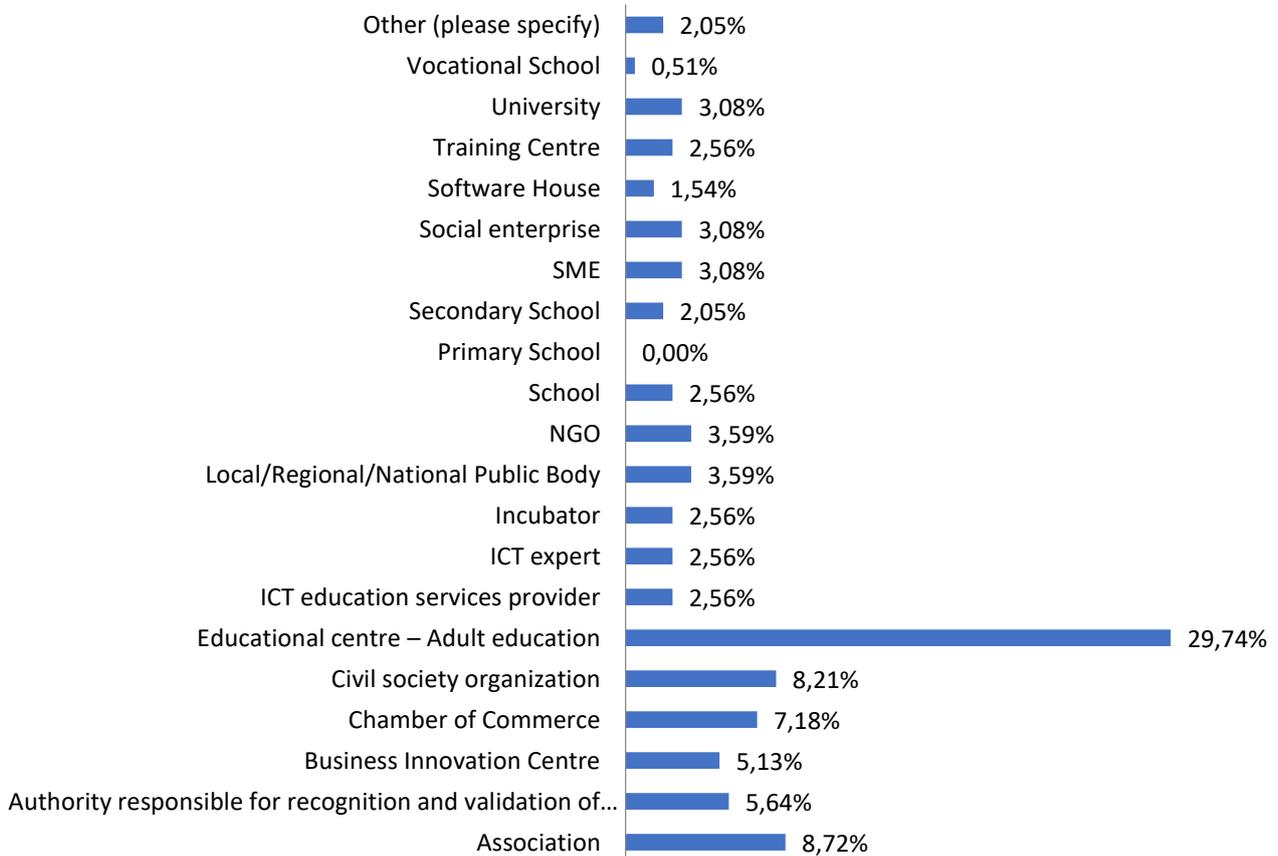
2.1.1 Demographic references

With reference to the Adult Education thread, the survey collected a total of 195 respondents, which completed the full questionnaire. Out of 195: 53,33% came from the private sector, while 43,08% from the public. Only the 3,59% (7 respondents) selected the option “other”, specifying that they work for NGOs or that they belong to both sectors working as free-lancers.

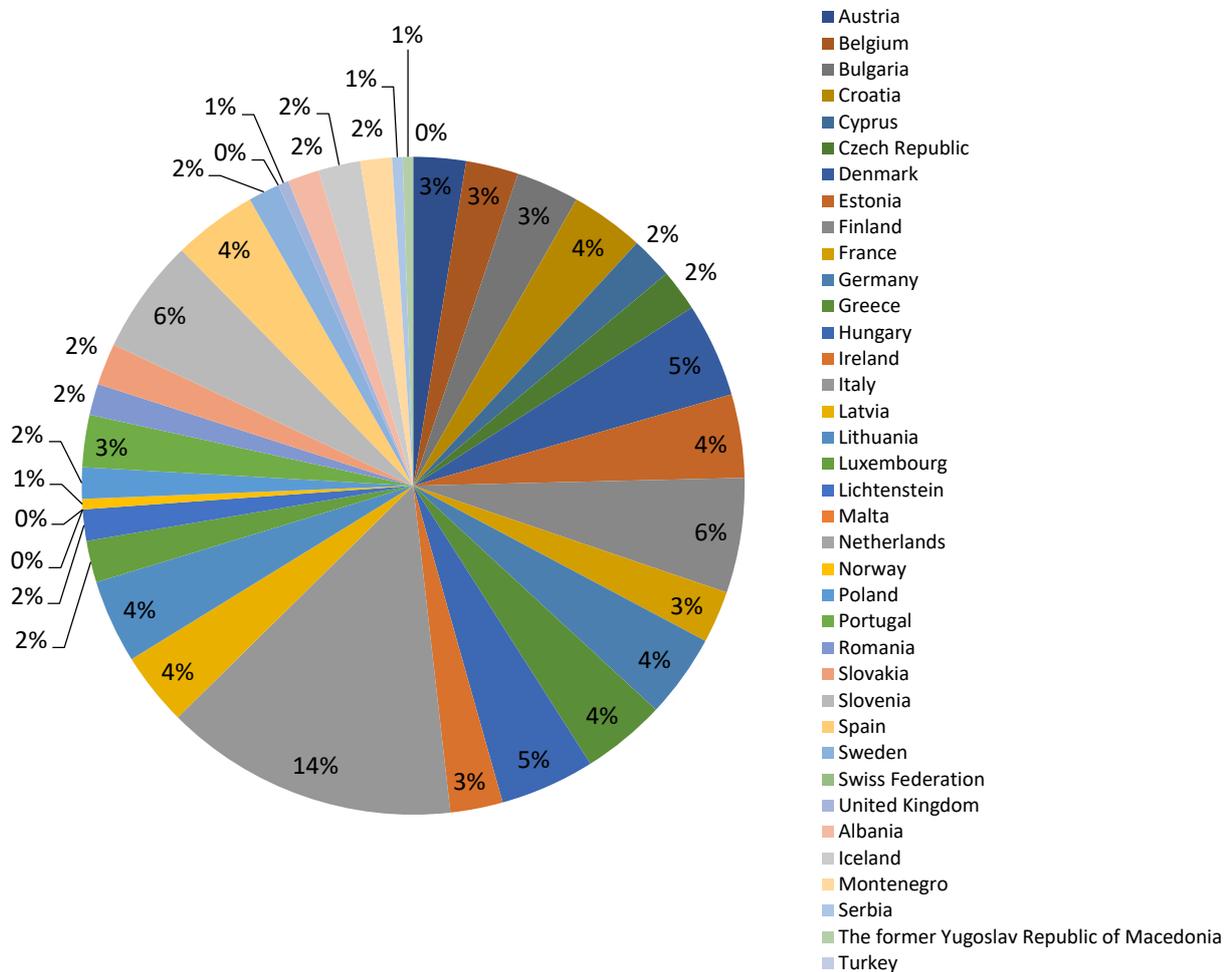
Which type of organization are you?



Are you a:



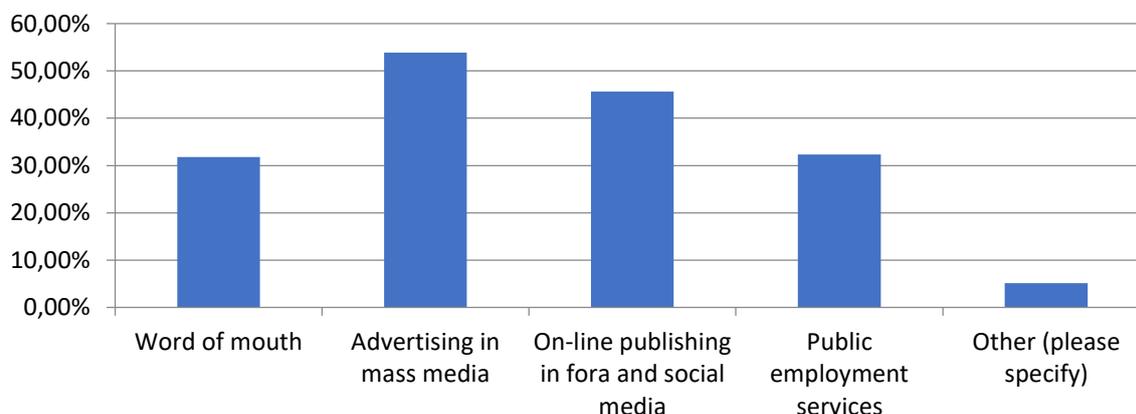
As for the type of entity, the graph shows that 29,74% belong to the Adult Education sector. Furthermore, respondents chose associations (8,72%), civil society organizations (8,21%), chambers of Commerce (7,18%), authority responsible for recognition and validation of skills (5,64%), business innovation centres (5,13%), Local/Regional/National Public Bodies and NGOs (both 4,35%).



The graph above gives a demographic snapshot of the survey. Out of 195, most of the respondents come from Italy (14,36%), followed by Slovenia and Finland (both with 5,64%), Denmark and Hungary (both with 4,62%) and the group of Estonia, Germany, Greece, Lithuania and Spain (each with 4,10%). No responses were collected from Malta, the Netherland, the Swiss Federation and Turkey.

2.1.2 Analysis of the adult sector

What are the main channels through which you recruit adults for your learning programmes?

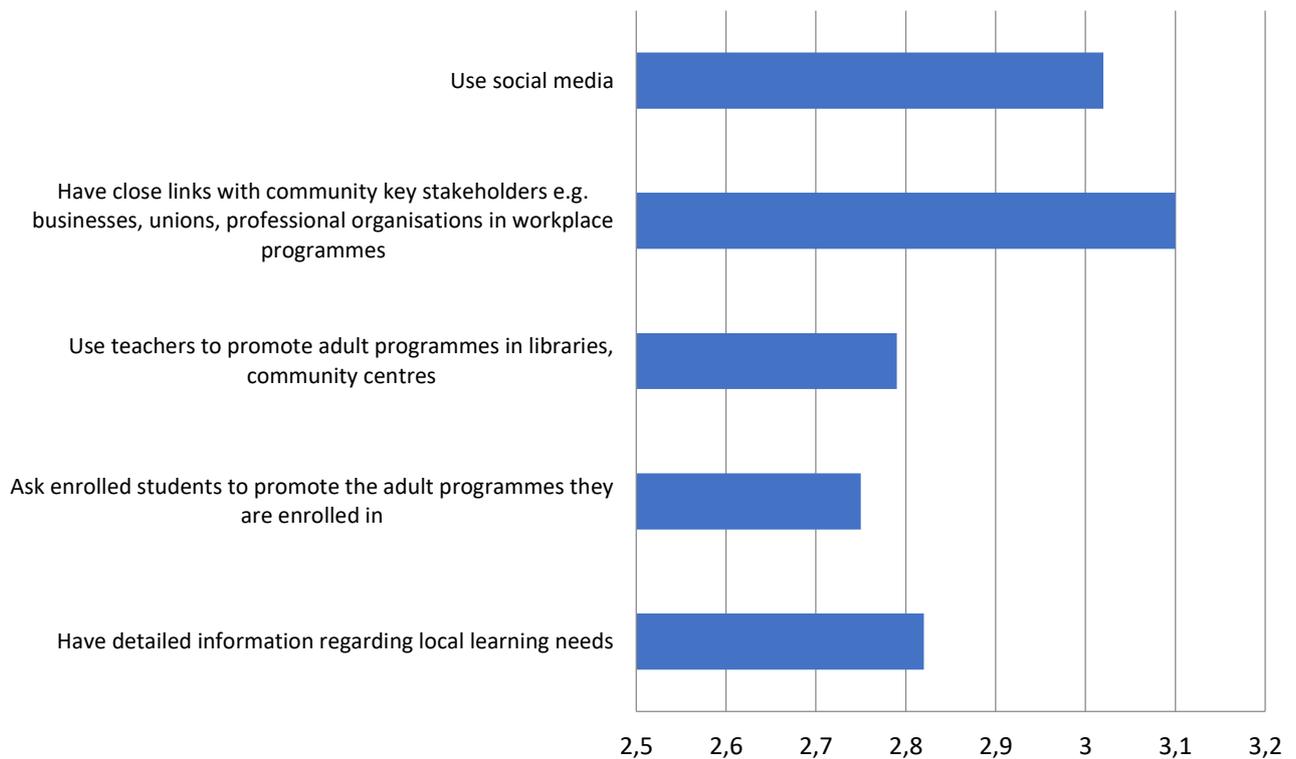


This question aimed to understand the main channels in the process of adults' recruitment and the ways to promote learning programs. Respondents had the possibility to choose more than one answer. The results show that organisations still prefer common channels, such as:

1. *Mass media advertisement* (105 preferences), while the
2. *Digital means*, i.e. online publishing through social media platforms, only ranked second (89 preferences).

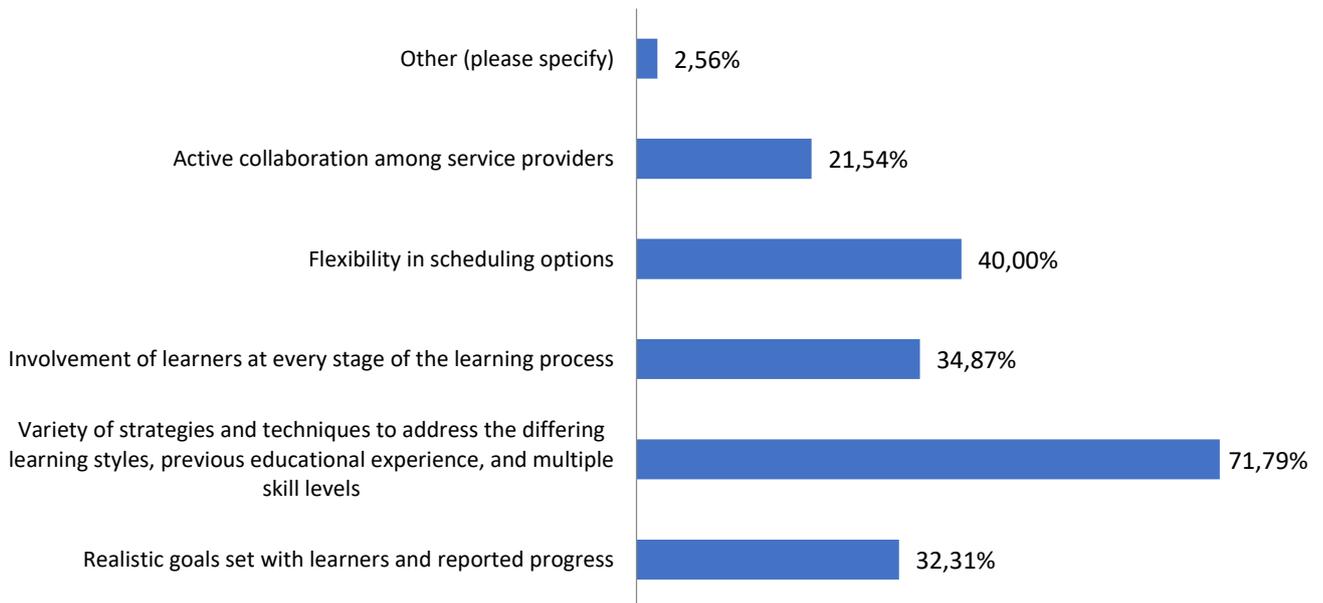
This is not a surprising result, since it can be stated that – compared to the youth – adults still lack digital skills or are less responsive in using social channels. On the other hand, what may sound unexpected is the sum of the other two options, *Word of Mouth* and *Public employment services*, which have received respectively 62 and 63 preferences (125 in total). This means that, despite the potential of digital tools, providers of adult learning programmes – and therefore adult learners too – still prefer conventional channels when it comes to recruit or attract students. Others (10) prefer networking, professional communication channels or they don't need to advertise since they already work for companies/enterprises providing learning programmes to employees.

How can an adult education provider attract learners to their learning programmes?



Regarding the way to attract learners, this question shows results which, somehow, are in line with the previous one. The methodology employed to analyse data gathered from this issue simply gave a weighted average to each option which requested a rate for the measures provided, marking them as *not useful*, *Poorly Useful*, *Useful*, *Very Useful*. Generally speaking, respondents found the option “*Have close links with community key stakeholders e.g. businesses, unions, professional organisations in workplace programmes*” the best way to attract learners to their educational programmes with a weighted average of 3.10 (indeed 39,77% rates the option very useful and 36,84% useful) while the option “*Use social media*” ranked second (weighted average of 3.02, in line with the previous question) whereas 37,95% rates it useful and 35,54% very useful. The last three options “*Have detailed information regarding local learning needs*”, “*Use teachers to promote adult programmes in libraries, community centres*” and “*Ask enrolled students to promote the adult programmes they are enrolled in*” classified respectively 3rd, 4th and 5th although most of the respondents evaluate them between useful and very useful.

Which practices should the adult education providers employ to ensure adult learners retention from the start?

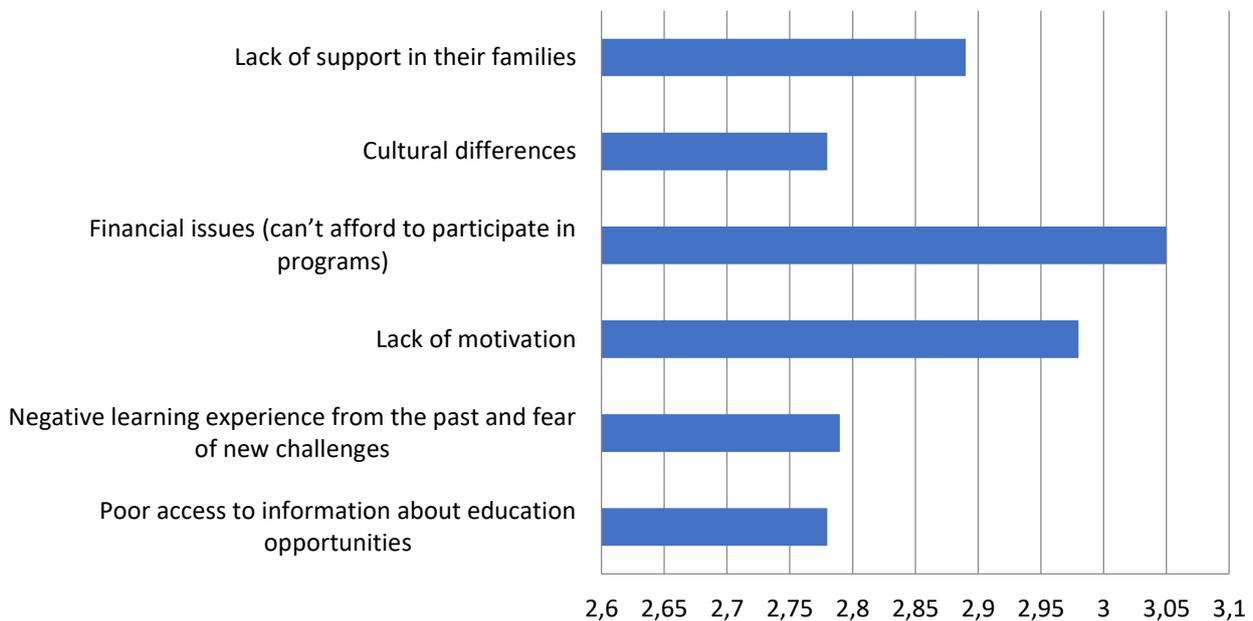


About the adult learners' retention practices, respondents had the possibility to choose more than one answer. Most of the respondents affirmed to use a variety of strategies and techniques – 140 preferences – while 78 preferences have been given to the flexibility in scheduling options. These results are followed by:

1. *"Involvement of learners at every stage of the learning process"* with 68,
2. *"Realistic goals set with learners and reported progress"* with 63 and
3. *"Active collaboration among service provider"* gained only 42 likings.

This data shows that educational methodologies need to adapt to a diversified audience coming from different cultural-working domains with several learning styles, educational experiences and skills along with the possibility to have a level of flexibility in scheduling options.

Which are the greatest obstacles preventing adults at risk from entering education programs?

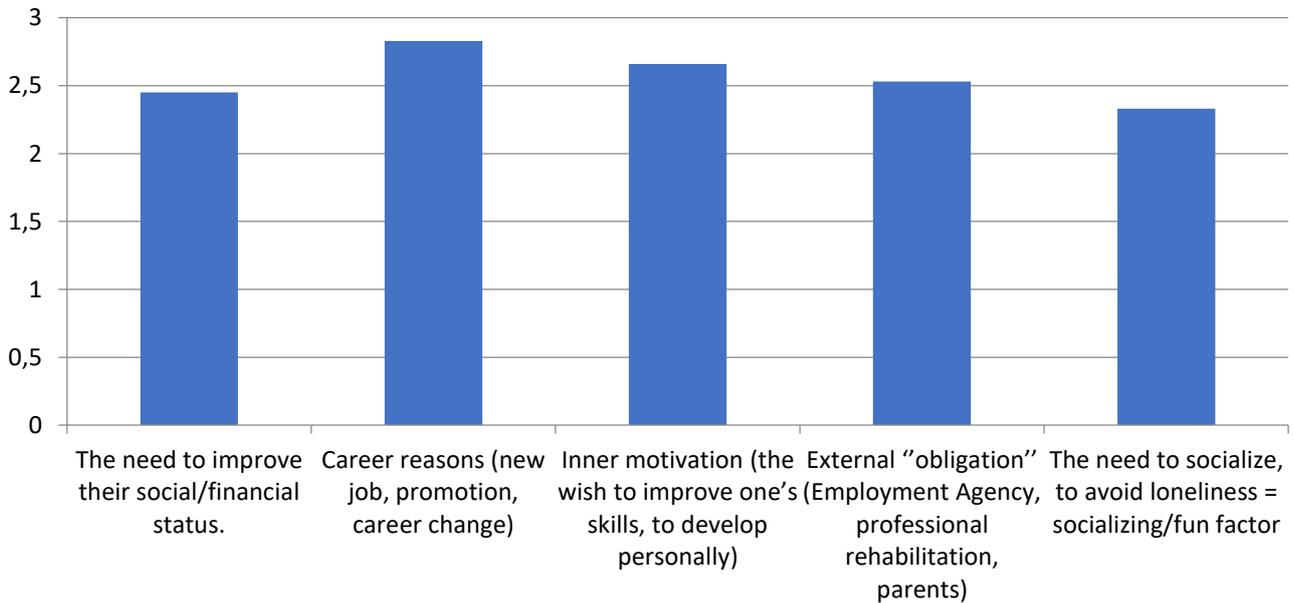


About the greatest obstacles preventing adults at risk from entering education programs, the graph shows a result which is in line with the current economic scenario. The methodology employed to analyse data gathered from this issue simply gave a weighted average to each option, which requested to rank the importance of obstacles/reasons provided from 1 to 4 (*no effect, trivial effect, good effect, very good effect*). Respondents found *Financial issues* to be the first obstacle/reason preventing adults from enrolling in learning programs with 3,05 (indeed 40,94% rates the option *good effect* and 33,92% *very good effect*) while the option *Lack of motivation* ranked second (weighted average of 2,98) whereas 44,19% rates this reason as *Good effect* and 30,81% *Very good effect*.

The last four options have very little differences among them, such as:

1. *"Lack of support in their families"* ranked 3rd with a weighted average of 2,89,
2. *"Negative learning experience from the past and fear of new challenges"* ranked 4th with a weighted average of 2,79 while
3. *"Poor access to information about education opportunities"* and *"Cultural differences"* obtained the same weighted average of 2,78.

Which are the most frequent motivational factors (internal/external) of adult learners to enter education programs?



This question tried to evaluate the internal/external motivational factors of an adult learner to enter education programs. The methodology employed to analyse data gathered from this issue simply gave a weighted average to each option which requested to rank the importance of motivation provided marking them as *Least Frequent*, *Poorly Frequent*, *Frequent*, *Very frequent*. According to data, respondents found the options:

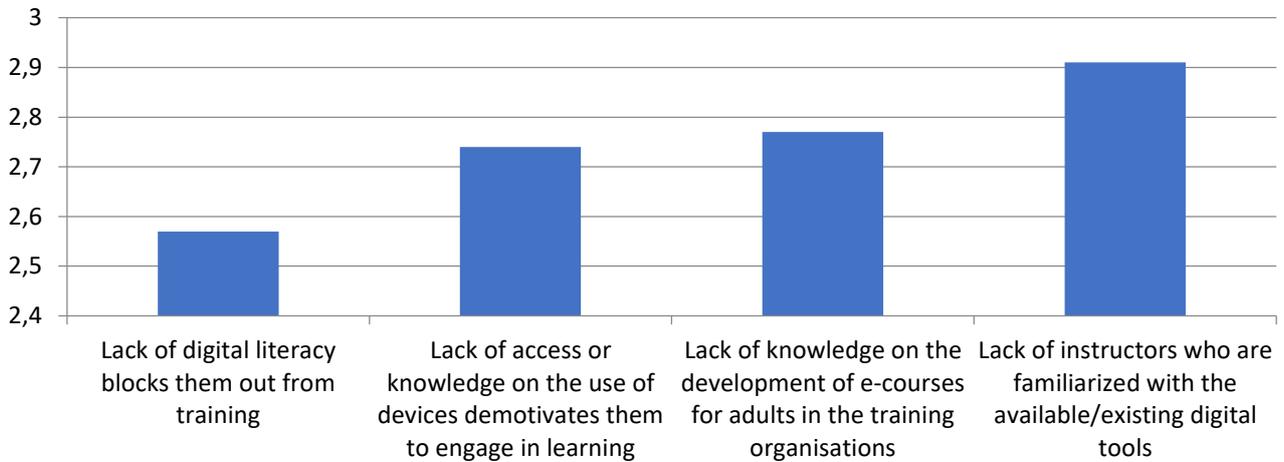
1. *"Career reasons (new job, promotion, career change)"* the first motivation encouraging adults to enter education programs with a weighted average of 2,83 (indeed 33,1% rates the option *Frequent* and 31,69% *Very frequent*);
2. *"Inner motivation (the wish to improve one's skills, to develop personally)"* ranked second (weighted average of 2,66) whereas 34,33% rates this motivation as *frequent* and 20,90% *very frequent*.

The last three options have very little differences among them:

3. *"External "obligation" (employment agency, professional rehabilitation, parents)"* ranked 3rd with a weighted average of 2,53,
4. *"The need to improve their social/financial status"* ranked 4th with a weighted average of 2,45
5. *"The need to socialize, to avoid loneliness = socializing/fun factor"* obtained a weighted average of 2,33.

Building upon this, it can be stated that adults are more encouraged by internal motivation (career goals or wish to improve personal skills) rather than external factors when they enter educational programs.

What are the challenges and barriers with regards to adult education and digital transformation?



In this section, we asked the participants to evaluate challenges and barriers with regards to adult education and digital transformation. The methodology employed to analyse data gathered from this issue gave a weighted average to each option, which requested to rank the importance of selected challenges according also to respondents' experience from 1 to 4, as *Not important*, *Poorly important*, *Important*, *Very important*. According to the resulting data, participants found the options:

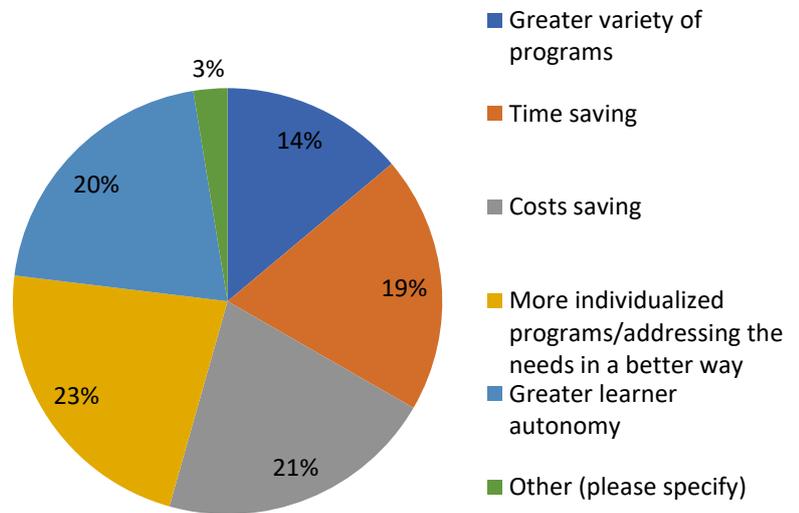
1. *"Lack of instructors who are familiarized with the available/existing digital tools"* the most important barrier within the *"adult education – digital transformation"* domain, with a weighted average of 2,91 (indeed 36,69% rates the option *Important* and 34,332% *Very important*);
2. *"Lack of knowledge on the development of e-courses for adults in the training organisations"* ranked second (weighted average of 2,77) whereas 45,20% rates this barrier *Important* and 19,21% *Very important*;
3. *"Lack of access or knowledge on the use of devices demotivates them to engage in learning"* ranked 3rd with a weighted average of 2,74;
4. *"Lack of digital literacy blocks them out from training"* with a weighted average of 2,57 has been considered the less important challenge.

Indeed, as a respondent commented, *«Most of adults have basic digital literacy, otherwise they do not start...starting from zero is no longer an option to reach skilled roles»*.

As far as it concerns the ways through which digitalisation improved teaching methodologies in terms of adult learners' benefits, results show a certain balance among the proposed options. Indeed 22,56% of respondents identified "More individualized programs/addressing the needs in a better way" as a first benefit digitalisation contributes to. Then we find respectively:

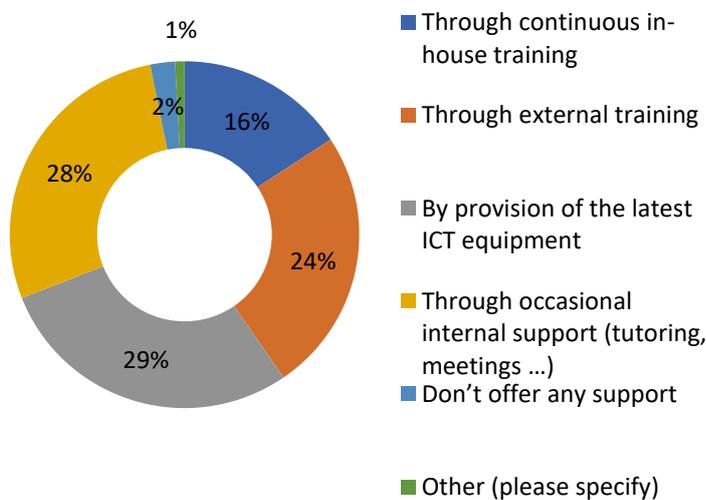
1. "Costs saving" 21,03%;
2. "Greater learner autonomy" 20,51%;
3. "Time saving" 19,49%;
4. "Greater variety of programs" 13,85% and then
5. "Other" 2,56%.

In which way digitalisation improved teaching methodologies toward adult learners' benefits?



Assessing these results, the first insight here regards definitively the enormous potential that digitalisation can trigger, not only in terms of teaching methodologies but also in terms of overall benefits for adult education providers and learners.

In what way(s) do you help teachers/professional staff embrace this transformation?



The graph here shows the way through which participants help teachers/professional staff embrace this transformation (digitalisation). Respondents had the possibility to choose more than one answer.

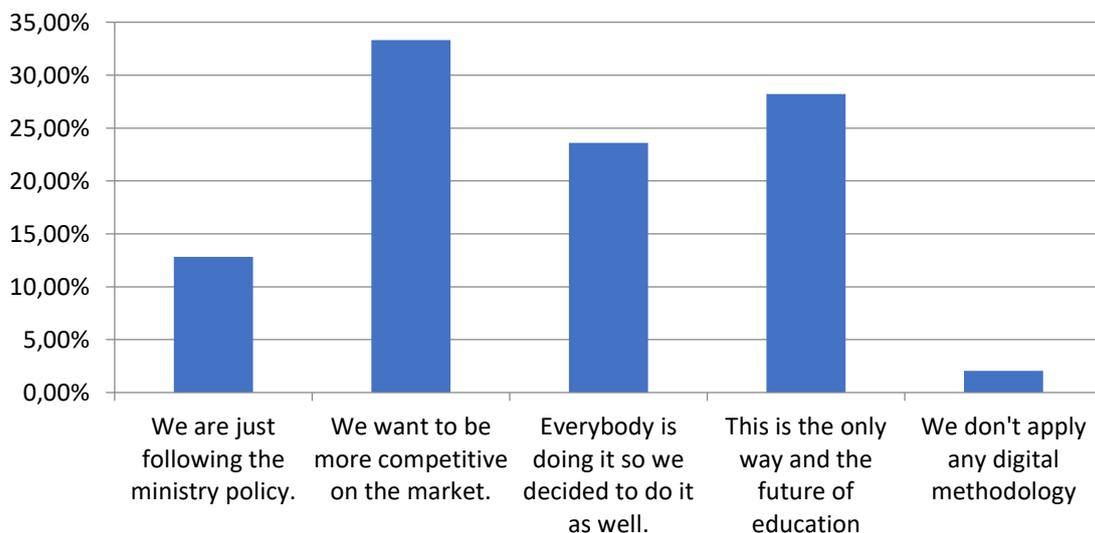
1. 100 preferences went to the answer "By provision of the latest ICT equipment" while
2. "Through occasional internal support (tutoring, meetings ...)" ranked second with 3 preferences less (97 in total);
3. "Through external training",

collected 86 preferences;

4. "Through continuous in-house training" had 55 preferences;
5. "Don't offer any support" lastly received 8 preferences.

The result shows a balance among the options, with a little fall if we move towards training activities (external and in-house) on the left. From an economic point of view, this data underlines the importance of ICT equipment provision - and of course a kind of tutoring support, which ranked second – to keep market competitiveness and avoid technology obsolescence. Some respondents affirmed that they "Don't offer any support". Out of 8 answers, only 2 participants left a comment. The first says «We inspire and engage the educator within our mentorship. Technical expertise we pull from professional training organisations», while the second simply stated she/he is not in such a position.

Why your organisation is making transformation toward digitalised methodologies ?



As for the reason why, organisations are making transformation toward digitalised methodologies, the:

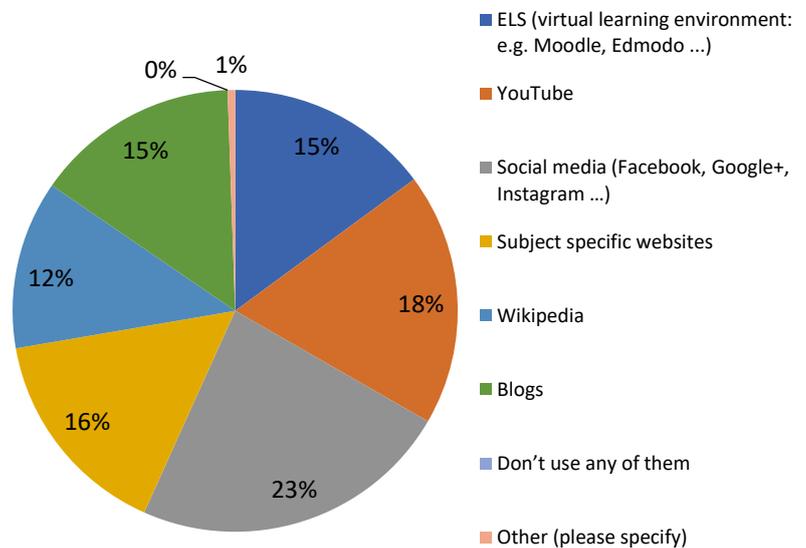
1. 33,33% stated that they want to be more competitive on the market;
2. 28,21% preferred "This is the only way and the future of education";
3. 23,59% chose "Everybody is doing it so we decided to do it as well" while
4. 12,82% is applying digitalised methodologies because they are following a ministry policy and
5. only 2,05% does not apply any digital methodology.

In line with the analysis of the previous question, respondents seem to be aware about the necessity of exploiting the digitalisation from an economic point of view, so to keep a competitive edge on the market. In addition, they go as far as to acknowledge the "positive systemic inevitability" of digitalisation in education, as showed by the little percentage remarking that they are not applying any digital methodology.

Regarding respondents' preferences on the proposed online tools, the participants had the possibility to choose more than one answer.

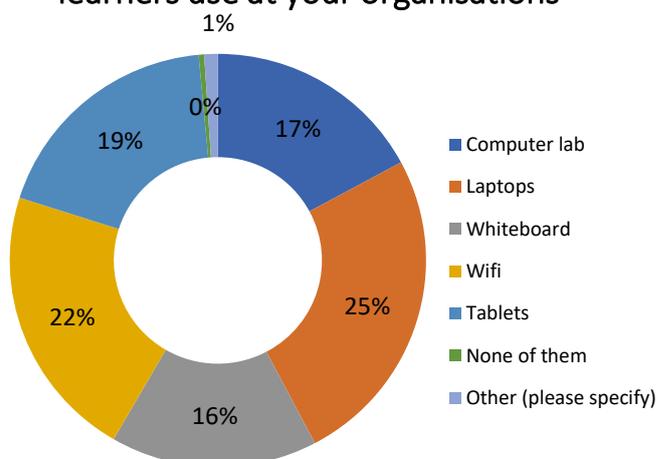
1. 129 respondents chose "Social media (Facebook, Google+, Instagram ...)" while
2. "YouTube" ranked second with 102 preferences;
3. successively, "Subject specific websites" with 86,
4. "ELS (virtual learning environment: e.g. Moodle, Edmodo ...)" and
5. "Blogs" both with 82 likings;
6. "Wikipedia" obtained 68 preferences.

Which of the listed online tools do you use in your education programs?



Nobody selected "Don't use any of them" while others (3 respondents) employ «host of sources, MOOCs and tools; webinars (online and recorded); Google docs suite». The statistic section shows that, apart from preferences and typologies of online tools employed, conventional tools are obsolete and are passing the way in favour of new digital tools.

Which of the following ICT can adult learners use at your organisations



About the skills and competences of adult learners in employing some basic ICT tools/devices/technologies, respondents had the possibility to choose more than one answer.

1. 119 preferences have been given to "Laptops" while
2. "Wi-Fi" ranked second with 102 preferences;
3. successively, "Tablets" with 88, "Computer Lab" with 81 and
4. "Whiteboard" with 76 likings;
5. "None of them" obtained 2

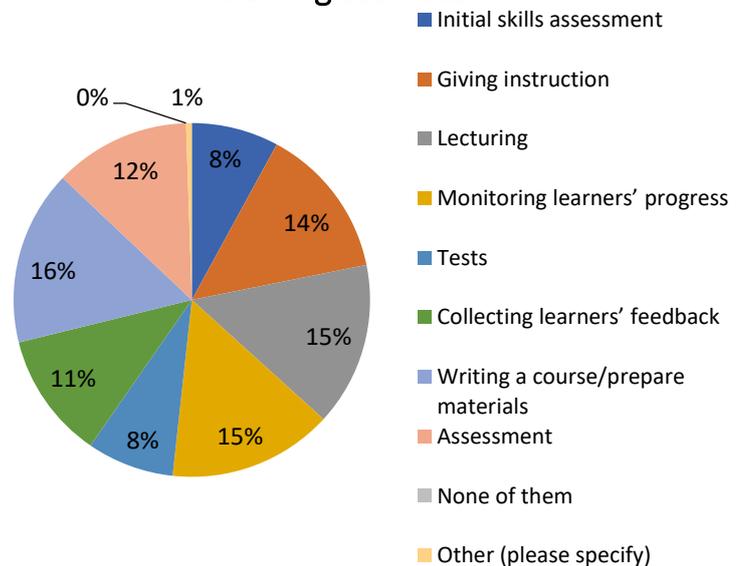
preferences.

The respondents who selected “Other” (5 respondents) specified that their adult learners can use «*cloud environments, mobile, smartphones*» while one commented «*adults tend to prefer "traditional" learning, so special effort is needed to introduce them to ICT tools*». The result shows a kind of balance among the options proposed highlighting, somehow, that adult learners have basic skills in using ICT tools, although the comment left captures a situation which needs attention. Two respondents selected the option “None of them” and commented their choice stating that «*All programs of studies offered are distance learning*» and «*All is online - they use their own equipment*».

This question asked respondents to express their preferences with reference to online “processes” employed in their training activity framework. Participants had the possibility to select more than one answer.

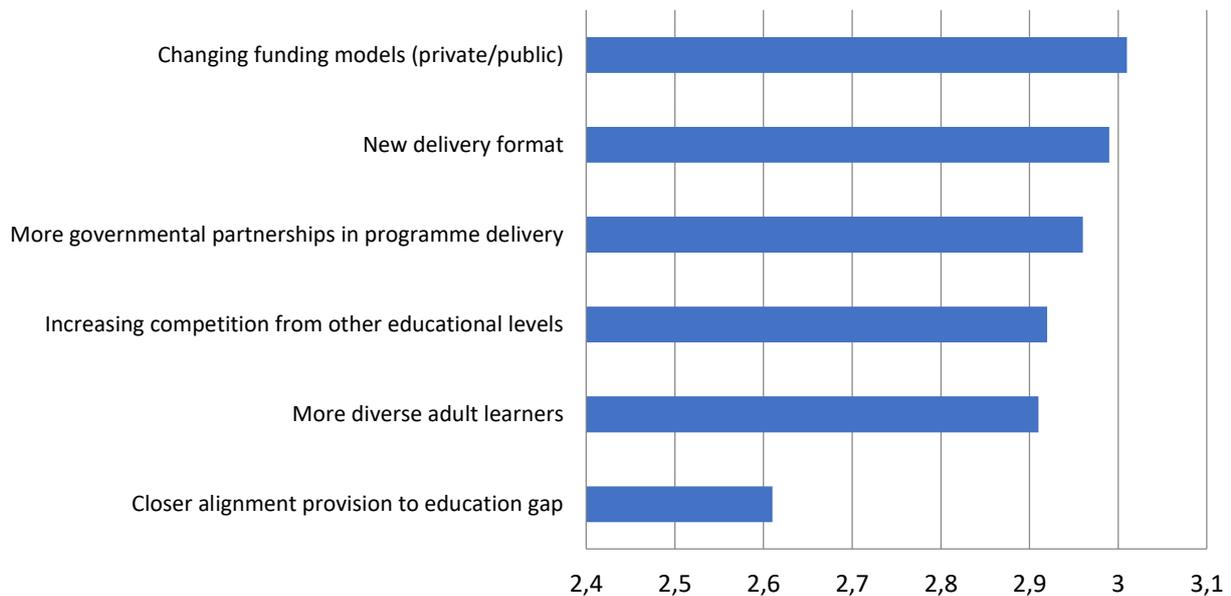
1. 93 preferences went to the answer “*Writing a course/prepare material*”
2. while “*Lecturing*” and “*Monitoring learners’ progress*” ranked second with 87 preferences;
3. successively, “*Giving instruction*” with 81,
4. “*Assessment*” with 72,
5. “*Collecting learners’ feedback*” with 67 and
6. Finally, “*Initial skills assessment*” and “*Tests*” both with 46 likings.
7. “*None of them*” obtained no preferences.

Which of the following “processes” do you do online in the framework of your training activities?



The ones who selected “Other” (3 respondents) specified that they do/create «*Community of learners’ creation* » or «*simulation*» or «*fully online courses based on Moodle*». The result shows a kind of balance among the options proposed highlighting, anyway, an important trend: adult education providers, although in different manners, employ online processes for their training activities.

What do you think will shape Adult education in 3 years from now?

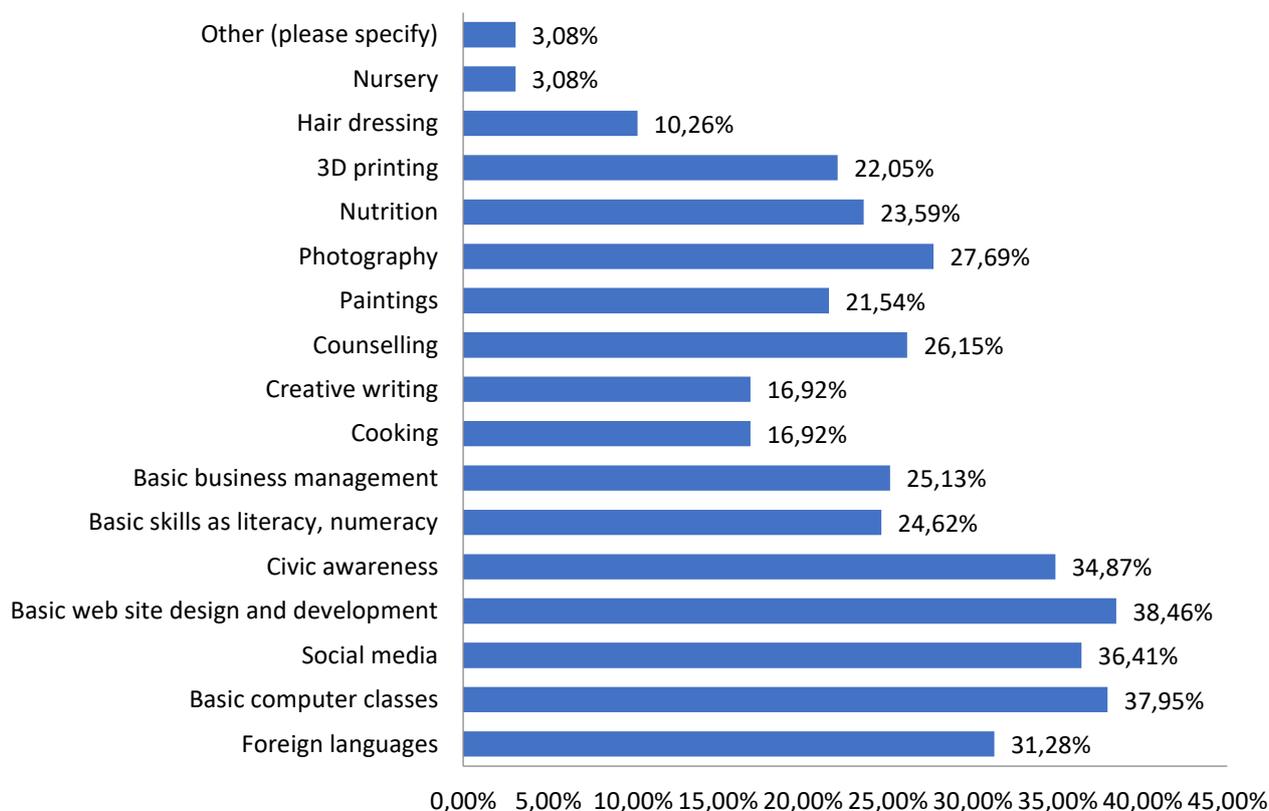


About “*What do you think will shape Adult education in 3 years from now?*” we asked participants to evaluate the probability for each proposed event/situation to occur in Adult Education in the next three years. The methodology employed to analyse data gathered from this issue simply gave a weighted average to each option which requested a rate, marked as *Least likely to happen*, *Likely to happen*, *Probable*, *Very probable*. According to data, participants found the option:

1. “*Changing funding models (private/public)*” the most likely to happen in shaping the “*future*” adult education domain, with a weighted average of 3,01 (indeed 36,09% rates the option probable and 35,5% very probable)
2. while the option “*New delivery format*” ranked second (weighted average of 2,99) whereas 52,91% rates it probable and 25,58% very probable.
3. “*More governmental partnerships in programme delivery*” ranked 3rd with a weighted average of 2,96,
4. “*Increasing competition from other educational levels*” obtained a weighted average of 2,92, then
5. “*More diverse adult learners*” with a weighted average of 2,91
6. while “*Closer alignment provision to education gap*” has been considered the less likely to occur.

Although there are very little differences, this result shows again that the economic factor prevails and has a prominent role even on other variables like, for example, closing gaps in the adult education sector.

Which are in your opinion the most interesting topics for an adult learner?



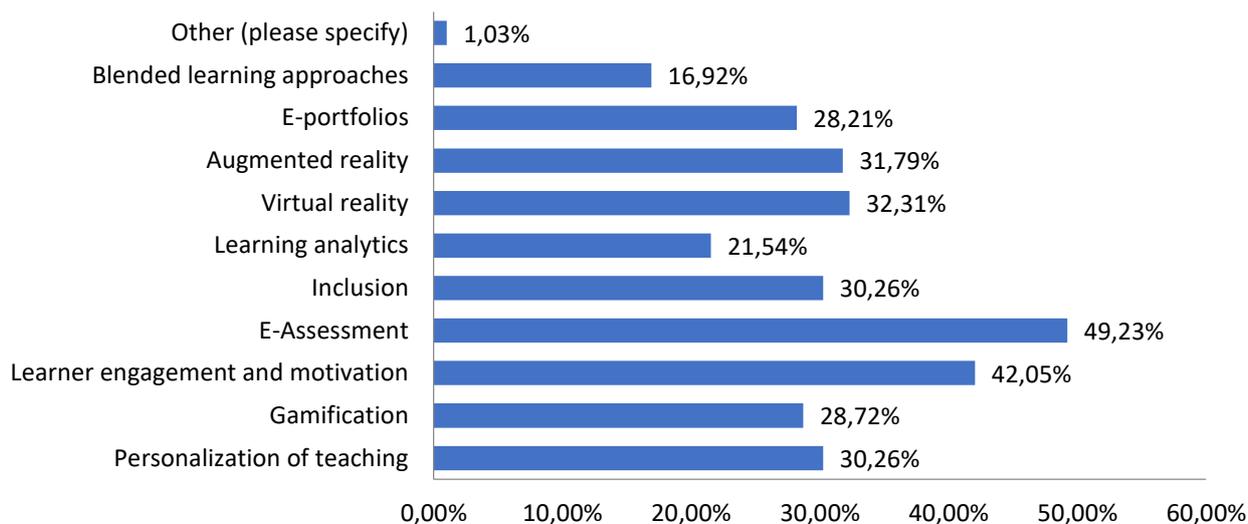
Furthermore, we asked respondents to express their opinion with reference to the most interesting topics for an adult learner. Participants had the possibility to select more than one answer. 75 preferences went to the answer “Basic web site design and development” while “Basic computer classes” ranked second with 1 preference less (74 in total) and “Social Media” third with 71 likings.

Moreover:

ANSWER CHOICES	N° OF PREFERENCES
Civic awareness	68
Foreign languages	61
Photography	54
Counselling	51
Basic business management	49
Basic skills as literacy, numeracy	48
Nutrition	46
3D printing	43
Paintings	42
Cooking	33
Creative writing	33
Hair dressing	20
Nursery	6

Those who selected “Other” (6 respondents) specified that they are interested in topics as «Soft skills», «Career success and personal transformation skills», «Project management», «Health and social care», «Chance management» and «Professional skills». Considering the number of options proposed, the result shows that respondents prefer topics related to ICT/digital issue.

Please indicate which of the following transformations triggered by ICT adult education can truly benefit from



The graph above shows respondents selection among the proposed transformations triggered by ICT, the most helpful for the adult education sector. Participants had the possibility to select more than one answer.

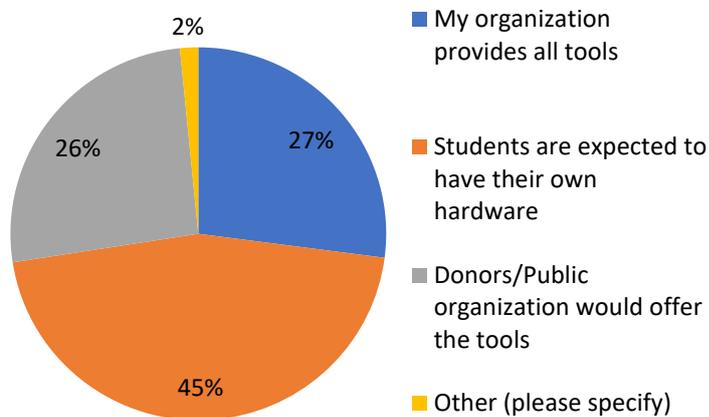
1. 96 preferences went to the option “E-Assessment”
2. while “Learner engagement and motivation” ranked second with 82 preferences
3. and “Virtual Reality” third with 63 likings.

Moreover:

ANSWER CHOICES	N° OF PREFERENCES
Augmented reality	62
Personalization of teaching	59
Inclusion	59
Gamification	56
E-portfolios	55
Learning analytics	42
Blended learning approaches	33

The respondents who selected “Other” (2 respondents) left the following comments «Focusing on realities of job market for diverse people» and «Blended learning will remain important for many topics / themes, and is also required by participants for personal social interaction».

For the ICT transformations discussed above, how would you implement that?



Consequently, we sought to understand how respondents would implement the ICT transformations discussed in the previous question. Participants had the possibility to choose more than one answer.

1. 116 preferences went to the option “*Students are expected to have their own hardware*”

2. while “*My organization provides all tools*” ranked second with 69 preferences

3. and “*Donors/Public organization would offer the tools*” had 66 preferences.

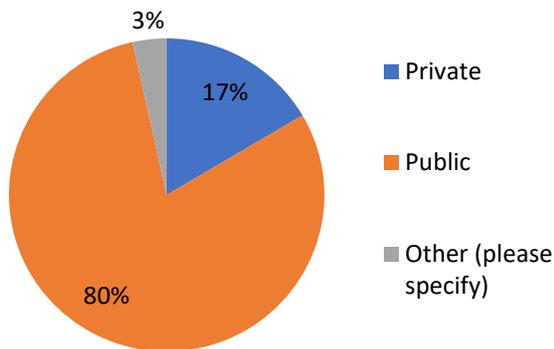
The ones who selected “*Other*” (4 respondents) left the following comments «*We would need to hire those technologies*», «*It depends on the programme and students* », «*Get a grant for it*» and «*connectivity speed can be a problem for remote / rural areas*». With reference to the adult education domain, the result shows that providers expect adult to bring/have their own HW, meaning that in the next future people attending any educational programme should have basic computer literacy.

Only one respondent left a comment stating «*Good effort. Focusing on life skills and real work via apprentices (learn by doing) backed up by mentors and moderate academic 'frameworks' are our way forward to get more adult women into Cyber Security and other advanced digital activities*».

2.2 Higher Education

2.2.1 Demographic references

Which type of organization are you?



This part of the survey has explored the sector of Higher Education and its tendency to approach more methods linked to the digital innovation in their daily activities, at European level. 115 fulfilled questionnaires have been collected among all the consulted recipients.

Out of 115 respondents, the 80,00 % replied to be a public organisation while 16,52% are private organisations. Among the few "other", for example, we find charities, semi-public organisations, cultural associations and NGOs.

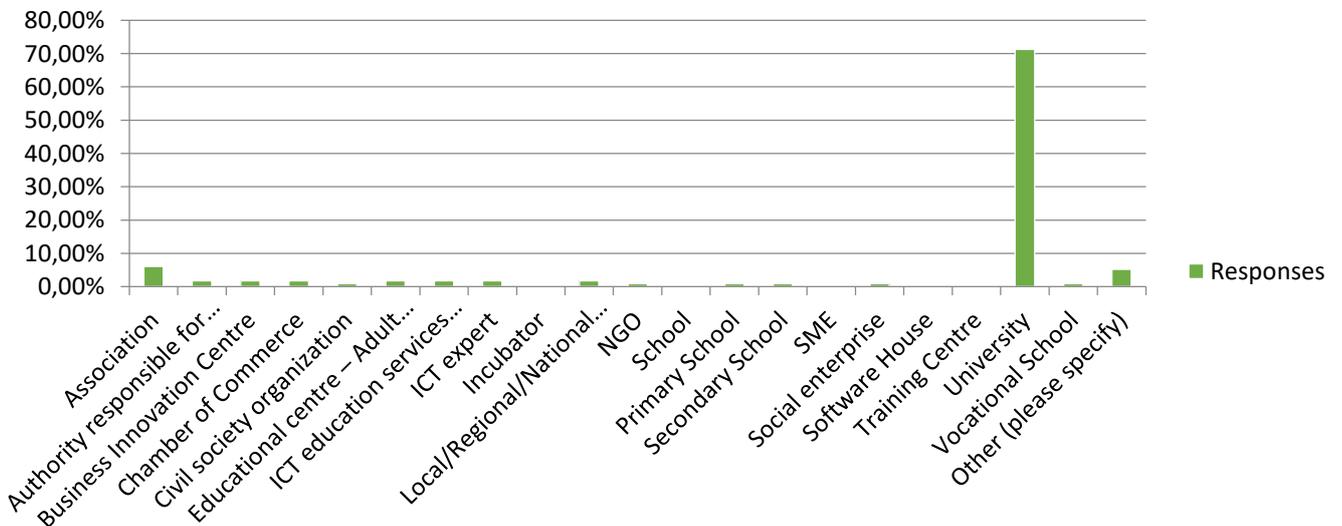
These figures show up that public organizations are those that had a greater propensity to respond comprehensively to the whole survey or at least that, however, have been reached by the survey more

massively. This is also quite normal given the nature of the key topic, Higher Education, which is an educational sector mostly ruled by public entities.

Other:

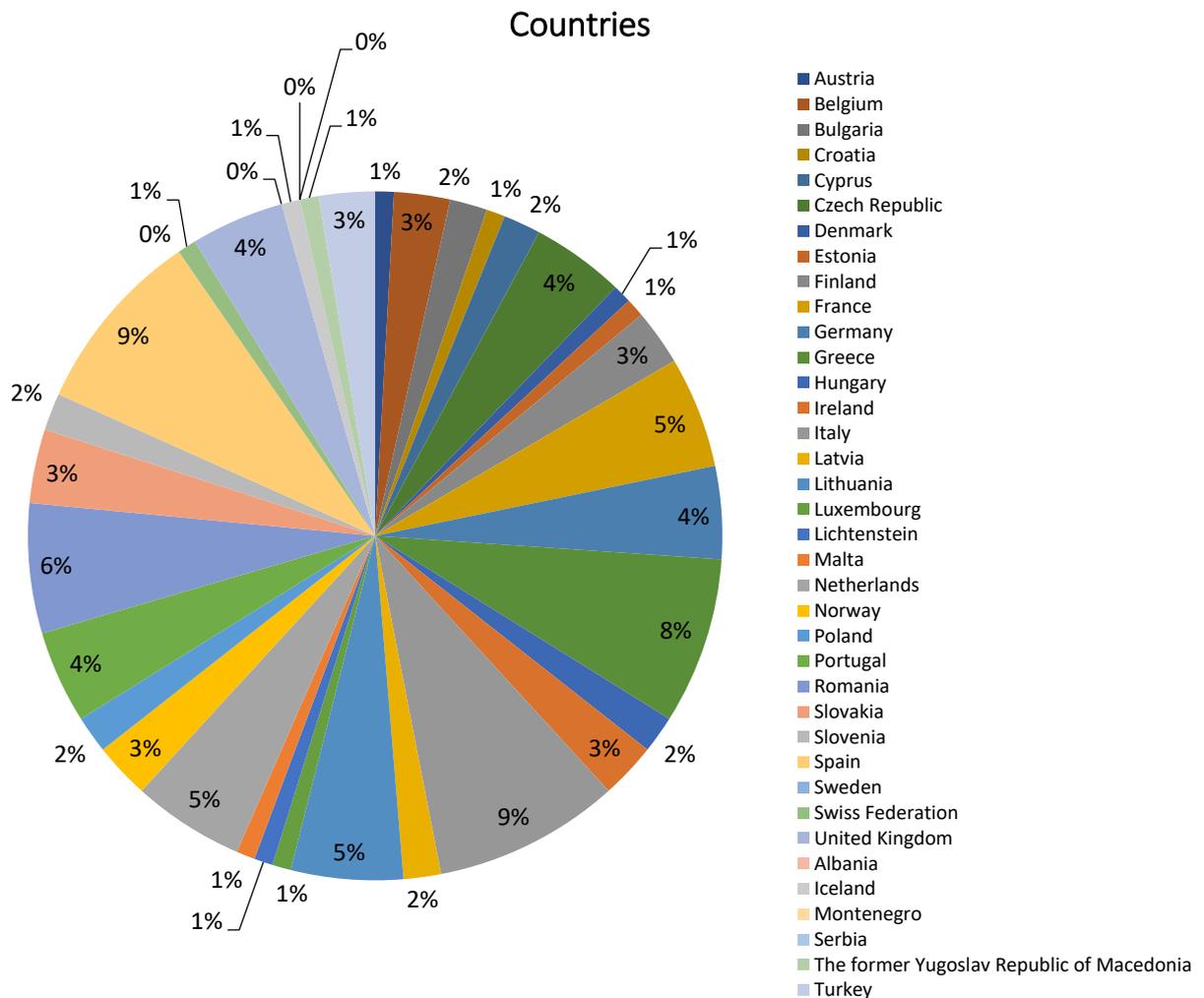
Semi-public
An umbrella organisation of 20 associations of Singing teachers
Private but with public funds
self-governing state granted

Are you a:



This question investigated the entities' categories of the respondents. Most of them - 71,30% - are universities. Then, there is a small group of associations. This figure is not that much unexpected given that the survey is addressed to those belonging to the Higher Education sector and most of them are, commonly speaking, coming from the University area.

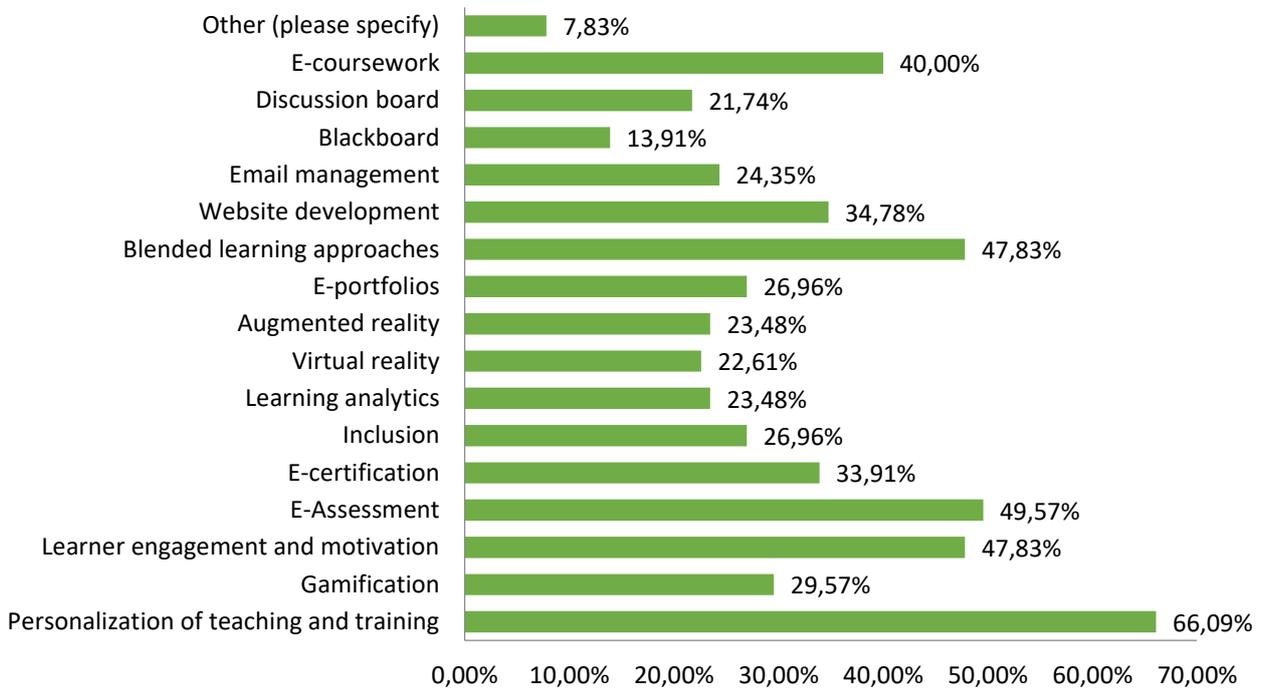
Between the category of "others" we found out some linked organisations, which are mixed-up universities with continuous education, vocational and training centres for apprenticeship, HEI, Institute of Technology and Research and Development Institution related to SMEs.



As for the countries of origin, respondents are rather distributed, with a prominent number coming from Spain, Italy (8,70% each, 10 respondents each) and Romania (6,09%, 7 respondents), followed by France, Lithuania and Netherland (5,22% each, 6 respondents each).

2.2.2 Analysis of the Higher Education sector

Indicate which of the following transformations triggered by ICT, higher education can truly benefit from



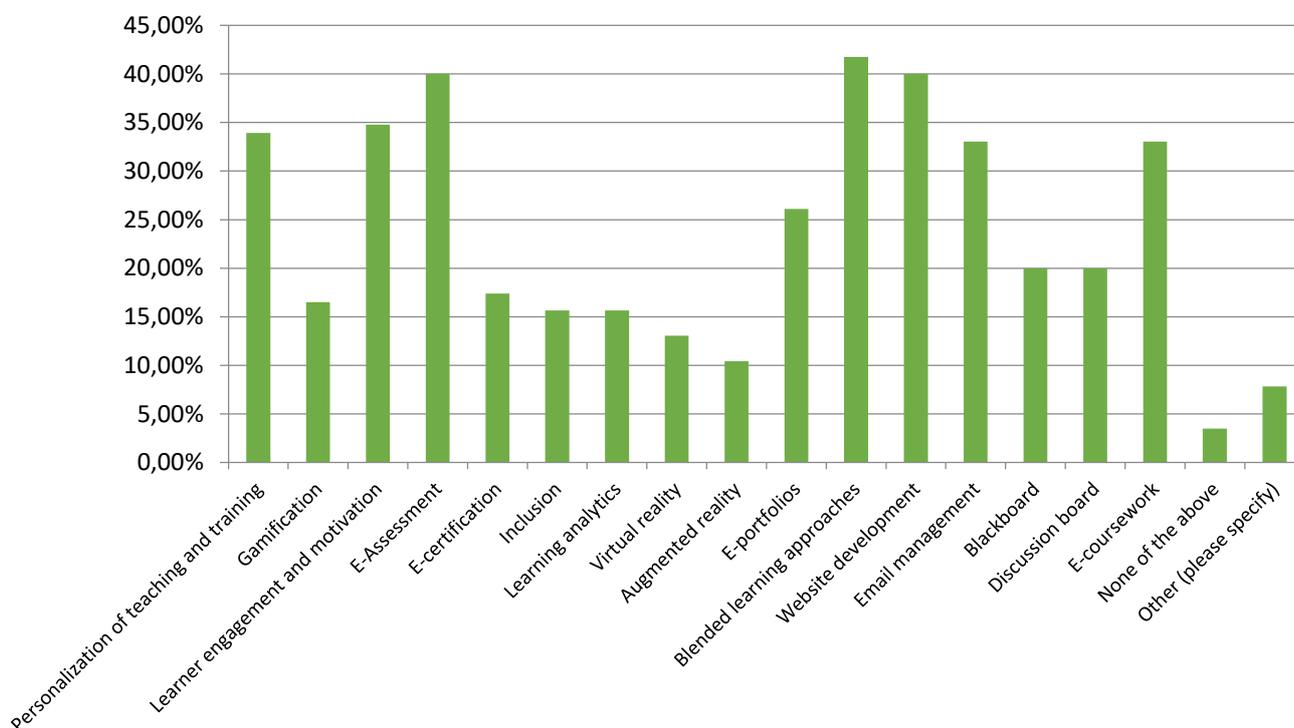
This question had the willing to understand more deeply the perception of respondents about the benefits received from transformations triggered by ICT. In terms of preferences expressed, as each respondent could give more than one answer, the situation outlined is the following:

1. *Personalization of teaching and training* (76 preferences);
2. *E-Assessment* (57 preferences) and
3. *Blended learning approaches* as well as *Learner engagement and motivation* (55 preferences each) cover the three main steps in the drawn-up chart, in terms of transformations triggered by ICT for Higher Education institutions.

Probably this situation is related to the need of different approaches in teaching and learning tools, along with a mixed one in the provision of lessons (like the blended learning approach is, combining the traditional frontal method in classroom with computer-driven activity). Within the "Other" category, it is interesting to take into consideration the necessity to distribute between a network of universities the educational contents acquired.

Increased cooperation,
 Crowdsourcing
 Joint development and distribution of educational contents in a network of universities
 Web lessons
 teamwork, collaboration
 LMSs like Moodle
 Admissions
 Programming and automatization on all industrial field
 Serious Games

Which transformations triggered by ICT are used at your institution?



Here we inquired the current situation in terms of ICT transformations already presented or provided by the membership organisations of the respondents. It seems that active transformations are well-distributed. However, regarding the top three we can find

1. the *Blended learning* approaches (48 preferences),
2. *E-assessment* as well as *Website development* (46 preferences each),
3. and the *Learner engagement* (40 preferences).

Between “*other*” we find Moodle, LMS (Learning Management System) and the Flipped learning. This shows that some of the most innovative e-learning tools have already been used among the respondents.

We can safely state that the majority of the respondents is quite active into the main innovative categories of digital learning.

Among those that answered “*other*”, we can find the following ICT tools or methodologies:

Moodle

Joint development and distribution of educational contents in a network of universities

I am not aware which transformations triggered by ICT are used across all faculties of our university.

I am not aware of any - as I am not primarily working with Erasmus

teamwork, collaboration

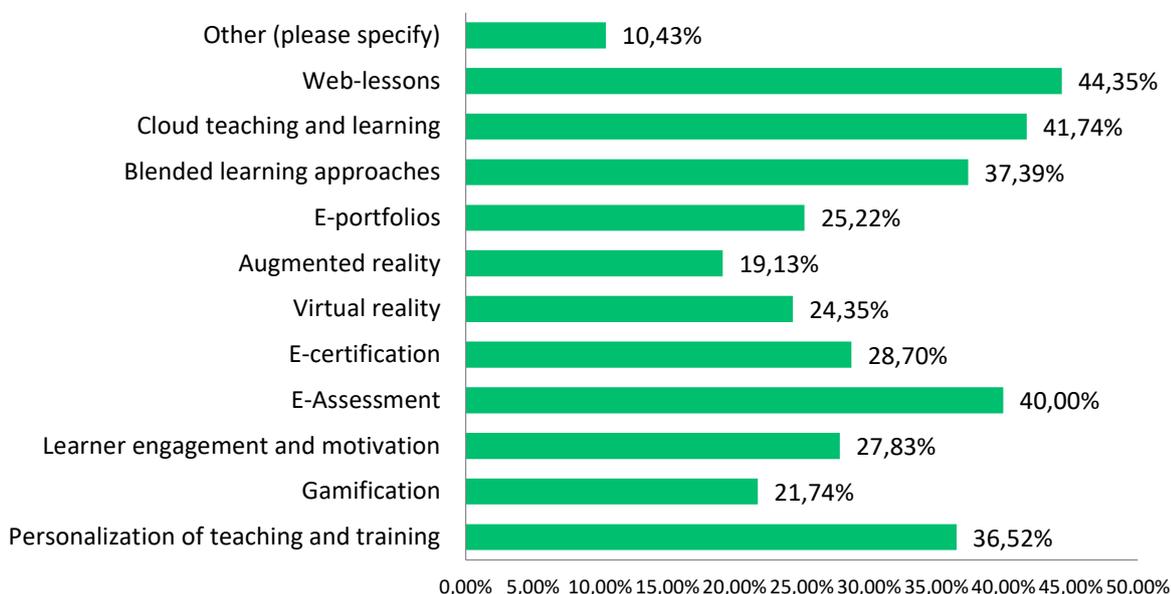
LMS

Telecollaboration

enhanced video clips, specific software for innovation with technology

Flipped learning

Do you think teaching/learning/assessment in 3 years from now will be done in the same way as it is done today?



Now, after analysing the current situation, we have explored the ideal scenario in the close future (3 years) as perceived by the respondents, dealing with innovation in the teaching/learning/assessment activities among their organisations. In fact, they have been asked to think about the potential or non-potential change related to the provision of the mentioned categories.

Respondents think that almost all the presented teaching/learning/assessment categories, in the same way, could be implemented as today in the next 3 years.

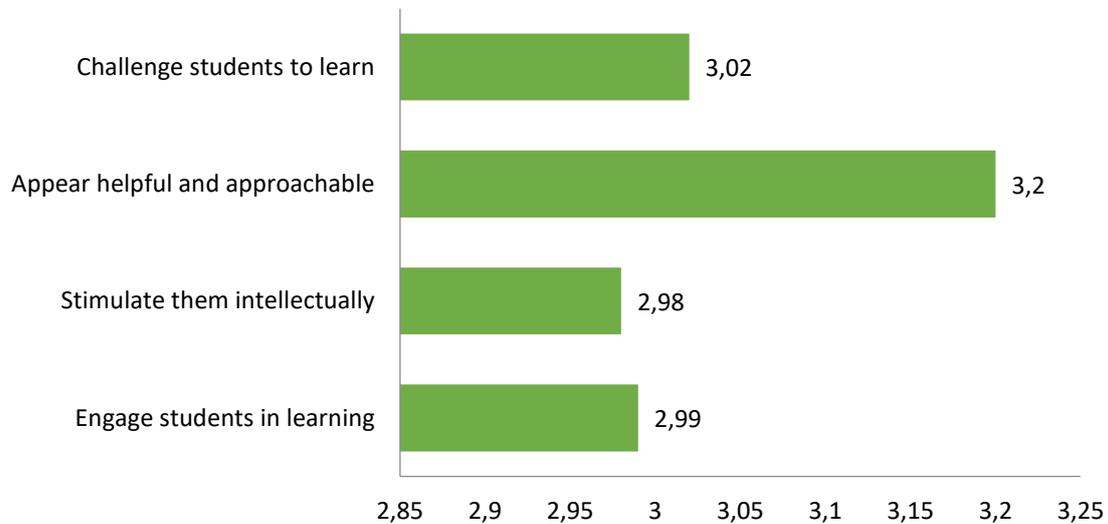
We can only add that there is a smooth preference for *Web lessons* (51 preferences) and *Cloud teaching and learning* (48 preferences) as methods that will be not that different from the present approaches.

★		★★		★★★		★★★★		Total	Weighted Average
11,30%	13	50,43%	58	33,04%	38	5,22%	6	115	2,32

At this step, respondents have been asked to reflect on the current situation in Europe about the familiarity of Higher Education teachers with the digital.

In fact, with this question we explored the perception among the consulted organizations about the increasing of digital tools in classrooms. It results that, considering the weighted average (which is a statistical means calculated by giving values to some attribute of the data), generally speaking the respondents think Higher Education teachers will use more and more digital equipment in overseeing their lessons, even though to an average of 2,32. In fact, the half of respondents – 50,43% answered that the inclusion of digitalized tools in class will be moderate.

What about tutors? Rate their performances described in the following statements.

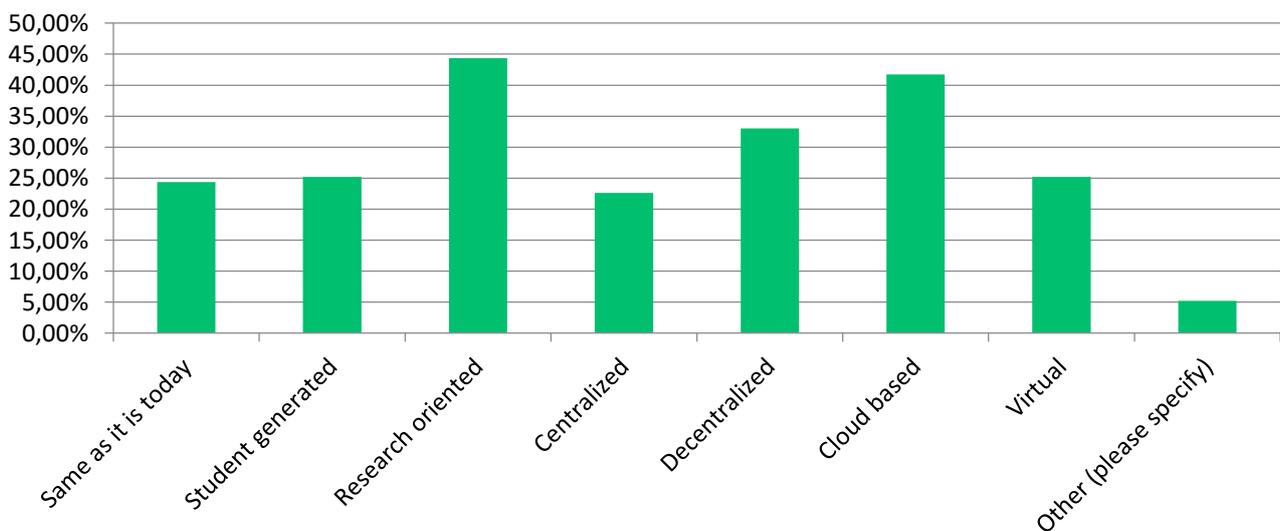


This question pursued the feedbacks on the role of the tutors dealing with their relationships with students and their tendency to boost learning among them.

It is almost clear that tutors are considered mostly helpful and approachable for students (with an averagely high rate of 3,2), being a big support in carrying out the activities of teachers.

It is interesting also to stress that a rate of 3,02 has been given to *“Challenge students to learn”*, with a strong reference to the need to stimulate students with a sense of competitiveness, highly requested in the current labour market.

How do you expect Higher Education governance and leadership to look like in 5+ years?



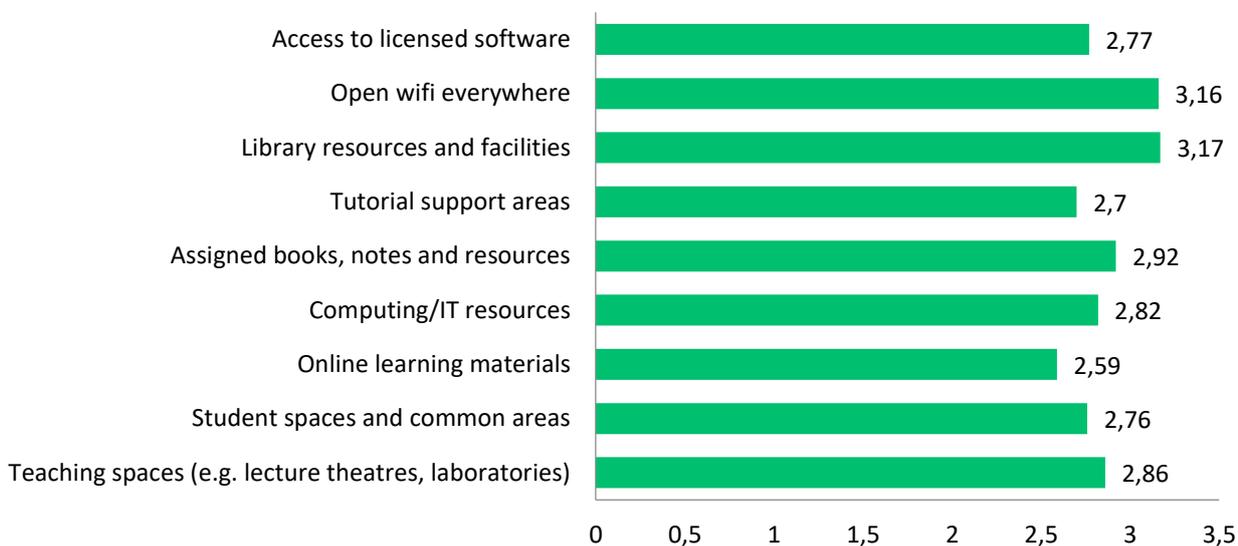
After exploring the digitalisation of teaching and learning approaches, it is now time to go deeper with the Higher Education Governance and Leadership. We have asked respondents to give their opinions about their main expectations dealing with the executive management of their Higher Education entities.

In this question respondents could choose more than one option. It results that the future of Higher Education governance and Leadership is oriented to research (51 preferences) and is cloud based (48 preferences).

Between the 6 “other” responses, someone says that the governance and leadership should be more consistent with employment requirements. Furthermore, someone else states that it is not immediate to think about the scenario of this next future but does not seem to foresee great changes, at least in 5 years.

Fragmented
Will make use of crowdsourcing tasks
Interactive and engaging
More consistent with employment requirements
It is very difficult to say since every faculty is more or less autonomous, but since the overall university governance is still quite centralized, I do not foresee very dramatic changes.
Maybe more than one leadership in different disciplines

How do you expect Higher Education governance and leadership to look like in 5+ years?

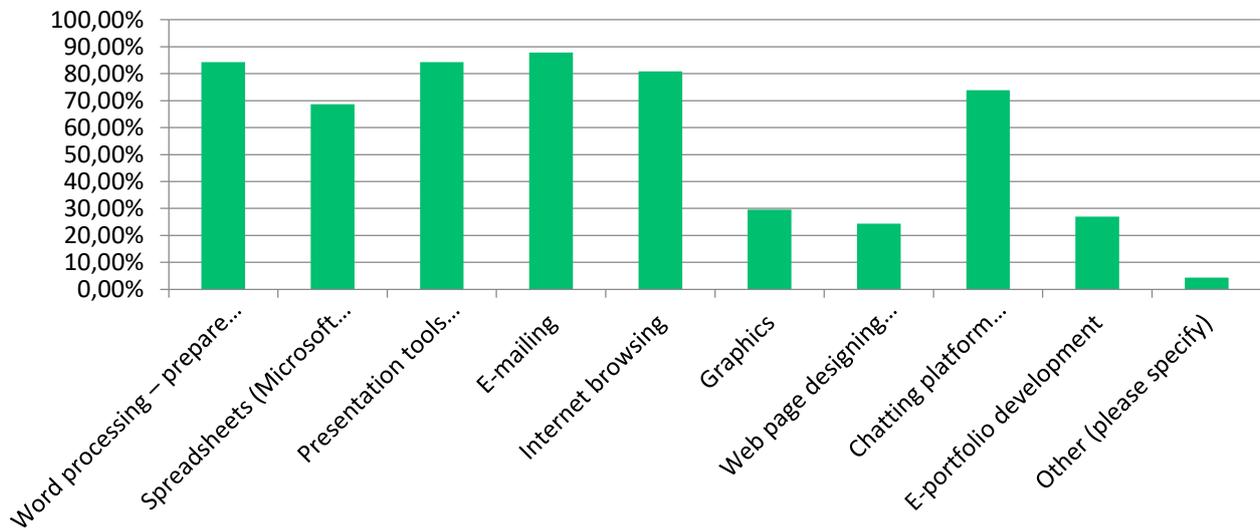


After giving a general opinion on the latter topics, respondents have been requested to rate between 1 and 4 the learning resources provided by their institutions, to assess if they are useful for the courses implementation. According to the 115 answers, the most useful learning resource already provided for the course offered is *Library resources and facilities*, with a high rate (3,17 in average). At the following position, we find:

1. *Open Wi-Fi everywhere* (3,16) and
2. *Assigned books, notes and resources* (2,92).

Globally, rates are quite highly spread within all the presented categories. Considering this assumption, it seems that *Tutorial support areas* are not that developed and maybe available at a very high level within the consulted institutions.

Which of the computer-related basic skills do you think the students have in your institution?



This question aimed at looking to the actual situation of the digital knowledge among Higher Education learners.

Respondents warmly state that their students own very basic digital skills, such as

1. *E-mailing* (101 preferences),
2. *Presentations tools as well as Word processing* (97 preferences each) and
3. *Internet browsing* (93 preferences), between the top three positions.

This shows a quite common trend in the capitalisation of basic digital tools regarding the students' understanding, given that these mentioned tools are quite commonly used, maybe also in their daily personal life.

Only 5 respondents (out of 115) add other encountered digital skills between their students that are quite advanced, like statistical software knowledge and tools (SPSS/STATA).

Some of our students work with MATLAB, CAD relevant things, Catia

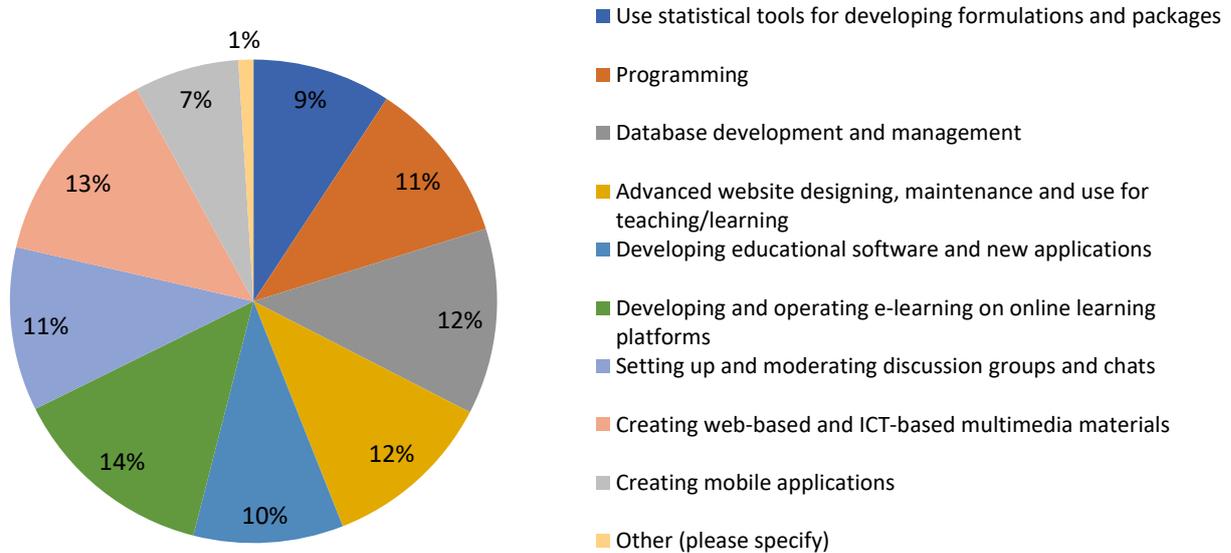
SPSS/STATA

Statistical tools

Simulation, serious games

SPSS

Which of the following advanced skills can you use to create and develop new applications, contents, learning materials, etc.?



With this question, we inquired the perception of some of the most advanced skills in digital learning into the creation and development of new applications, contents and learning materials. The respondents of the survey strongly agree on identifying, between the other preferences:

1. *Developing and operating e-learning on online learning platforms* (55 preferences),
2. *Creating web-based and ICT-based multimedia materials* (54 preferences) and
3. *Database development and management* (50 preferences) such as the most advanced skills useful to create new applications, contents, learning materials etc.

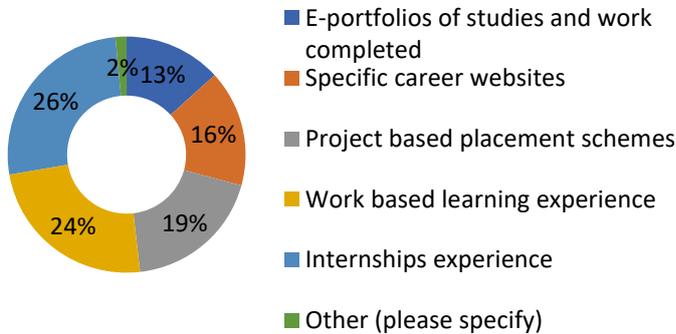
Creating mobile applications and *Use statistical tools for developing formulations and packages* are not that common between our interviewed organisations (low than 40 preferences).

How much digitalized are administrative operation in your institution? Rate from 1 to 4, where 1 equals to lowest paper use and 4 equals to highest paper use

★		★★		★★★		★★★★		Total	Weighted Average
8,70%	10	37,39%	43	44,35%	51	9,57%	11	115	2,55

As far as it concerns the administration offices of the organisations which responded, we have explored the digitalisation in the operations departments. The digitalisation has been compared to the range between the lowest and the highest paper use, to have clear in mind the presence of digital skills and other related ones between the staff. Considering the weighted average, respondents state that their administrative system is quite highly digitalized (by giving such a very good rate, 2,55 out of 3 at most). This could encourage the consulted institutions to upgrade their administrative departments in such a way, given that they already own good digital basis.

What is in your view the most effective way to assist HE students in their transition to employment?



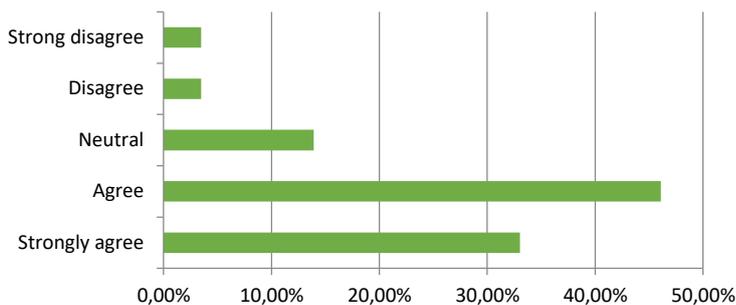
In this section we are exploring the teaching and tutoring methodologies. The above graphics and tables report what Higher Education respondents have chosen as the most effective way to assist their students in finding job or approaching the labour market.

Internship experiences (87 preferences) and the *work based learning experience* (80 preferences) are considered the most effective ways to assist HE students in their transition to employment.

Within the “*Other*” category, we find some high-specialized ways such as the use of man-machine interface and Moodle.

The results above basically might be due to the general trends in Universities produced by following EU indications on specific learning aptitudes, directly linked to the Job World. The Future of Jobs, as indicated in the devoted WEF 2016 Report, is based on digitals, besides robotics and related topics. So, it is quite important, and well perceived by respondents, to introduce students to the digital world in order to be more and more competitive.

Do you think ICT will improve the teaching and learning effectiveness and quality in Higher Education?



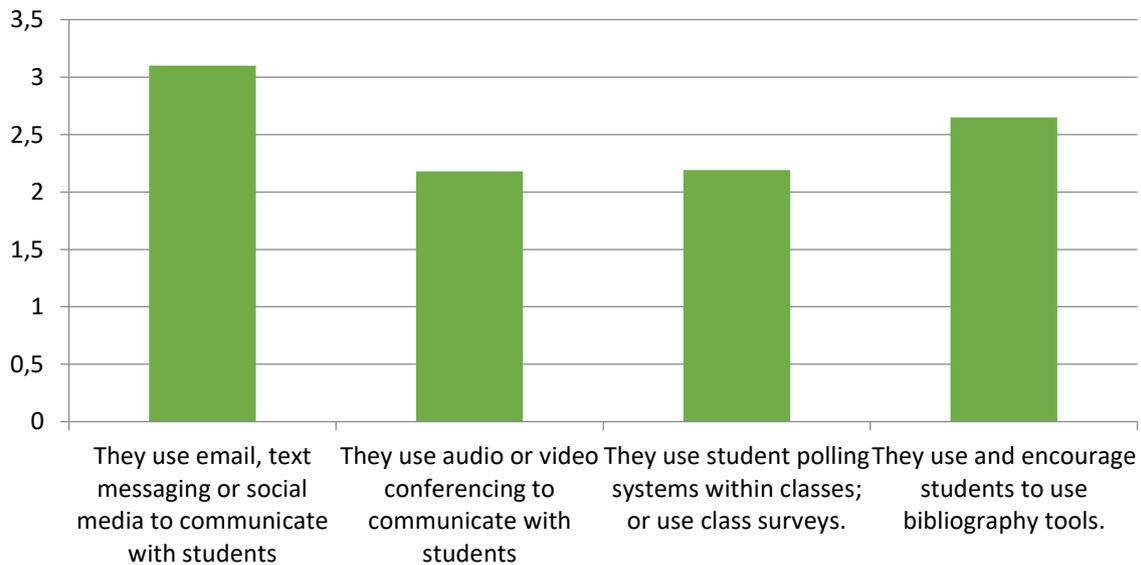
This question wants to search for the level of change provided by ICT into the teaching and learning effectiveness and quality in Higher Education.

1. 46,06% of the respondents agree with the improvement given by the teaching and learning effectiveness and quality in Higher Education.

2. 33,04% strongly agree with this statement, showing that the importance of better exploiting ICT in Higher Education is considerably appreciated between the interviewed people. This

could indeed facilitate both the teaching and learning processes for Higher Education students, along with their opportunity in finding high levels jobs.

How often do professors use digital tools for communication and information with their students?



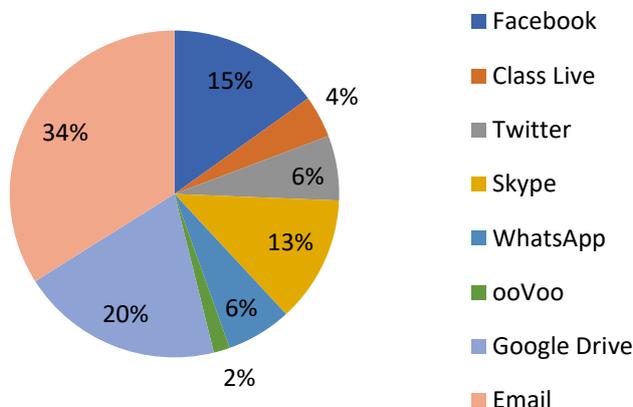
Now is the turn of the professors: we have investigated the frequency of the digital tools' usage between them in the field of communication and information with their students.

Still reasoning on a weighted average perspective, high rates have been given to the use of email, text messaging or social media to communicate with students in terms of good frequency of digital communication and information tools by the professors (3,1 out of 3,5).

They also state – with a good score (2,65) – that they are encouraging students to use bibliography tools.

Use of audio or video conferencing and student polling systems are less rated but still taken into consideration.

Which tool is used as communication and information management tool in the teaching process at your institution?



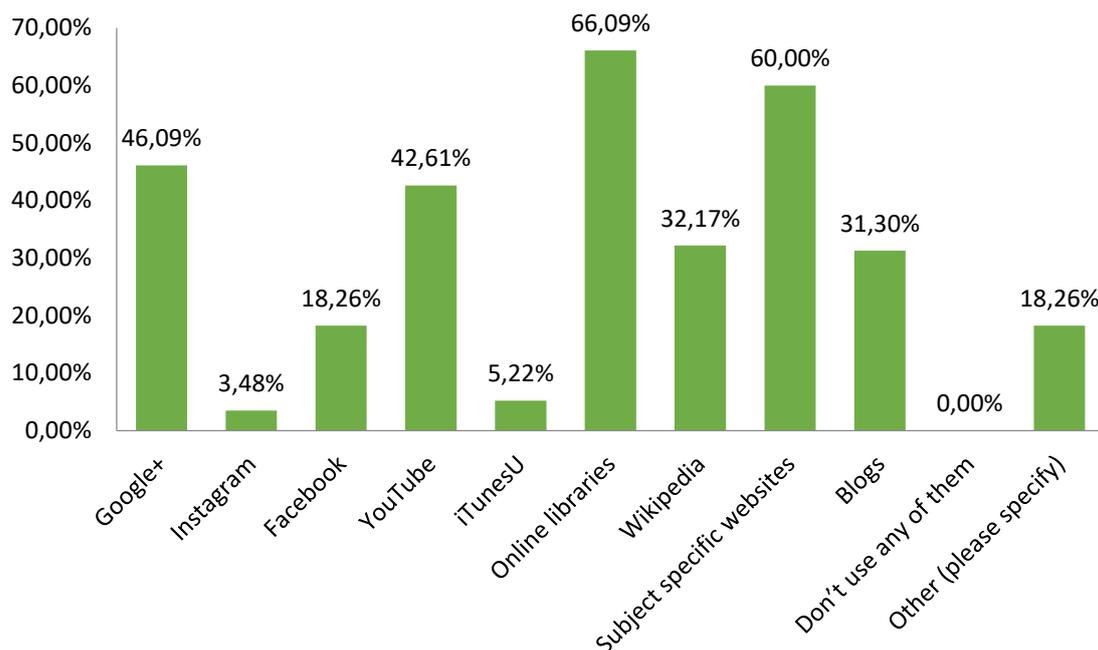
Investigating about communication and information facilities, this question addressed what is the most common tool used in the teaching process at the consulted institutions.

E-mail, Google Drive and Facebook are the most used three communication and information tools in the teaching process of the organisations.

In terms of expressed preferences, only few of them have been given to Skype (39) and WhatsApp (20).

This is probably due because these latest instruments are considered less effective in the exchanging of information of significant importance,

like texts or figures that are not sufficiently suitable to be shared through this communication means.



In the teaching area, we have now asked respondents to indicate their preferences about the used tools for finding and producing online resources.

Respondents have commented that they use all the proposed tools. It stands out that:

1. *Online Libraries* (76 preferences),
2. *Subject specific websites* (69 preferences) and
3. *Google +* (53 preferences) are the top three ones.

However, it should be noted also that some added new tools, such as Moodle, LMS and various e-learning software. This demonstrates that the respondents are quite skilled in terms of used tools for finding and producing online resources for teaching purposes.

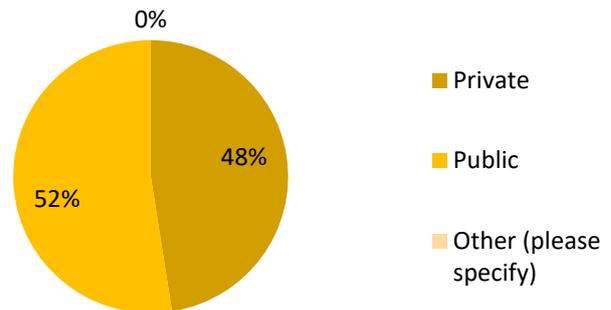
- Google, SlideShare to locate materials
- MOODLE
- Moodle
- These applications are good for wasting time if you do not apply to learn
- Sakai, Moodle
- But only some teachers do it, others still rely on hard copies of materials
- Cannot answer
- Office 365, Yammer, SharePoint Portal, ...
- Moodle
- Claroline
- Academia.edu; Researchgate
- e-learning software (state-wide licences)
- Ditorial chain ; LMS
- our own website Educate-it
- Repositories for open educational resources, open courseware
- also in q/18 - our own tools and systems are used, not public accounts on social media
- Blackboard SCORMS

2.3 School education

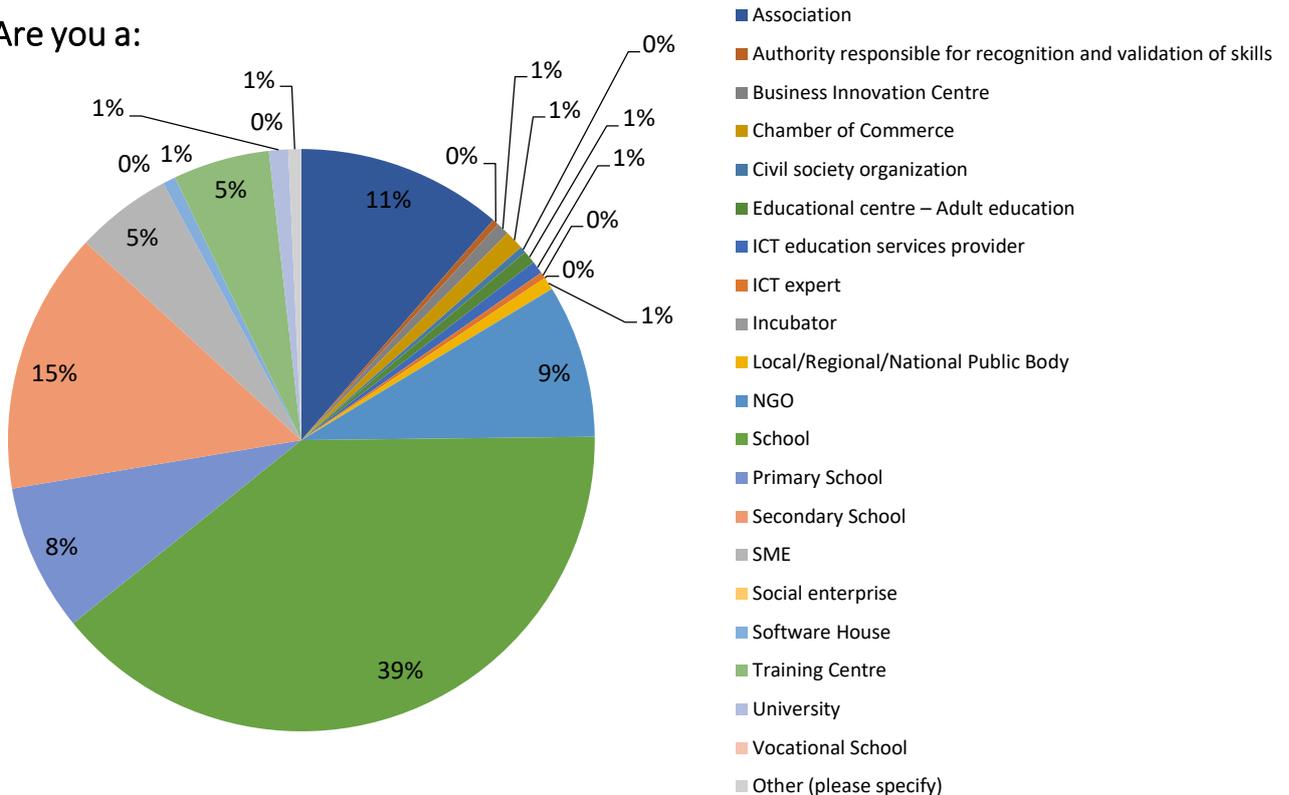
2.3.1 Demographic references

With reference to the School Education sector the survey collected a total of 282 respondents. Out of 282, 47,52 % comes from the Private Sector, while 52,48% from the Public. These % guarantees a homogenous picture from both the sectors dealing with school education about the future of the digital education in Europe in the school sector.

Which type of organization are you?

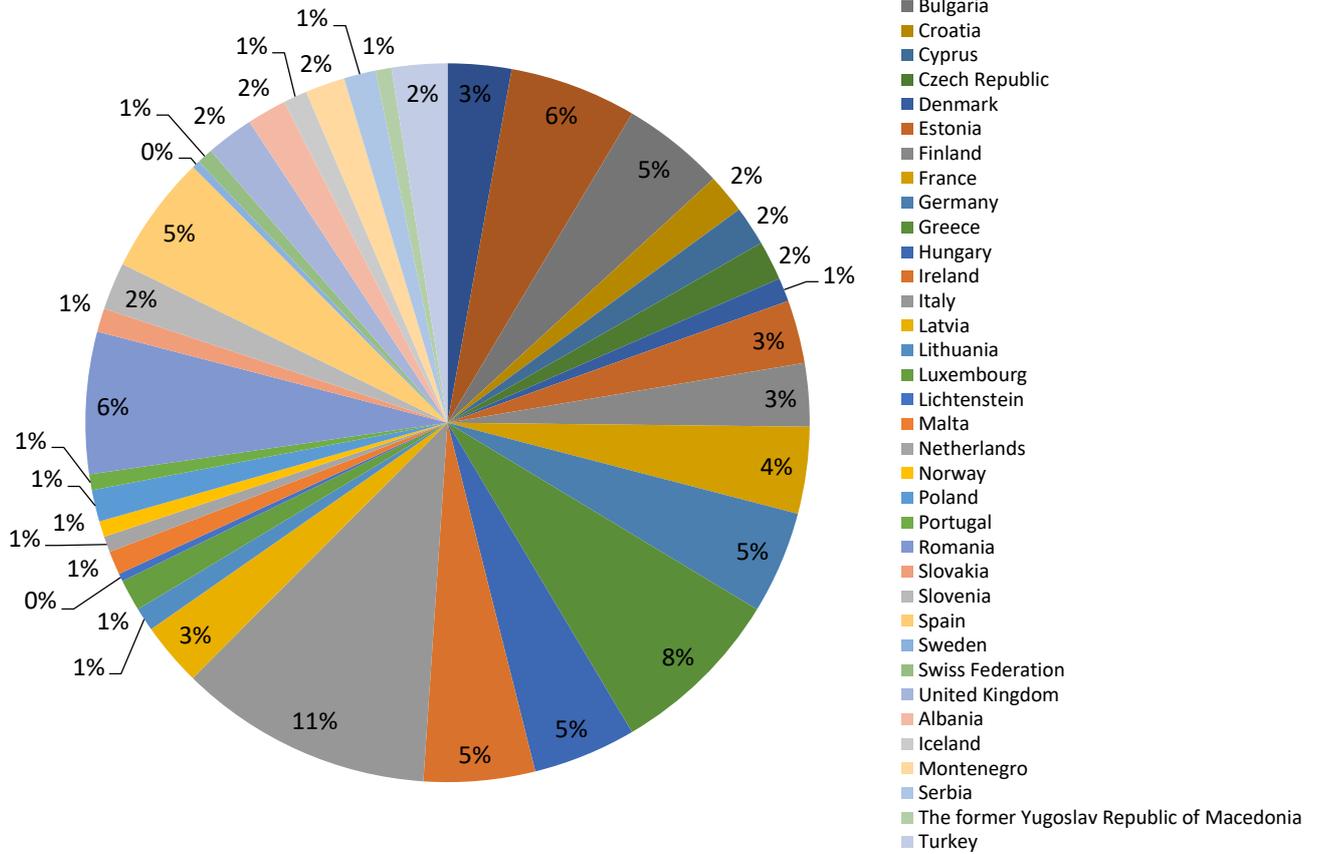


Are you a:



The second question tried to understand the type of entity the respondents belong to. Taking into consideration that all the respondents deal with the School Education Sector, the graph shows that most of the respondents are either Schools (39.36%), Primary Schools (8.16%) and Secondary Schools (14.54%), representing the 62.05% of the total. Successively, respondents are representative of Associations (11.35%) and NGOs (8.51%) that mainly operate into the school education sector.

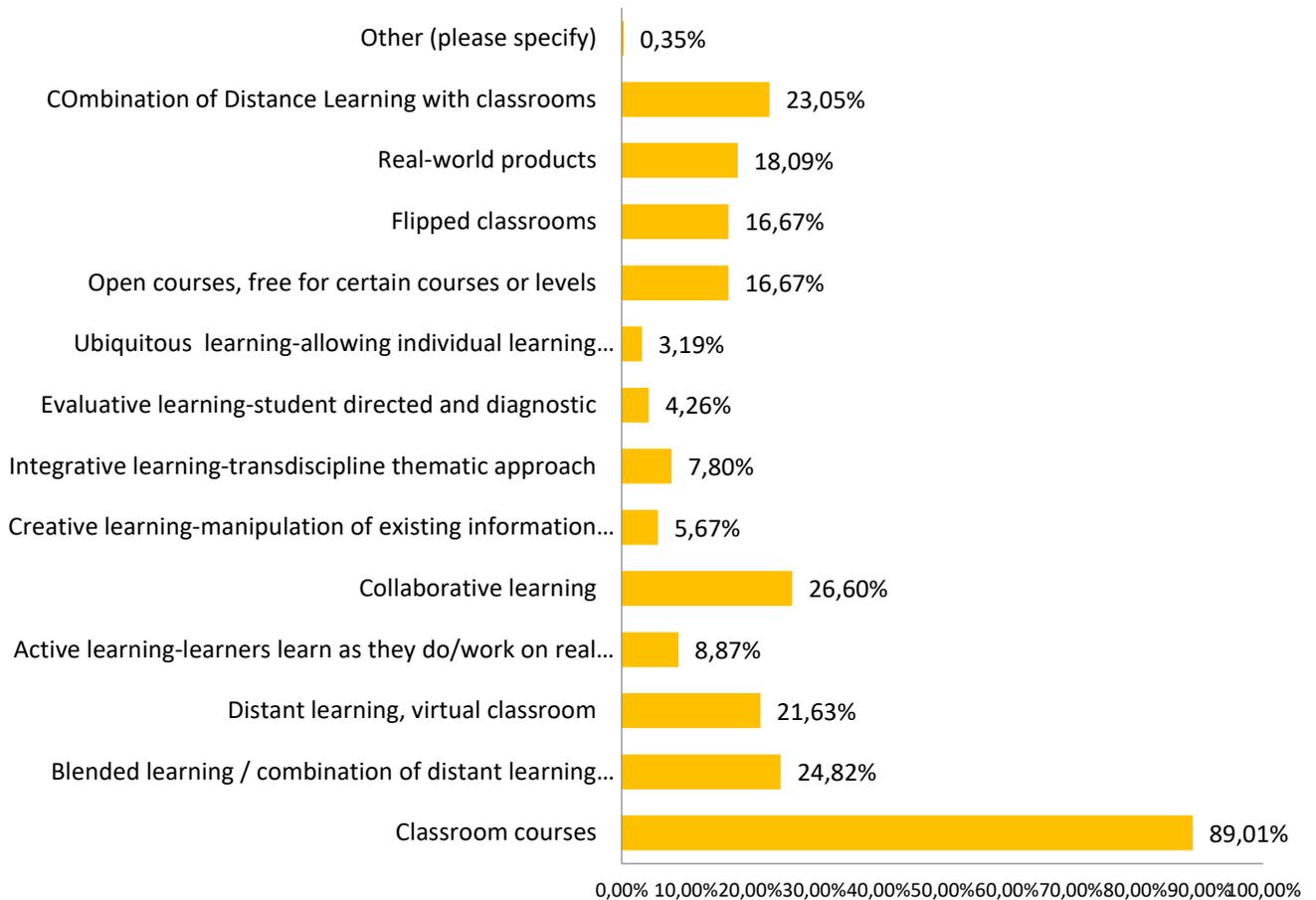
Countries



The third question gives us a detailed picture about the geographical distribution of the respondents. Out of 282, most of the respondents come from Italy 11,35%, followed by Greece 7,80%, Romania 6,38% and Belgium 5,67%.

2.3.2 Analysis of the School sector

Which methodology do you use for your courses implementation?



This question provides a European picture of the most implemented methodology used by the entities operating into the School Education sector to develop their educational activities in schools. Preferences refer out of a total of 282 answers provided by the respondents. Respondents could choose at least one or more than one options among the ones proposed.

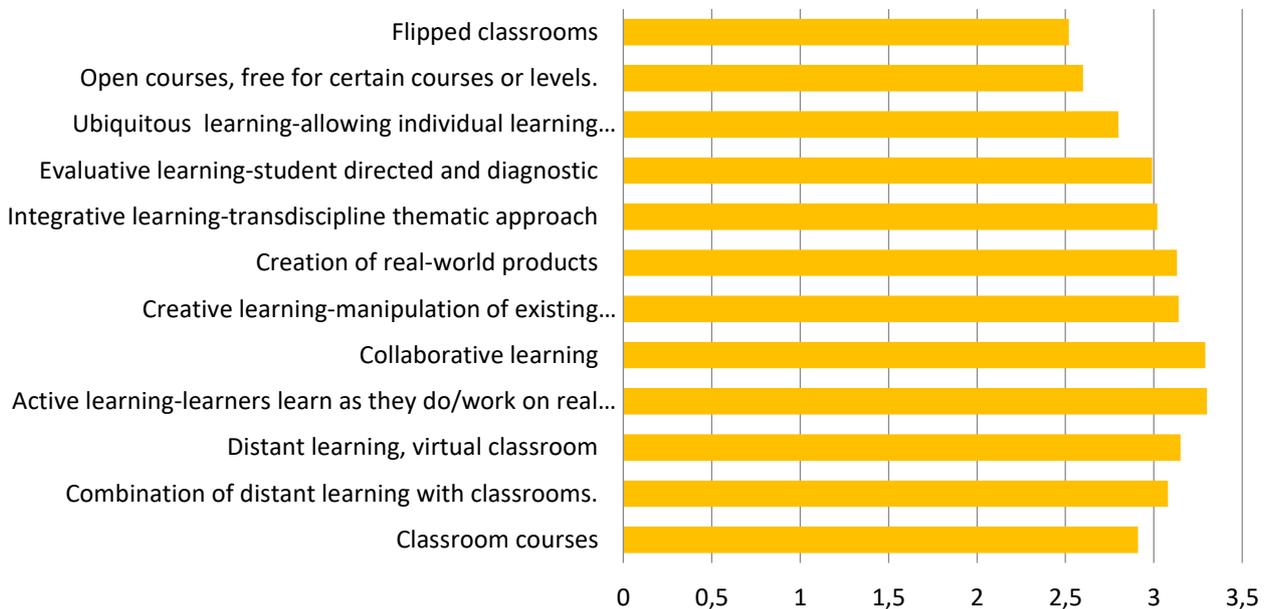
The results show that the most preferred methodology is:

1. *Classroom course* with 251 preferences.
2. The second most interesting results, which take into consideration also technology, are related to: *Collaborative Learning* (75 preferences);
3. *Blended Learning* (70 preferences) and
4. *Combination of Distant Learning with Classroom* (65 preferences).

This situation demonstrates that technologies are slowly entering classrooms as a support for trainers and teachers to facilitate the student learning process.

Ubiquitous learning (9 preferences), *Evaluative learning* (12 preferences) and *Creative Learning* (16 preferences) are the less used methodologies, according to respondents' preferences.

Which methodology for your courses' implementation are you considering to develop in 3 years from now, apart from those you already use?



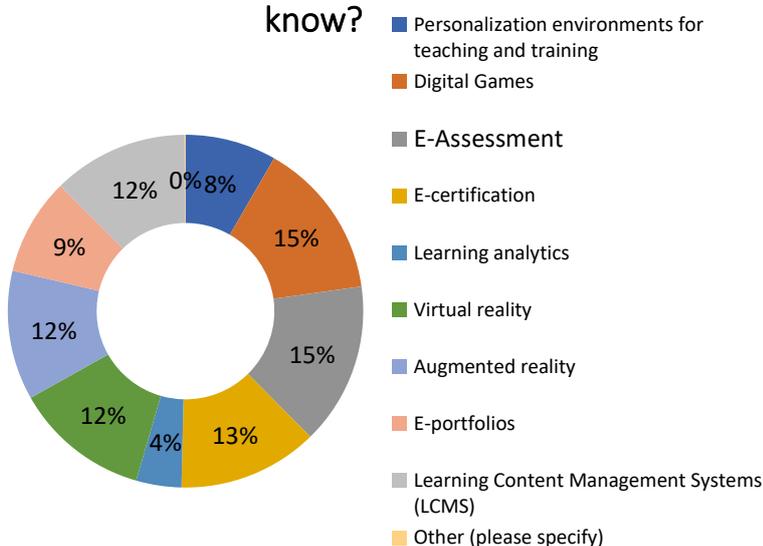
If the previous question provides a picture about the state of the art of the most used methodology for courses implementation, this question makes a step further and provides an overview of what could happen soon. Respondents had to rate from 1 to 4 the statements, indicating to what extent they will be willing to introduce them soon.

1. *Active learning-learners learn as they do/work on real life problems* (average rate 3,30) and
2. *Collaborative learning* (average rate 3,29), seem to be the most preferred methodologies for classes' implementation in three years from now.
3. *Distant learning*, on the other hand, ranked third with an average rate of 3,15.

As stated in the previous question, Classroom courses is considered as an important methodology for class implementation nowadays, but it is also considered as a relevant methodology for the future of the

Education system. Indeed, 55% of the respondents considered themselves as interested, but only 19,35% considered themselves as very interested in using classroom courses in the future to implement their courses. Flipped classroom (average rate 2,5) does not seem to interest the respondents that much compared to the other methodologies, and this can be explained by the fact that is still a not well-known methodology for class implementation.

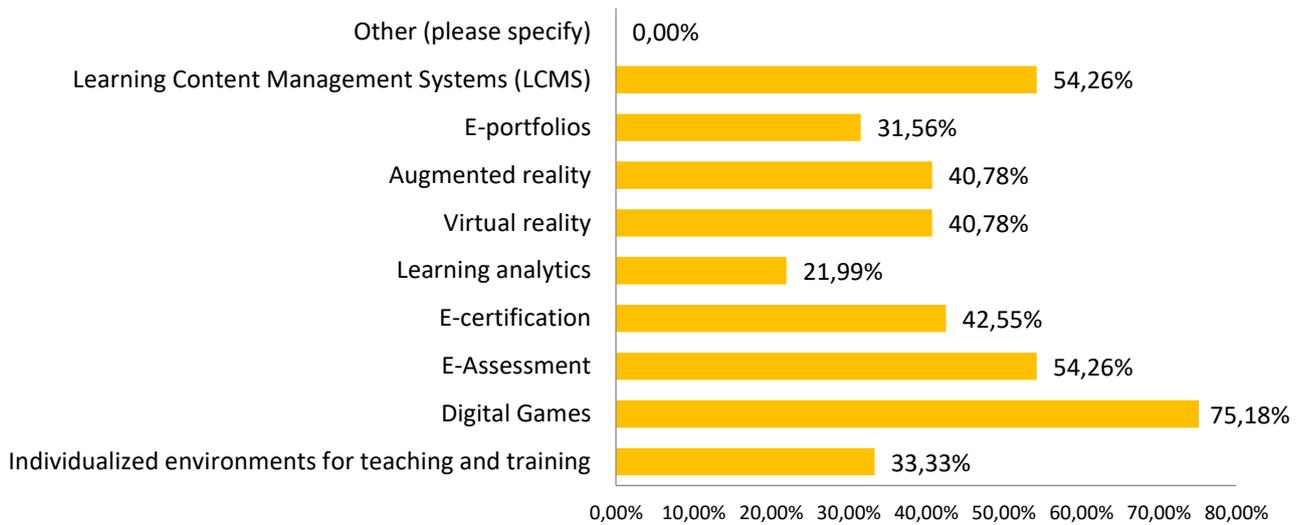
Which of the following ICT tools do you know?



However, with regards to the general knowledge of trainers/trainers about the digital tools available for class implementation, the most known digital tools are represented by

1. *E-Assessment* (184 preferences),
2. *Digital Games* (179 preferences)
3. *E-certification* (158 preferences), while the one which seems to be the outsider of the list is *Learning analytics*: just 51 out of 282 preferences. On average, preferences have also been given to *LCMS* (*Learning Content Management System*), and *Virtual and Augmented reality*.

Please indicate which of the following transformations triggered by ICT, schools can truly benefit from



In the graph above are indicated the different ICT tools that schools can truly benefit from.

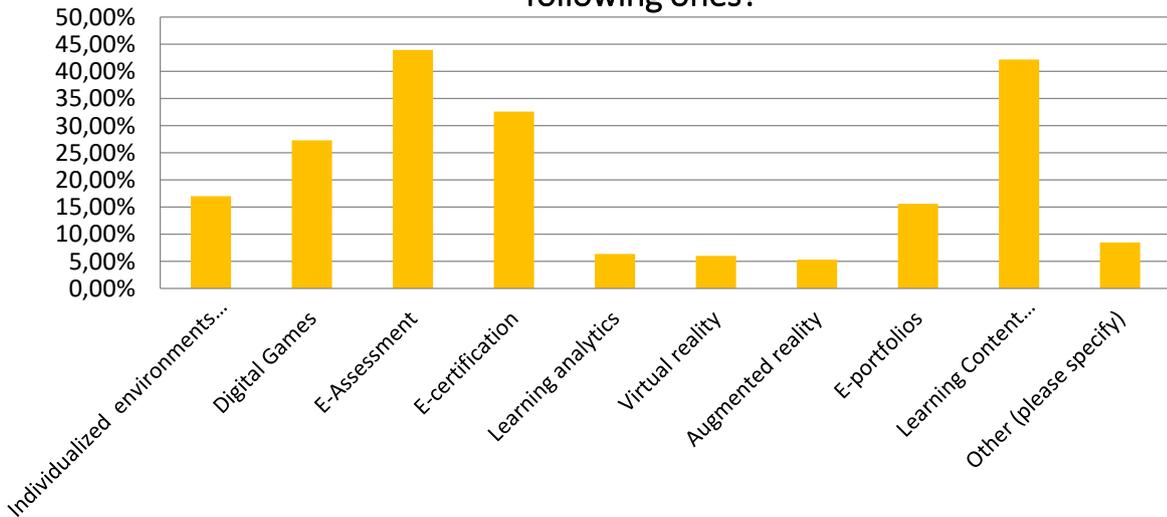
212 preferences have been given to *Digital Games* as the most promising transformation which may trigger school education among the ICT products available on the market.

The second joint winners are respectively: *E-Assessment* and *Learning Content Management Systems (LCMS)* with 153 preferences.

The less challenging ICT tools, according to respondents, are *Learning Analytics* (62 preferences), *E-portfolios* (89 preferences) and *Individualized environments for teaching and training* (94 preferences).

The high result of *Digital Games* can be explained by the fact that the digital learning game based system is able to engage/have an impact on the students' school results and engagement.

Which tools are the most used in your organisation, among the following ones?



The most used ICT tools in school are:

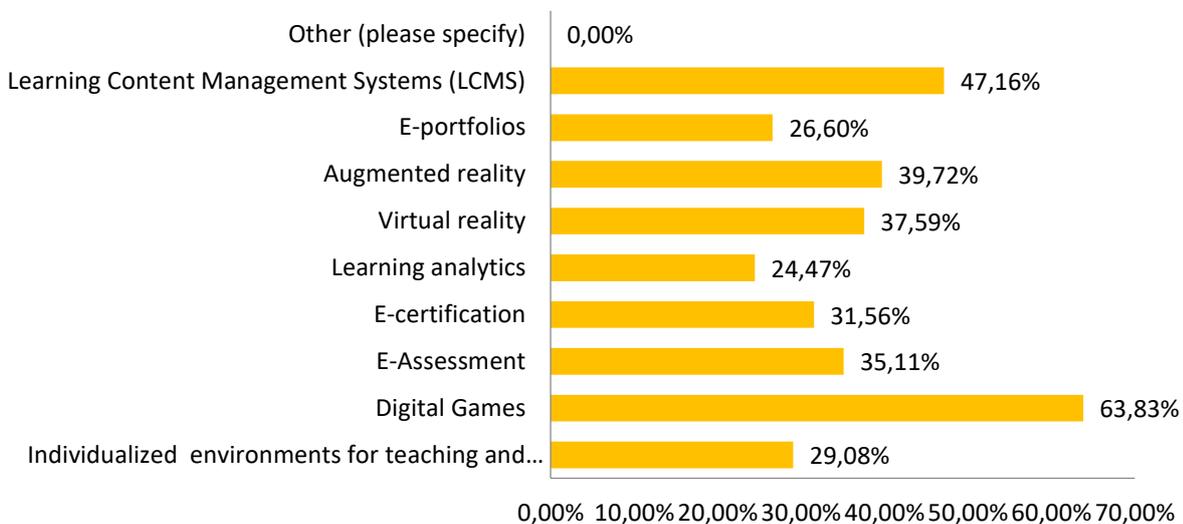
1. *E-Assessment* (124 preferences),
2. *Learning Content Management Systems, LCMS*, (119 preferences) and
3. *E-certification* (92 preferences).

Instead the less used tools are

4. *Augmented Reality* (15 preferences),
5. *Virtual reality* (17 preferences) and
6. *Learning Analytics* (18 preferences).

Moreover, 23 respondents declared that now they do not use ICT tools among the above mentioned and/or in general they do not use ICT tools for courses implementation, a part of those who declared to use *eTwinning* and *MOOCs*.

Which tool are you willing to introduce in your organization in 3 years from now?



Through this question we seek to understand which tools the respondents are willing to introduce in the next years, before 2020. *Digital Games* received 180 preferences, which reinforced the results of the previous questions, as they are considered the most promising transformation for digital school education. After *Digital Games*, the second and third ICT tools that the schools would like to integrate into their daily activities are the *LCMS Learning Content Management Systems, LCMS*, (133 preferences) and *Augmented Reality* (112 preferences).

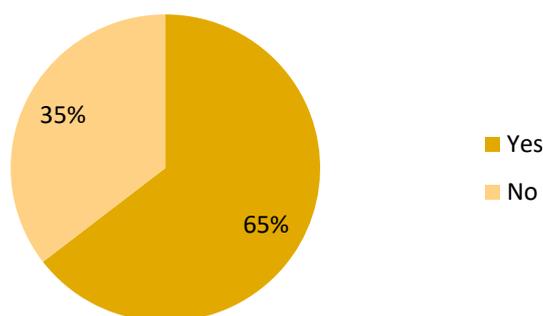
Learning Analytics received the lowest score among the list of ICT tools available for class implementation. Respondents not only do not know much about this tool as stated in the previous questions, but they also refrain to introduce it into the school system.

The table below shows us how respondents plan to introduce those ICT transformations discussed above. The 41,5 % of the respondents stated that schools will be equipped with the ICT tools for digital learning in three years from now. This data is interesting and very promising as the schools are willing to invest in ICT tools for their school offer, to facilitate the students' engagement in the learning process. The table also shows that schools rely on companies' support in doing so, indeed almost 20% of the respondents stated that companies will offer these tools to schools through sponsorship programs or similar ways.

For the ICT transformations discussed above, how would you implement that?

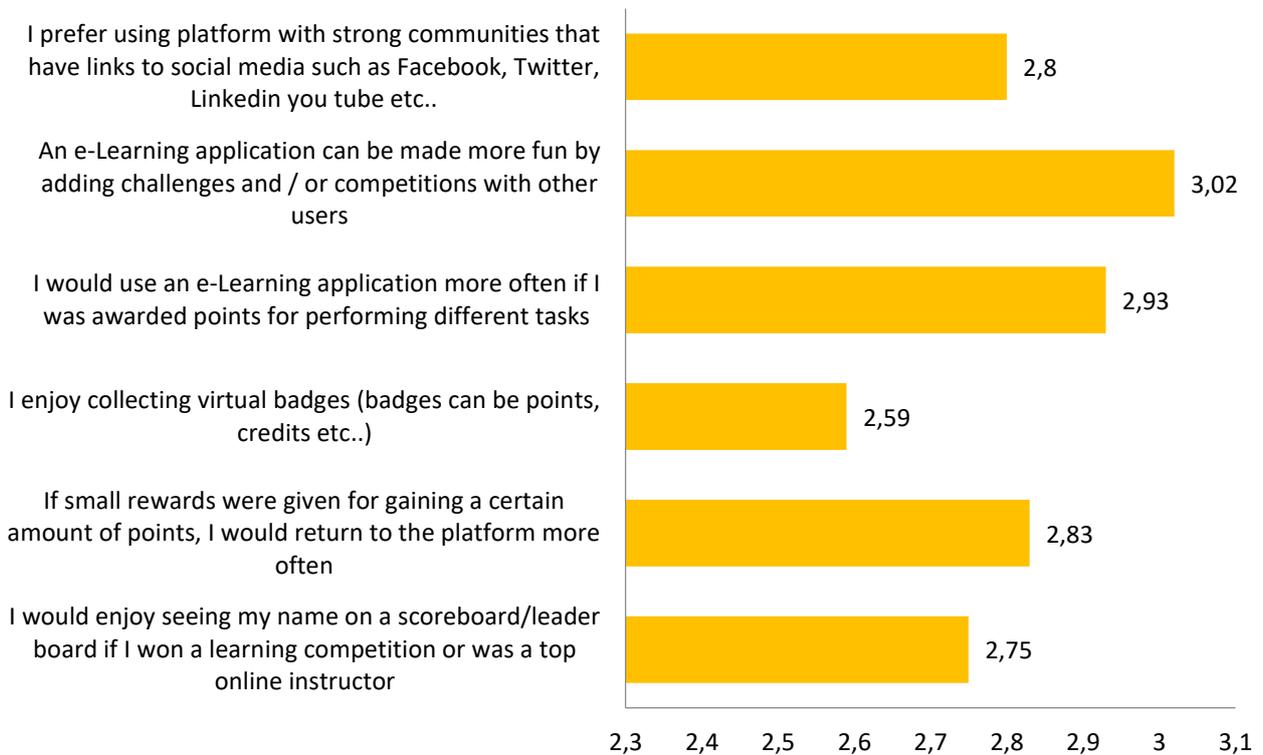
Answer Choices	Responses	
The school is equipped	10,99%	31
The school will be equipped with all tools.	41,49%	117
Students are expected to bring at school their own hardware.	19,15%	54
Ministry will provide all tools	8,51%	24
Sponsor Companies would offer the tools to school and students by sponsorship programs or similar ways.	19,86%	56

Have you ever used an e-Learning Platform in your courses?



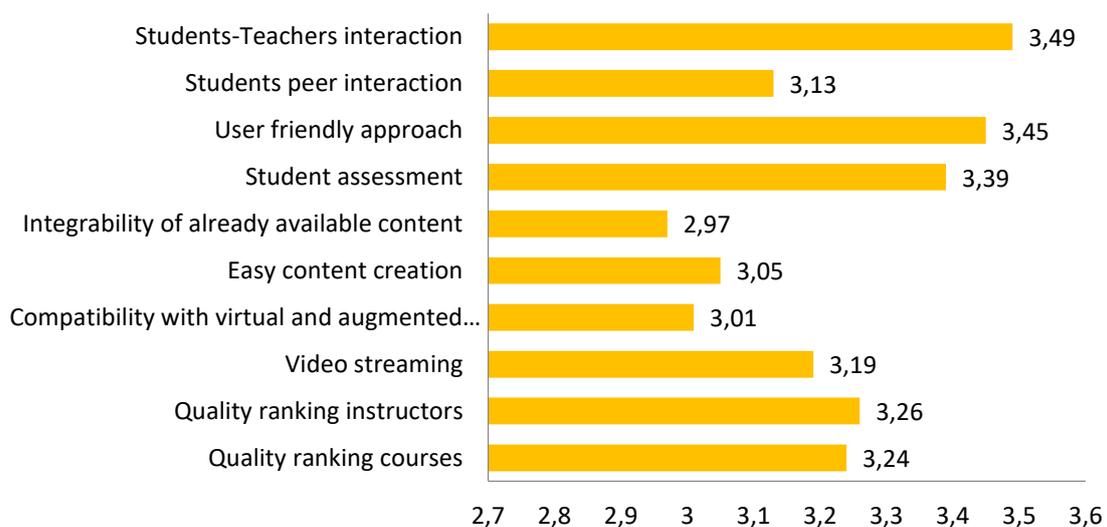
64,54% of the respondents affirm that they have used an e-learning platform for their course implementation. The rest instead have never used an e-learning platform. ICT tools and e-Learning Platform are slowly entering the school systems in Europe.

In case you use e-Learning platform as a teacher/instructor please rate the following statement



Among the teachers/instructor that use an e-Learning platform, the most rated answer supports the idea that adding fun with challenges and/or competitions to the platform will make it more attractive for the users. Also, the possibility of awarding points for performing different tasks seems to support the idea of making the e-platform more attractive for the final users.

What functionalities do you consider important for an e-Learning platform?



For what concerns the most important functionality for a platform, respondents affirmed that:

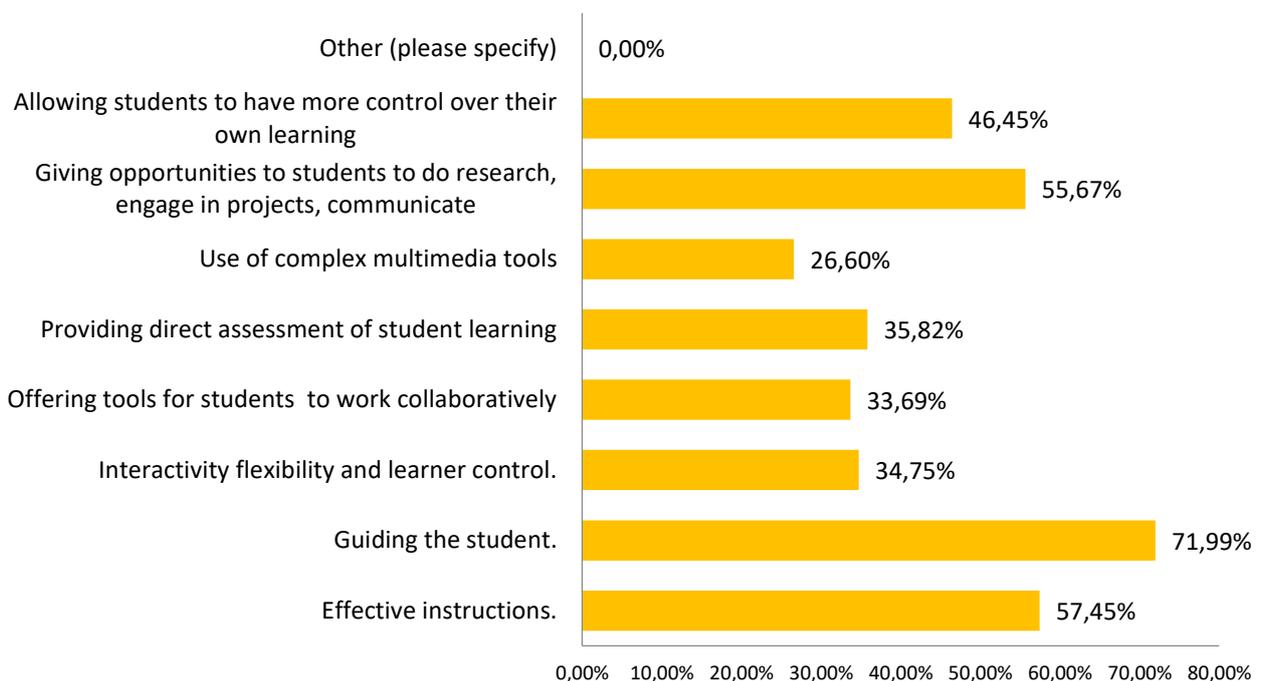
1. the possibility of interaction between students and teachers (average score 3,49) is of key importance.

This is followed by

2. the user-friendly approach of the platform (average score 3,45) and
3. to assess student performance (average score 3,39).

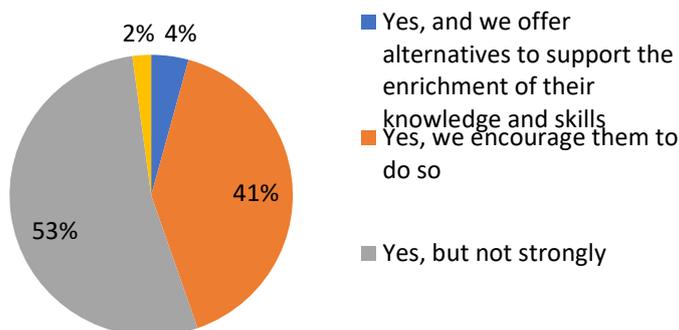
ICT platform functionalities seem to be necessary to support teachers and instructors into their daily school life. Indeed, the graph shows that ITC functionalities are important to facilitate the relationship between schools and their students. The question suggests also that the more appreciated functionalities of the platform are not related to content development but to teaching supports and analysis.

What makes a school course effective in your opinion?



This question investigates about the most effective methodologies for course implementation, courses effectiveness and if they guide the students into their learning process. Indeed, a total of 203 preferences have been given to the possibility of guiding the students in their learning process. The second two more

Do you propose engagement of extra activities to your students?



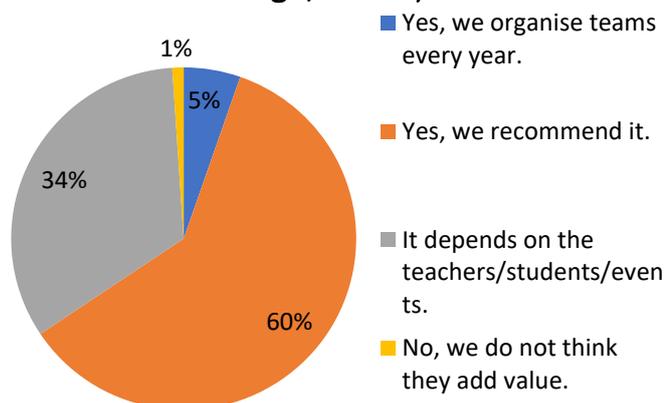
appreciated answers are related to the fact that a course needs to have clear instructions to be effective (162 preferences) and, the third, to allow students performing research activities, engage in project and communicate (157 preferences).

The option which seems not to influence the effectiveness of the courses is related to the use of complex multimedia tools (75 preferences). As stated in other questions, ICT tools should be simple and user friendly if you want ensure effectiveness and engagement.

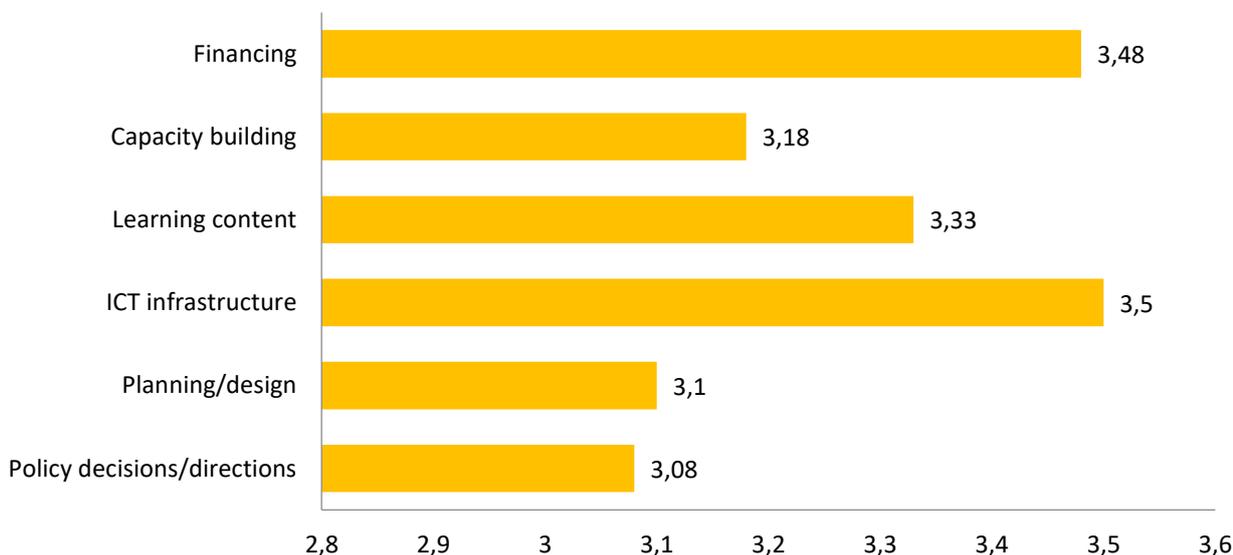
The learning engagement of students into extra school activities through ICT tools is encouraged by the entities working into the school education system, even if most of the respondents declare not to do it strongly. The overload of homework probably is affecting the engagement of students in extra school activities, as stated in one comment we received in the survey.

About student engagement, the graph shows that contests and challenges through ICT tools can facilitate teachers and instructors into their courses implementation. Indeed, this question suggests that teachers and instructors recommend to their schools' contest and challenges to support the students into their learning process (60%). Even if it appears that teacher and instructors support the importance challenges, just 5% of the respondents declared that they are involved in their organization.

Do you think contests/challenges for your students are useful? (innovation, design, IT etc.)



Which key factors/challenges do you consider important in ICT related excellence in school education system ?



This question provides a deep understanding of the factors and challenges that are considered relevant in the digitalization process of the school system. The most crucial factor for respondents is the necessity to have ICT infrastructures (average rate 3,5). Without laboratories and ICT tools is it not possible to exploit the potential of digital education. The second challenge is related to the availability of funding to properly equip school.

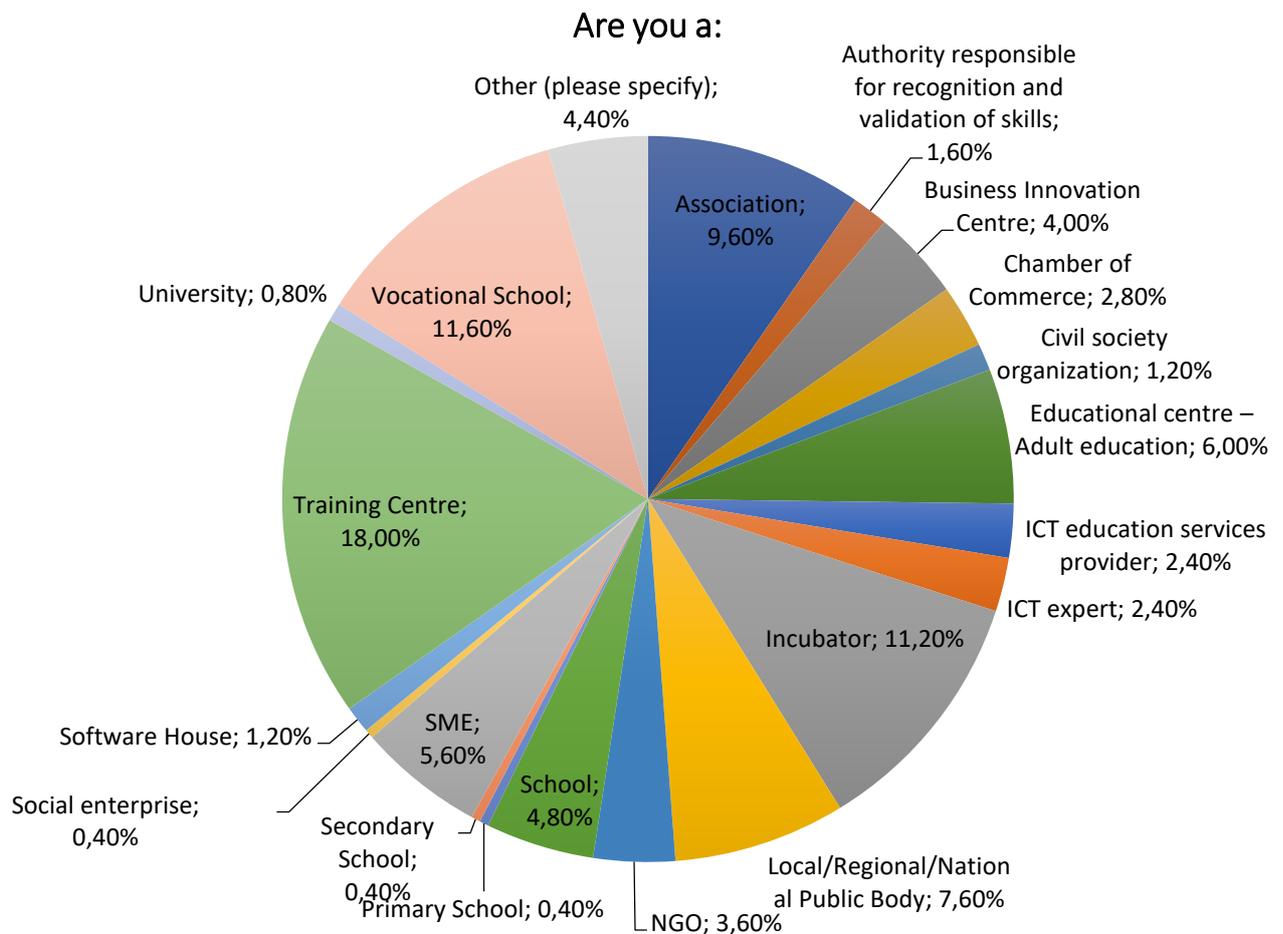
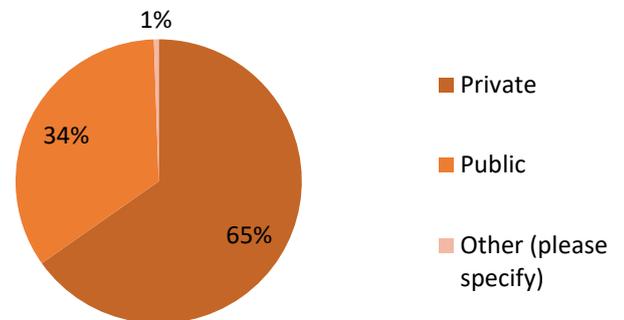
No comments have been left by the respondents at the end of the survey.

2.4 Vocational Education and Training

2.4.1 Demographic references

With reference to the Vocational Education and Training thread, the 184 organizations which completed the whole questionnaire mainly belong to the private sector – 65,22% or respondents –, while the public sector is represented for a 34,2%. There were also few respondents which answered “other” that were non-governmental organizations – 0,54%.

Which type of organization are you?

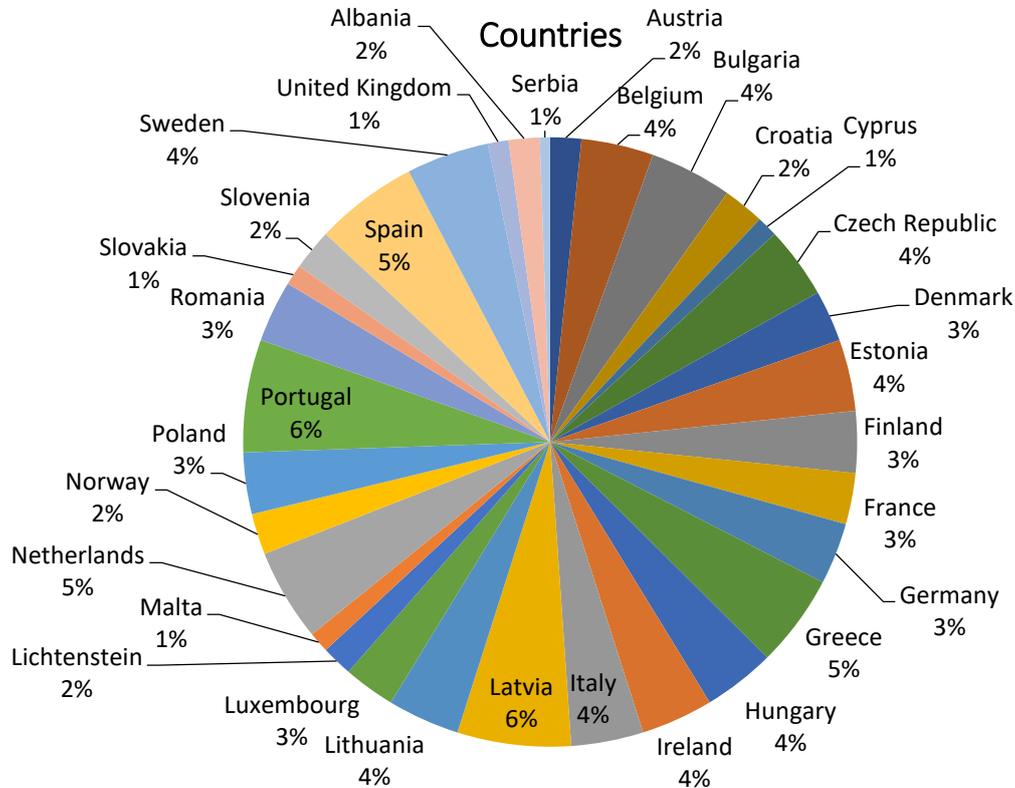


As you can see in the graph, most of the organizations were:

1. training centres (19,02%),
2. incubators (13,59%),

3. vocational schools (13,04%),
4. association (8,15%) and
5. Local/Regional/National Public Body (8,15%).

Other sectors are also represented but with minor results: business innovation centres, schools and adult education centres.



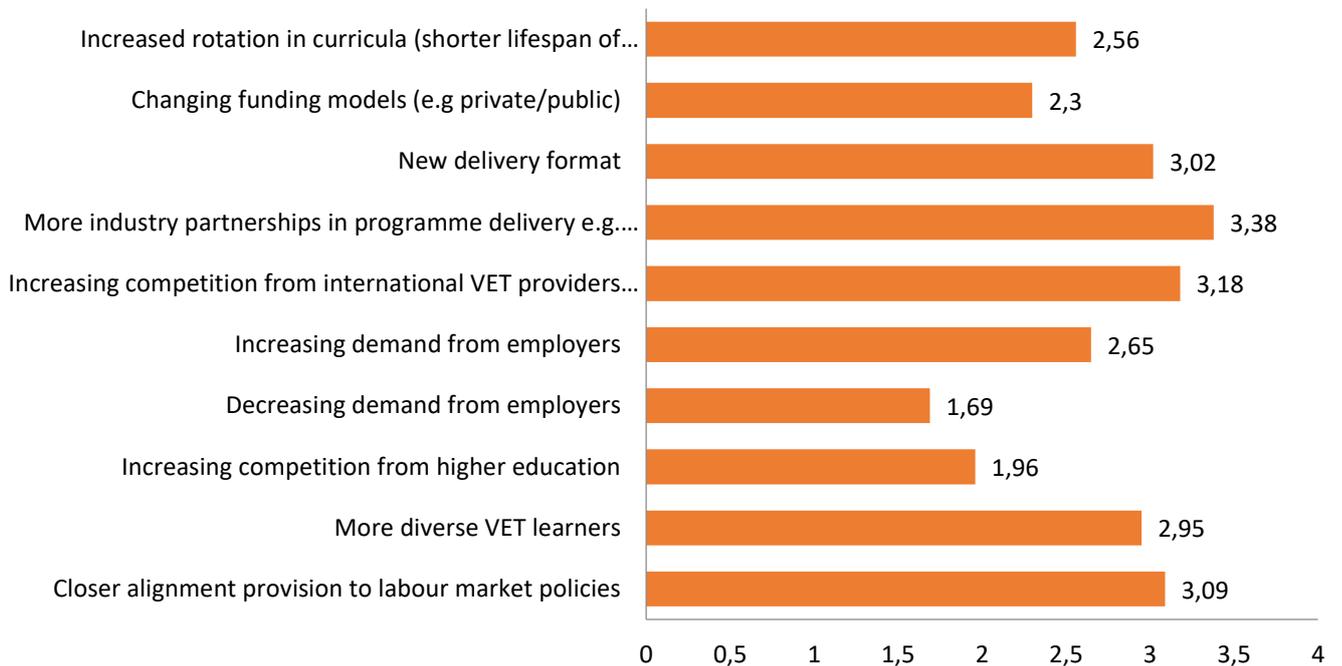
As the graph displays the most represented countries are:

1. Portugal – 5,98%
2. Latvia – 5,98%
3. Spain – 5,43%
4. Greece – 4,89%
5. The Netherlands – 4,89%
6. Bulgaria - 4,35%
7. Sweden - 4,35%.

There are also other countries represented, such as Hungary, Ireland, Lithuania, Denmark, Germany etc. The survey received no answer from Switzerland, Iceland, Montenegro, Former Yugoslav Republic of Macedonia and Turkey.

2.4.2 Analysis of the VET sector

What do you think will shape VET in 3 years now?



This section was meant to understand which type of changes the Vocational sector will face, according to the respondents, in 3 years. The question analysed different issues which were rated from 1 to 4, i.e. from the least likely to happen to very probable.

The most rated issues, as very probable to happen, are:

More industry partnerships in programme delivery e.g. WBL programs or apprenticeship programs	3,38
Increasing competition from international VET providers or industry certification programmes	3,18
Closer alignment provision to labour market policies	3,09
New delivery format	3,02

These results show that most of the respondents consider highly probable that in 3 years from now VET will increase its relations with industry through WBL and apprenticeships, as well as the competition among VET providers, which are becoming more and more international. A closer alignment to labour market is also foreseen together with new delivery format of the training courses.

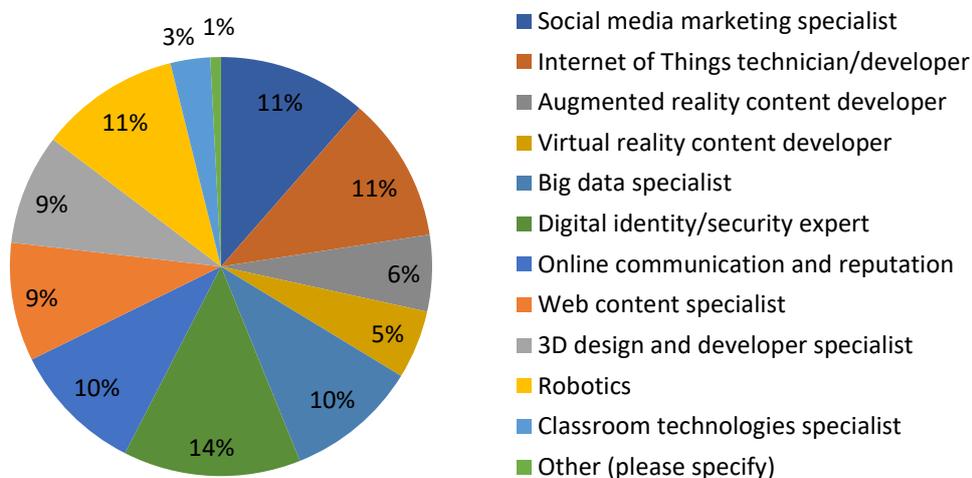
It is also interesting to analyse which of the issues were considered the least likely to happen:

Decreasing demand from employers	1,69
Increasing competition from higher education	1,96

These results show that Higher Education is not considered a competitor for VET, and that employers will still rely on VET learners as a work force. There were also some other issues suggested as “very probable to happen” in the near future:

Flexibility of the curricula; Increased engagement of companies; New Professional Profiles.
International qualifications - VET aligned by international standards and needs.

What are the future professions that you plan/consider to include in your training offer over the next 3 years?



Regarding the professions that respondents consider implementing in the near future, the highest percentage of results are for

1. *Digital identity/security expert* – 14%,
2. *Internet of things technician/developer* – 11%,
3. *Social media marketing specialist* – 11%,
4. *Virtual reality content developer* – 11%.

It's interesting that *Robotics* received just the 5% of the responses, as this technology is growing, as well as 3D design and developer specialist only scored for a 6%.

Four respondents also suggested other professions, such as:

On-line sales
Sustainability
Handcrafts - it may be a paradox, but to be aligned by the high standards and luxury segment, manufacturing and manual/handcraft skills will be very much sought. The market is orienting to niches, and so the differentiation and manual added value.

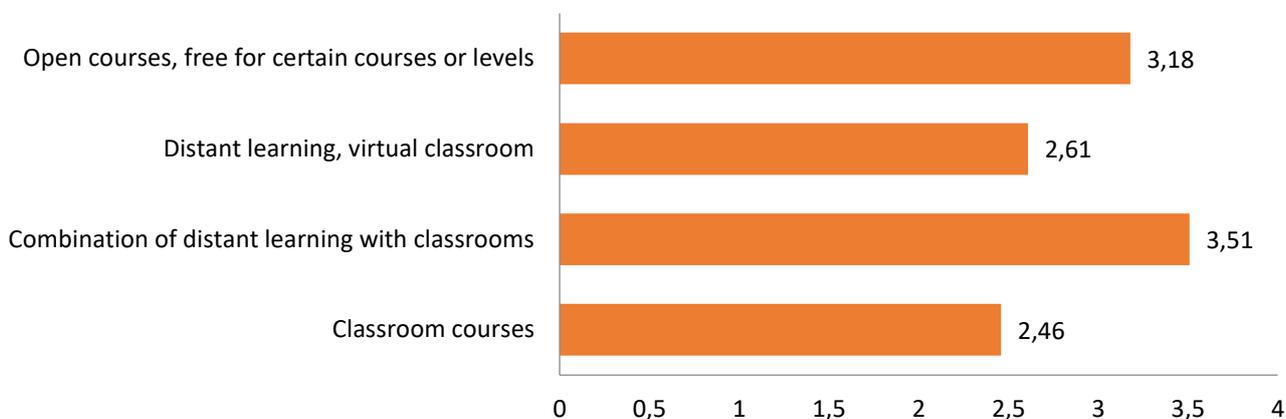
Which methodology do you use for your courses implementation?

Answer Choices	Responses
Classroom courses	110
Combination of distant learning with classrooms	78
Distant learning, virtual classroom	31
Open courses, free for certain courses or levels.	16
If none, why? And which one do you use?	1

The question was meant to understand which type of teaching methodology is used the most. As you can see in the table, classroom courses are still the most used method for teaching in VET. It is followed by a combination between distant learning and classroom, while only 31 respondents have chosen distant

learning or virtual classroom. One respondent, however, stated to be using hybrid method together with industry, which is an interesting methodology that should be investigated more.

Which methodology will you consider to implement in 3 years from now, among those that you are not using?



Respondents were also asked to choose which methodology they would like to implement in the future, in comparison with the one they are using today. Most of results, gathered through a rating between 1 to 4, (where 1 is the less interesting and 4 the most interesting), have been collected for the combination of distant learning with classroom activities. This rate clearly shows, considering also the results of the previous question, that respondents are willing to improve their teaching methodology towards a more “*distant teaching*” method. This is also demonstrated by the second most voted choice, open and free courses up to a certain level.

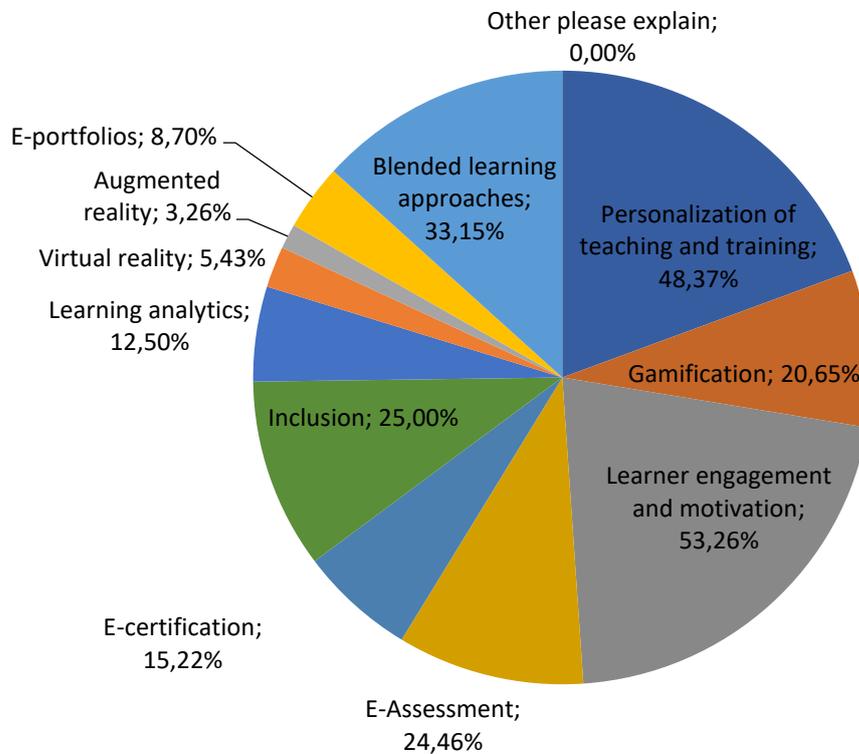
In the following question we analysed ICT tools and how these affect VET. First, we have asked respondents to express which ICT transformation can be beneficial to the VET sector. As you can see below in the table the most voted ones are: *Personalization of teaching and training*, *Gamification* and *Blended Learning*.

Please indicate which of the following transformations triggered by ICT, VET can truly benefit from

Answer Choices	Responses
Personalization of teaching and training	120
Gamification	81
Learner engagement and motivation	34
E-Assessment	55
E-certification	55
Inclusion	15
Learning analytics	55
Virtual reality	51
Augmented reality	24
E-portfolios	57
Blended learning approaches	104
Other (please specify)	0

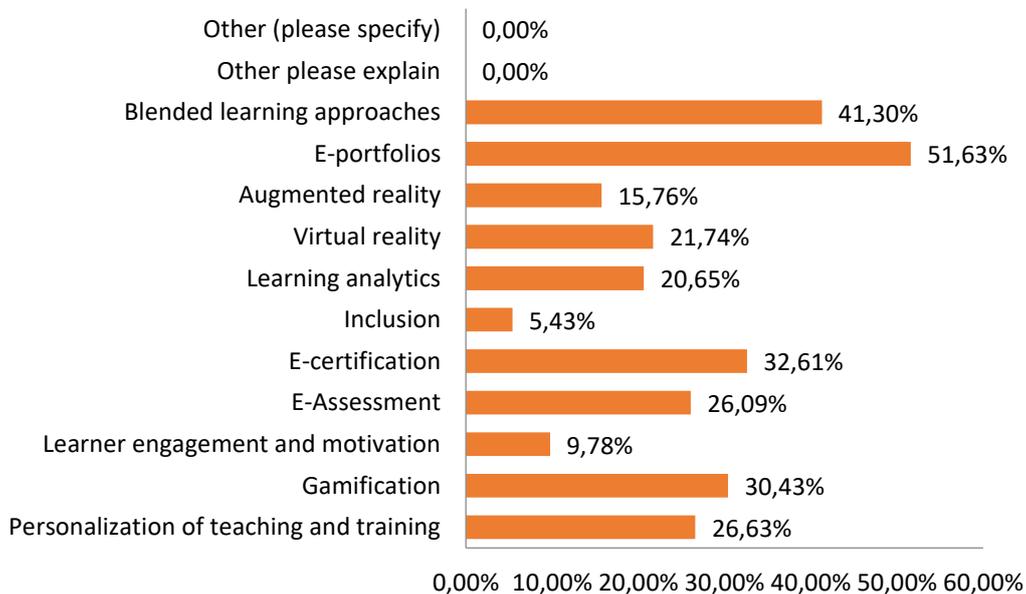
These results are linked to the following question, which investigates the type of tools that respondents are already using. As you can see below, the most already used are *Learner engagement* and *Motivation*, which

in the previous question received very few votes. On the other hand, *Personalization of teaching and training* and *Blended learning*, which scored very high also in the other question. Thanks to this question, we can also analyse that very few are using *Augmented reality*, *Virtual reality*, *e-portfolios* and *learning analytics*.

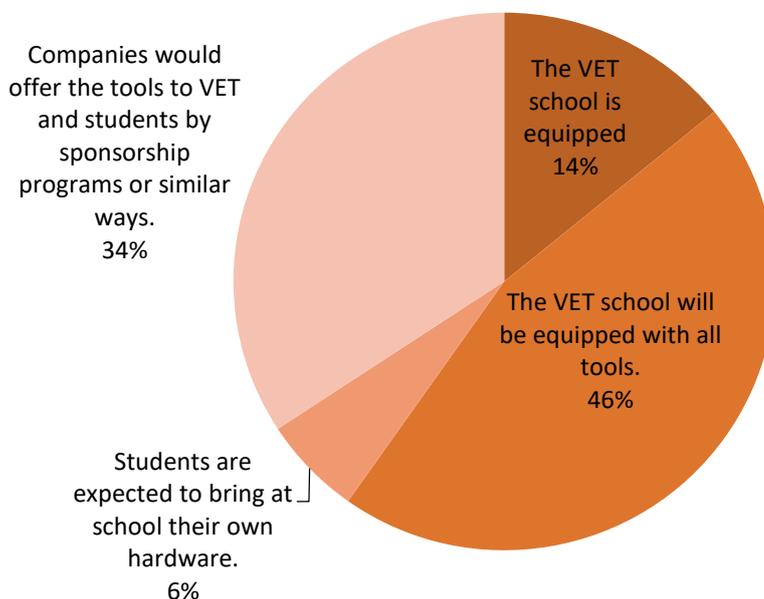


Finally, we have also asked which tool respondents will be interested to introduce soon. These results demonstrate that the most interesting tool for them is *E-portfolio*, followed by *Blended learning*, *E-certification*, *Gamification*. Here we can note that some tools as *Learning analytics*, *Virtual* or *Augmented reality* are still not in the plans of respondents

Which tool are you willing to introduce in your organization in 3 years from now?



For the ICT transformations discussed in question n.10, how would you implement that?



We have also asked the respondents how they would implement the ICT tools that they are willing to introduce, trying to understand which needs they will face soon.

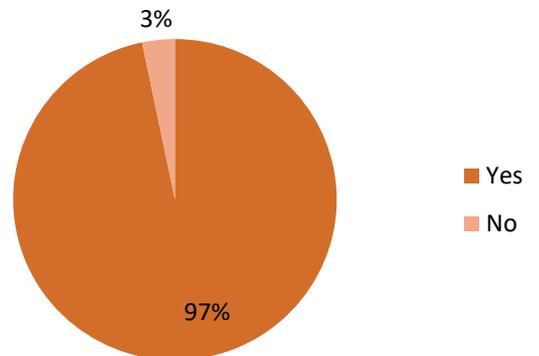
1. 46% declared that the VET school will be equipped, while
2. the 34% affirmed that they had to ask companies to sponsor the implementation of new tools.

Only 14% affirmed that their VET school is equipped or that students should bring their own hardware – 6%.

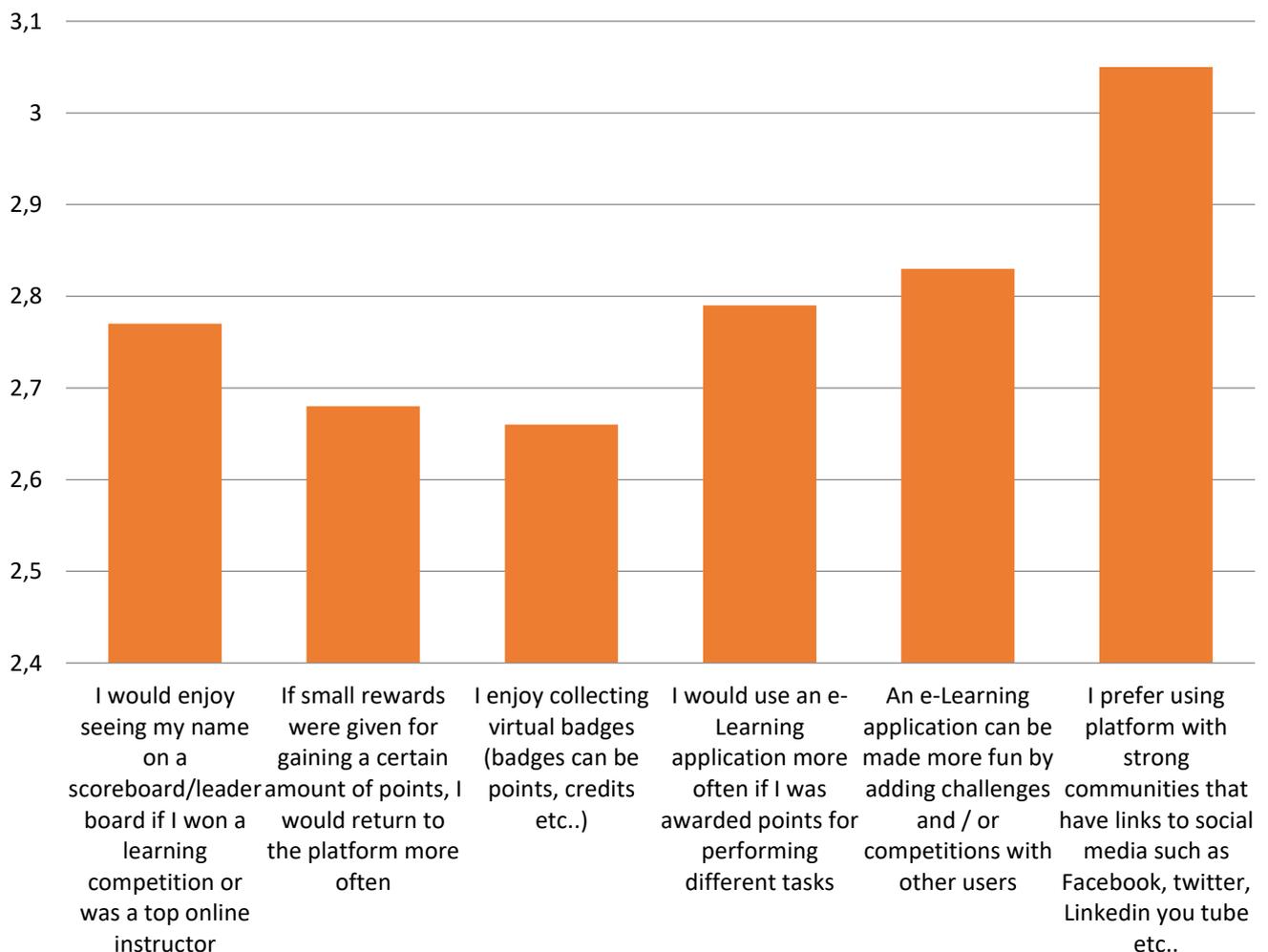
As what concerns the use of e-learning platforms, most of the respondents - 96,74% -, affirmed that they are using it, while 3,26% affirmed not to use it. These are the comments:

I'm not a teacher
Our learners showed to prefer more classic methodologies for teaching/learning. Then, the topics of our courses need a personal interaction most of the times
Because demand from our students of such a solution is still poor. We wish, however, plan to increase this methodology
Funding issues
Our courses are ruled by the Ministry of education and they have to follow the face-to-face model.

Have you ever used an e-Learning Platform in your courses?



In case you use e-Learning platform as a teacher/instructor



Those that are using e-learning platforms were asked also to rate some issues concerning the use of the platform. The results show that most of the respondents prefer using those platform, which allow users to

build up a strong community through social media – 3 others prefer to have applications which trigger competition among users – 2,8; the use of awarding systems such as points, badges and scoreboard is also appreciated.

Which functionalities you consider important in an e-Learning platform?

	Not important		Less important		Important		Very important		Total	Average
Quality ranking courses	1,68%	3	14,53%	26	59,22%	106	24,58%	44	179	3,07
Quality ranking instructors	1,67%	3	13,33%	24	58,89%	106	26,11%	47	180	3,09
Video streaming	1,10%	2	9,39%	17	51,38%	93	38,12%	69	181	3,27
Compatibility with virtual and augmented reality	16,29%	29	44,94%	80	25,84%	46	12,92%	23	178	2,35
Easy content creation	0,00%	0	2,22%	4	19,44%	35	78,33%	141	180	3,76
Integration of already available content	0,00%	0	3,91%	7	25,70%	46	70,39%	126	179	3,66
Student assessment	1,68%	3	2,79%	5	47,49%	85	48,04%	86	179	3,42
User friendly approach	0,00%	0	1,12%	2	21,79%	39	77,09%	138	179	3,76
Students peer interaction	0,00%	0	8,94%	16	51,40%	92	39,66%	71	179	3,31
Students-Teachers interaction	0,00%	0	5,06%	9	41,57%	74	53,37%	95	178	3,48

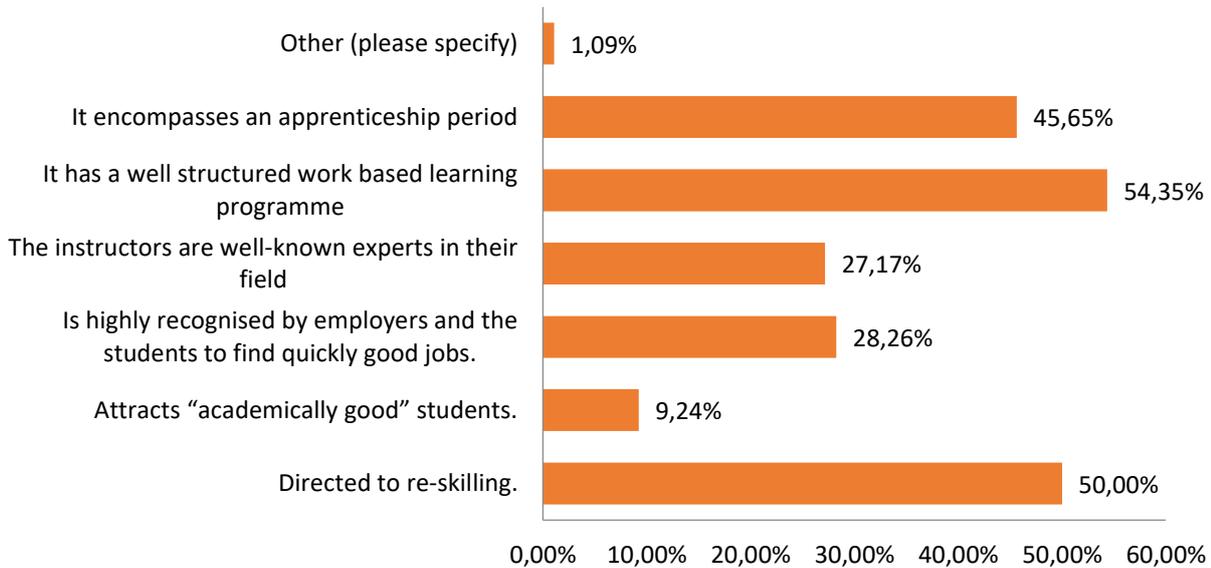
The functionalities that respondents consider the most important on a e-learning platform. First, we can note that most of the features are considered quite important, in particular:

1. *Easy content creation* – 3,76;
2. *Integration with already existing contents* – 3,66;
3. *Student/teachers interaction* 3,48.

On the other hand, those features considered to be the least important are: *Compatibility with virtual and augmented reality* - 2,35 and *Quality ranking courses* – 3,07.

The last group of questions addresses the role of VET in the labour market and the use of apprenticeship in VET. First, we have asked what makes a VET course effective.

What makes a VET course effective?



As showed in the results, the success key for a VET course is the presence of a well-structured work based learning programme, followed by the structure addressed to re-skill. Moreover, the other feature that has been considered as important is the presence of an apprenticeship period, as recognised by employers as preparatory to find job. On the other hand, the presence of well-known experts is recognised not so important.

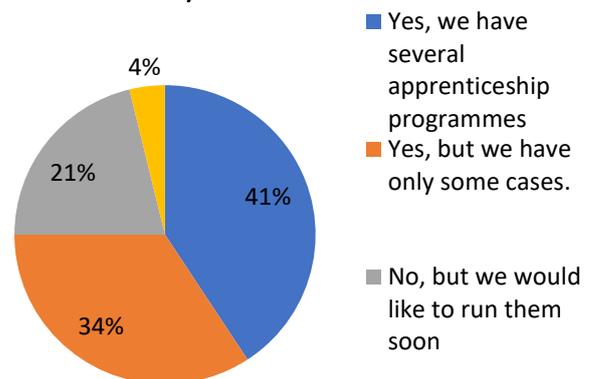
Some respondents also responded "other", specifying as follows:

the instructors are able to teach online and guide the students effectively

Is based on competences, overall development of trainees and practical

The graph shows the percentage of respondents which offer apprenticeship in their courses – 41% and those that offer apprenticeship but only in some cases – 34%. If we merge the first and second result, an overall 65% offers apprenticeship. However, the percentage of VET that still doesn't offer apprenticeship is quite important - 25% - even though the 21% would like to implement it.

Do you offer apprenticeship in your courses?

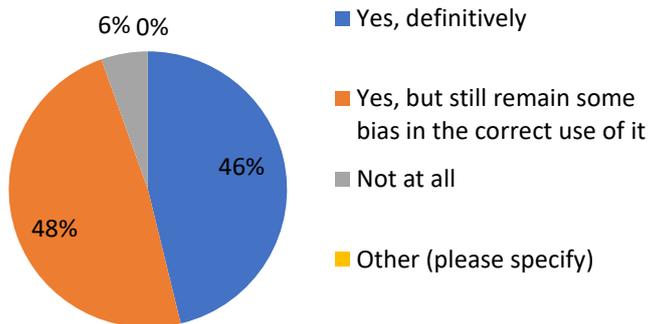


What is the added value you see from apprenticeship?

Answer Choices	Responses
Hands-on experience.	118
Connection to the job market.	127
Feedback from employees that is translated into curricula.	52
There is no specific value for the VET courses we offer.	4
Why in your opinion there is no specific value?	1

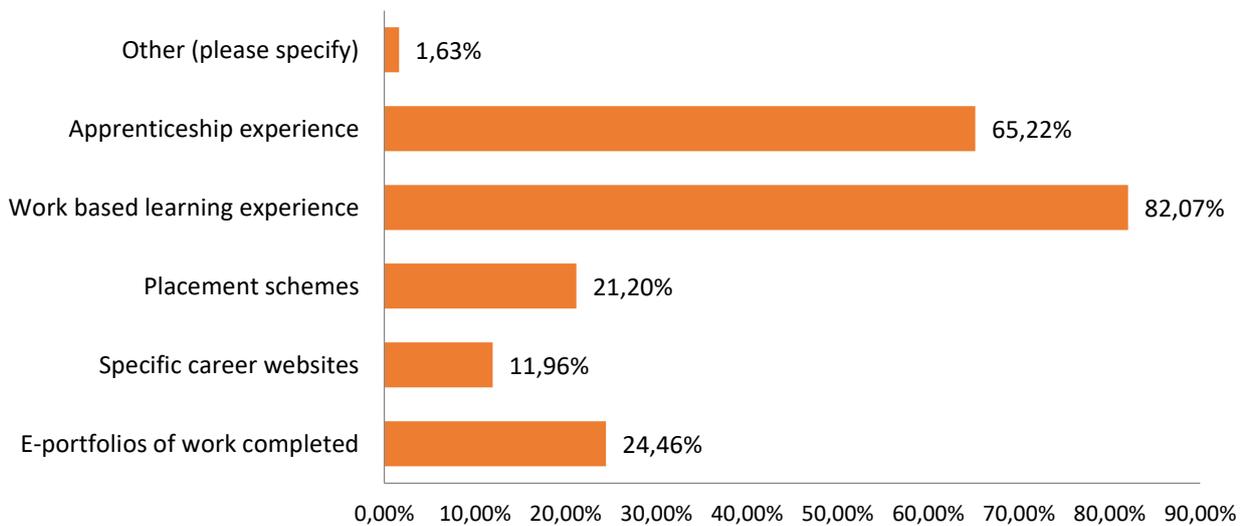
The added value that respondents see in apprenticeship is the hands-on experience that learners can acquire, followed by the connection to the job market. Moreover, the feedbacks of employees that can be used in the curricula is also important.

Do you think that apprenticeship will be regarded differently for the future professions?



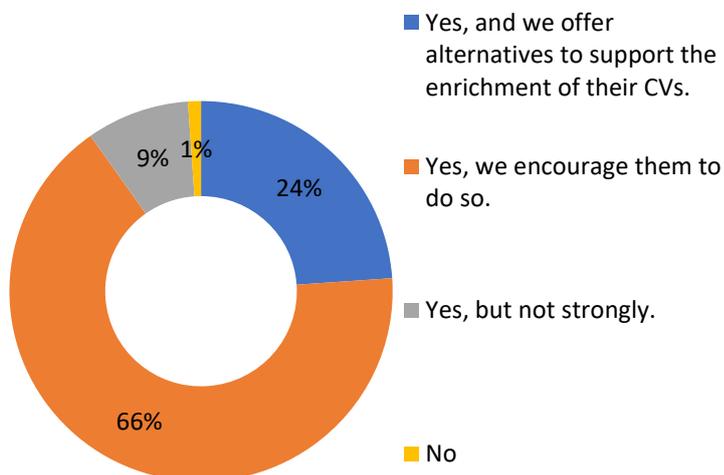
The importance of apprenticeship is demonstrated also by the results of this question that addresses the future of apprenticeship. In fact, 48% stated that apprenticeship will be more and more important even if some bias remain about its correct use.

What is in your view the most effective way to assist VET students in their transition to employment?



As far as what concerns effective measures to assist students in the transition to employment, work based experience is considered the most effective, together with apprenticeship. On the other hand, specific career website or placement schemes are not effective according to respondents' answers.

Do you propose engagement of extra activities to your students?



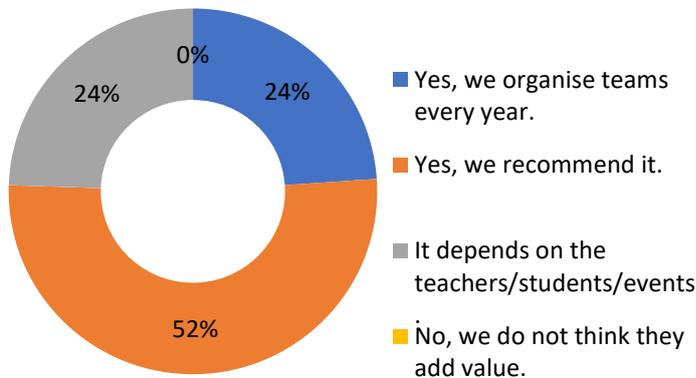
As far as what concerns extra activities offered in VET training courses:

1. the majority of respondents affirmed that they encourage to do such activities – 66%;

2. while only 24% affirmed to offer extra activities also with the view to enrich the learners' CV.

It is positive anyway the fact that just 9% of respondents chose the answer "yes but not strongly" and that only one respondent is not offering such activities. On average, 79% of respondents is offering a kind of extra activity in their courses.

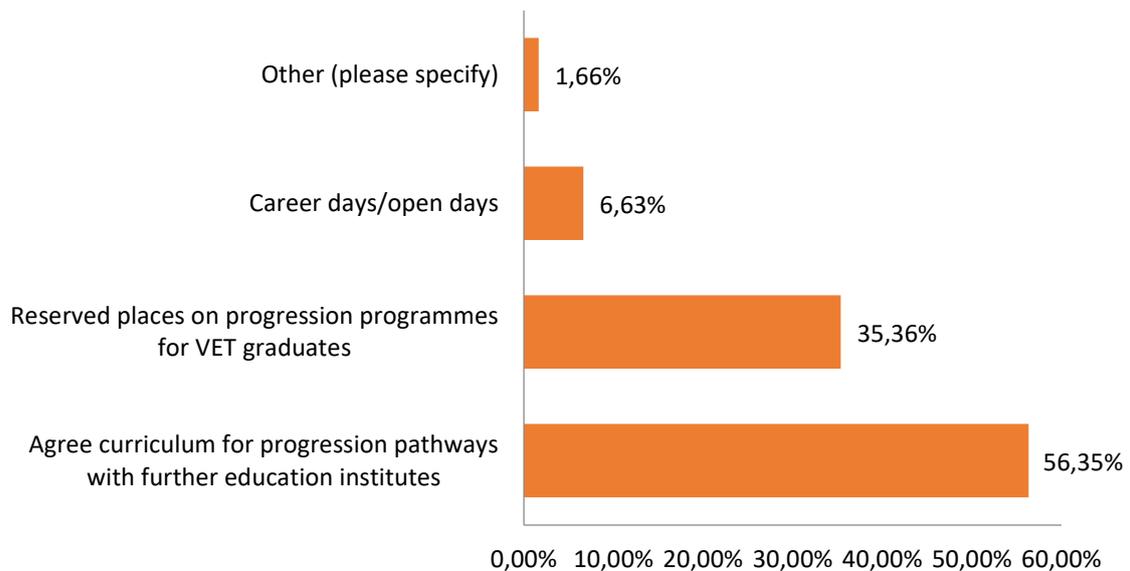
Do you think contests/challenges for your students are useful?



The survey investigates also if organizations are offering any type of contests or challenges for their learners. As one can see in the graph, the majority of respondents

1. 52% affirmed that they recommend it. However, a high percentage
2. 24% - still rely on teachers/students/events.

Those that organize such activities are the 24% of respondents, but it is positive to note that none of the respondents chose the negative answer.



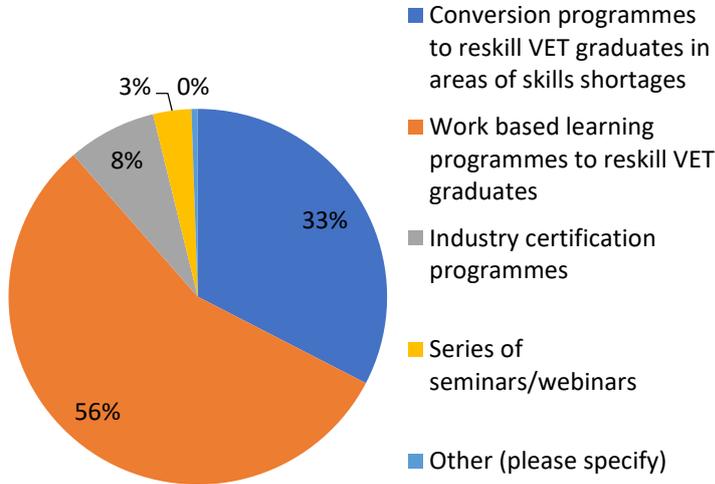
As for the most effective way to assist VET students in their transition to further/higher education, respondents chose the "Agree curriculum for progression pathways with further education institutes" with 102 preferences, followed by "Reserved places on progression programmes for VET graduates" with 64 preferences. There were also 3 respondents which suggested under "other" the following methodologies:

Specific orientation and motivational training courses for students. Our organization also provides support to young people who have completed VET courses and choose to continue their studies.

Recognition of previous learning and shorter courses

A thorough understanding how work changes through digitalisation, an openness to acquire new skills as needed and support to understand how further education will help them reach short- as well as long-term goals that focus on employability and intellectual satisfaction

What is in your view the most effective way to reskill VET graduates to skills shortage areas?

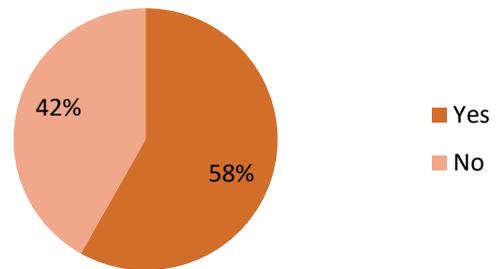


For what concerns the methodologies to reskill VET graduates, respondents preferred work based learning programmes up to the 56%, followed by conversion programmes for reskill in the areas with skills gap. Few of them chose industry certification programmes (8%) and seminars/webinar (3%).

These results show that there is a high appreciation or trust in work-based learning methodology as a whole – this is also shown in the previous questions results – and to solve the issue of skills gap.

It is also promising the number of respondents that already tried to implement such measures. 58% in fact affirmed yes, even though a 42% have still not tried.

Have you ever tried to apply such type of measure/s?



3. What is the future of digital education and training in the EU – Conclusions

In the previous sections we have analysed in detail the quantitative and qualitative results of the survey, both for the demographic part and for the ones addressing the 4 specific sectors. In this last section, we will try to draw the conclusions on the base of a cross analysis among the 4 sectorial results and finally formulate our recommendations.

We have started the analysis with the Adult Education sector, which highlights from the beginning a certain preference for conventional channels of communication and engagement of learners. This is something which is also confirmed in other questions' results of the School and VET sector, even though a growing use of social media is proved. As far as it concerns learners' engagement, attraction and retention, these aspects are very important by respondents and at the centre of their interests as issues that can be solved through the use of ICT tools and different methodologies.

Furthermore, **the financial aspects are considered as one of the factors that are inevitably shaping digital education take off** and, on the other hand, learners engagement. In fact, respondents of the Adult Education sector affirmed strongly that financial issues are the greatest obstacle for adult learners, while when asked to estimate how organizations can embrace digital tools adoption in their daily activities, most of the results led to the fact that either the learners/students must bring their own devices, or they will seek help from companies. This issue is confirmed also in other sectors like School and VET. For the school sector, the financial issue is one of the most principal factors allowing for a true implementation of digitalization in school, together with ICT infrastructures that clearly requires investments. Whereas in VET, it is estimated by respondents that ICT transformations will be highly supported by the organizations themselves or sponsored by companies.

The results of all 4 sectors, especially Adult, highlighted a lack of skills from educators/teachers/instructors, which is hindering the true take off of digitalization in education. This issue is reflected also in the results of those questions which investigated about the willingness/promotion of activities in all sectors, related to contests/challenges aimed at improving students'/learners' motivation. Very often these activities are left to teacher/educators' initiative and are not structured in educational programmes.

The use of ICT tools which support teaching, according to respondents, allows the personalisation of programs. This is in our opinion the key aspect of digital teaching methodologies, which can strongly shape the education of tomorrow. It's positive that also respondents from all 4 sectors understood this point and that is crucial to them. This is linked also to their vision and future planning. Adoption of digital methodologies means, for them, to be competitive in the market.

However, if from one side ICT tools allow personalisation in learning – as improvement in teaching methodologies – on the other side classroom courses are still considered at the core of teaching approaches in all 4 sectors. We think this is not a step back from the growing use of distance learning platform or other techniques, such as flipped classroom or blended learning. Considering that these techniques are still quite new and that a school or a university shall have the necessary equipment to visualise and understand the real benefit from their implementation, therefore education institutions affirm to opt more for collaborative learning and for a mixture of online/offline teaching and learning.

This aspect may also be linked to another result that we have noticed from the 4 different surveys. **Both augmented reality and virtual reality are not valued as teaching methodology worth to be used today and in the future.** We think that these tools are still much complicated for the majority of educators/teachers and also linked to the registered lack of skills. Therefore, we can understand the reason why, when asked to rate both the most used methodologies and those that organizations are willing to implement in the future, augmented and virtual reality are not at the top of the list. This is also true for the tool of “learning analytics”. It is still difficult, according to respondents, to see the implementation and scope of such instrument, while it may give very good insights about students’ performances, engagement and for helping instructors in designing their programmes and courses. There is substantial difference, instead, on the perception of E-portfolios and their scope and usage. While in Higher Education it is considered one of the tool which can help students progress in the labour market, in VET today it is still underestimated and seen as a tool to be implemented in the future.

The general results give us the opportunity to reflect on various issues that are shaping education, not only since digitalization is bringing major transformation, but also because the whole educational structure is changing over the different economic and political situation.

Therefore, we strongly believe that education developments’, especially those affected by the growing introduction of ICT tools must be reviewed and analysed closely and constantly, thus to allow rapid adjustments and improvements, keeping pace with the ICT evolution.

From these conclusions and through the analysis of the quantitative results of the 4 sectors we draw the following recommendations which have been categorised as:

- **Transversal, i.e. true for all the sectors**
- **Specific, i.e. true for a certain sector.**

4. Recommendations: transversal issues

- 4.1 Improve communication techniques to attract more students/learners. In this regarding, **the power of conventional channels for communication should not be underestimated**, while communication through social media must improve in credibility.
- 4.2 Learners/students engagement and retention is one of the top priority for educational organizations. ICT tools are recognised as fundamental to ease this process and develop it further. Investments and improvements must be made in ICT **to progress in personalisation features on learning systems**, as well as the possibility to **build up strong communities of learners which can engage with teachers/instructors**.
- 4.3 **Digitalisation of teachers/tutors** is still under development, but it is at the base of the digital transformation of the education sector. There should be a quicker action in improving teachers/tutors' digital skills.
- 4.4 Since the use of tools as You tube, Facebook, Wikipedia etc. is wide in education, there should be information and awareness about how to use them and in general about how to convey information sourced from the web into actual education material.
- 4.5 **Educational organizations and their facilities should be more equipped to really embrace the digitalisation**, in terms of software and hardware investments. This entails a different way to structure funding schemes both at national and European level. On the other hand, students/learners should be more encouraged to use their personal devices so to facilitate the organisations in reducing expenditures for hardware while getting the same innovative goals.
- 4.6 **Augmented and Virtual reality are still not very well known**. There is the need for more information and specific training about how they can be applied in education and showcase possibilities and implications in case of adoption (costs, methodologies, skill needed etc.)
- 4.7 **Education organizations should be facilitated in creating links with local stakeholders and businesses** to ease the learners/students' progress in the labour market.
- 4.8 Learning analytic is a methodology which has been underestimated so far and is not considered relevant for the future, while it is fundamental to understand students/learners' performances. We recommend increasing knowledge on this and to raise awareness on the usefulness of learning analytics.

5. Recommendations: Adult education

- 5.1 As far as what concerns the different methodologies of distant learning, such as blended learning, flipped classroom etc., awareness raising on this matter should be improved with more practical examples and sharing of practices
- 5.2 There should be a more structured way to **share experiences between former students/learners to those willing to enrol in courses**. This will allow the constant attraction of new learners and improvement in motivation.
- 5.3 Educational organizations should be more aware of skill shortages and education gaps by establishing **a closer relation with the labour market, so to quickly adjust to market changes** and offer up to date courses.
- 5.4 E-portfolios tools are considered very important in Higher Education, while they are not known or used in other sectors. We recommend not to under estimate this tool as a different way to present knowledge, skills and competences which has been proved to be useful in certain contexts

6. Recommendations: Higher Education

- 6.1 Educational organizations should be facilitated in creating links with local stakeholders and businesses to ease the learners/students' progress in the labour market.
- 6.2 There should be a more structured way **to share experiences between former students/learners to those willing to enrol in courses**. This will allow the constant attraction of new learners and improvement in motivation.
- 6.3 **Web lessons and cloud teaching is considered the future of education**. This should be considered more important in Higher education.
- 6.4 **Higher education** is considered to be in the future **more and more research-oriented and cloud based**. These are important aspects which should be taken into consideration by those who structure courses and the system as a whole

7. Recommendations: School Education

- 7.1 As far as what concerns the different methodologies of distant learning, such as blended learning, flipped classroom etc., awareness raising on this matter should be improved with more practical examples and sharing of practices.

8. Recommendations: Vocational Education and Training

- 8.1 Educational organizations and their facilities should be more equipped to really embrace the digitalisation, in terms of software and hardware investments. This entails a different way to structure funding schemes both at national and European level. On the other hand, students/learners should be more encouraged to use their personal devices so to facilitate the organisations in reducing expenditures for hardware.
- 8.2 **Augmented and Virtual reality are still not very well known. There is a need for more information and tailored training about how they can be applied in education and showcase possibilities and implications in case of adoption (costs, methodologies, skill needed etc.)**
- 8.3 Educational organizations should be facilitated in creating links with local stakeholders and businesses to ease the learners/students' progress in the labour market.
- 8.4 There should be a more structured way to share experiences between former students/learners to those willing to enrol in courses. This will allow the constant attraction of new learners and improvement in motivation.
- 8.5 Educational organizations should be more aware of skill shortages and education gaps by establishing a closer relation with the labour market so to quickly adjust to market changes and offer up to date courses.
- 8.6 E-portfolios tools are considered very important in Higher Education, while they are not known or used in other sectors. We recommend not to under estimate this tool as a different way to present knowledge, skills and competences which has been proved to be useful in certain contexts
- 8.7 **Work based learning and apprenticeship are considered a key practice for the success of VET courses. However, there are still difficulties in their implementation,** which are not necessarily linked to the economic conditions. The use of ICT may ease the adoption of these measures and improve VET offer.

Recommendation in a glance	Transversal	AE	HE	SE	VET
1. Improve communication techniques to attract more students/learners. In this regarding the power of conventional channels for communication should not be underestimated, while communication through social media must improve in credibility.	X				
2. Learners/students engagement and retention is one of the top priority for educational organizations. ICT tools are recognised as fundamental to ease this process and develop it further. Investments and improvements must be made in ICT to progress in personalisation features on learning systems, as well as the possibility to build up strong communities of learners which can engage with teachers/instructors.	X				
3. Digitalisation of teachers/tutors is still under development but is at the base of the digital transformation of the education sector. There should be a quicker action in improving teachers/tutors' digital skills.	X				
4. Since the use of tools as You tube, Facebook, Wikipedia etc. is wide in education, there should be information and awareness about how to use them and in general about how to convey information sourced from the web into actual education material.	X				
5. Education organizations and their facilities should be more equipped to really embrace the digitalisation, in terms of software investments. This entails a different way to structure funding schemes both at national and European level. On the other hand, students/learners should be more encouraged to use their personal devices so to facilitate the organisations in reducing expenditures for hardware.	X				
6. Augmented and Virtual reality are still not very well known. There is the need for more information about how they can be applied in education and showcase possibilities and implications in case of adoption (costs, methodologies, skill needed etc.)	X				
7. Learning analytic is a methodology which has been underestimated so far and is not considered relevant for the future, while it is fundamental to understand students/learners' performances. We recommend to increase knowledge on this and raise awareness on the usefulness of learning analytics.	X				
8. As far as what concerns the different methodologies of distant learning, such as blended learning, flipped classroom etc. awareness raising on this matter should be improved with more practical examples and sharing of practices.		X		X	

	Transversal	AE	HE	SE	VET
9. Educational organizations should be facilitated in creating links with local stakeholders and businesses to ease the learners/students' progress in the labour market.		X	X		X
10. There should be a more structured way to share experiences between former students/learners to those willing to enrol in courses. This will allow the constant attraction of new learners and improvement in motivation.		X	X		X
11. Educational organizations should be more aware of skill shortages and education gaps by establishing a closer relation with the labour market, so to adjust quickly to market changes and offer up to date courses.		X			X
12. Web lessons and cloud teaching is considered the future of education. This should be considered more important in Higher education.			X		
13. Higher education is considered to be in the future more and more research-oriented and cloud based. These are important aspects which should be taken into consideration by those who structure courses and the system as a whole			X		
14. E-portfolios are considered very important in Higher Education, while they are not known or used in other sector. We recommend not to under estimate this tool as a different way to present knowledge, skills and competences which has been proved to be useful in certain contexts		X			X
15. Work based learning and apprenticeship are considered a key practice for the success of VET courses, however there are still difficulties in their implementation, which are not linked necessarily to economic conditions. The use of ICT may ease the adoption of these measures and improve VET offer.					X

Feedbacks gathered during the Conference held in Brussels on the 19th of October 2017

DLEARN, on its Annual Conference, has organized an event to present the results of the research “*What do you think about the future of digital Education and Training in EU?*”. The Conference allowed to discuss and dig into the main issues raised through the research results.

In fact, during the event an interesting and valuable panel of speakers intervened. First, Mr. Gianluca Coppola, President of the *European Digital Learning Network*, which explained how the survey was realized. After that, Ms. Lucilla Sioli from the European Commission - Head of Unit Digital Economy and Skills (F.4) - DG Communications Networks, Content, Technology –, presented the initiative of the *Digital Skills and Jobs Coalition*, which by 2020 hopes to train 1 million young unemployed people for vacant digital jobs. Other main objectives of the *Coalition* include: support the upskilling and retraining of the workforce; modernize education and training; reorient and make use of available funding to support digital skills and carry out awareness-raising about the importance of digital skills for employability, competitiveness and participation in society.

Following this, Mr. Gregory Makrides – President of EAEC *European Association of Erasmus Coordinators* commented the results of the research from the Higher Education perspectives.

To understand also the point of view of the students, we heard about the interpretation of the results for the School sector from Ms. Ela Jakubek - Secretary General of OBESSU *Organizing Bureau of European School Student Unions*.

The second part of the conference has been characterized by the intervention of Mr. Joao Santos (European Commission - Deputy Head of Unit Vocational training, Apprenticeships and Adult learning - DG Employment (E.3), Directorate General for Employment, Social Affairs and Inclusion), who described the *Future policies in vocational training to match the digital skill gap and increase employability*. Rapid innovation in ICT and its adoption throughout the economy is having a massive impact on the jobs available and skills needed in the economy. It is changing the structure of employment. It is leading also to an increased number of skilled ICT professionals in all sectors. Lastly, Ms. Brikena Xhomaqi – Director of LLP Platform – presented the results from the perspective of Vocational Education and Training and Adult Education.

To collect the feedback from the audience of the conference and to analyse the public perception about the research and its results, we have conducted a workshop in the last part of the morning session of the conference. The attendees were asked to gather in groups of no more than 5 people and discuss about the results of the survey by adding their own comments and feedbacks. Thanks to this work, we have gathered the following additional contributions which integrate the above-mentioned recommendations. The following statements were gathered from the audience and address a transversal vision among the four sectors of the research. All the statements have been put together according their similarity.

- 1 • Difficulty with the engagement. Community of learners Vs. job market. They have to involve business.
- 2 • Confidence: invest in people so they believe they can achieve lifelong learning. For all ages. Cultural barriers have to be eliminated.
- 3 • Invest in partnerships. Invest in places to learn. Creating a way of funding.
- 4 • Digital skills teaching to teachers. Internships for teachers. Experience-based education. Shift mind-set. Easier access to the placement of teacher.
- 5 • Virtual reality valuable but too expensive. Unaffordable. Developed by companies. Funding to university and development of virtual reality.
- 6 • Elaborate more concrete cooperation with companies.
- 7 • Taking into accounts that learning also requires a physical dimension - learning sometimes needs the physical senses (feeling, smelling, listening, ...).
- 8 • Teach digital skills with a purpose, e.g. develop critical thinking, social inclusion - greater focus on purpose and final outcome. Keep in mind the goal of social inclusion.
- 9 • Be aware of the content and take a bottom-up approach to bridge the gap between countries with extended level of equipment and those without. Use what is available in the specific area, e.g. smartphones, to start creating digital skills.
- 10 • Vision of education related to the world of tomorrow. Governance framework to implement that vision. Structural changes - what needs to change to make this happens. Teachers - empowering teachers and learners.

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