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D3.3: Report on the profile of European explainers

Workpackage 3: Assessment of needs

Workpackage leader:

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1   Executive Summary

The second study carried out as part of the PILOTS project aims to supplement the information obtained from focus groups (Pilots D3.2) by means of a quantitative survey on an expanded sample of European explainers. More particularly, it focuses on the profiles of science explainers working within European institutions, as well as their roles and training needs. For the purposes of the study, a questionnaire was made available on the Internet from July 2009 to February 2010. Explainers were contacted via the European social network recently created on the initiative of Pilots and hosted on the project's Web site, as well as by an invitation sent to the member institutions of the European (Ecsite) and national professional networks involved. A total of 236 questionnaires were thus received and analysed.

2   Methodology

As with the qualitative study, the methodological aims and choices for defining the main objectives of the study were set in collaboration with all of the Pilots project partners, and more particularly the SISSA Medialab (Trieste) and the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci in Milan. Survey coordination and data analysis were conducted jointly by the Cité des Sciences et de l'Industrie's department of cultural action and department of strategic studies.

2.1 Objectives of the study

The main objective of the study was to build upon the focus-group analysis results of the qualitative study, mainly the profile, role and training practices of museum and science centre explainers in order to identify their training needs. The idea was to use the results of the qualitative study and some of the data from earlier studies on explainers (Dotik project) to draw up questionnaires that were then widely distributed to museums and science centres. The qualitative study previously conducted as part of the Pilots project thus revealed that explainers were generally presented as interacting with the public, while the other aspects of the profession were at best played down, and more often than not kept quiet. The management's perception of the explainer profession leaves very little room for project design and management, as opposed to activities "in front of the public". The professional image of explainers is above all the one that is created and conveyed by the institution. It would thus seem that the simplistic image of the explainer position is initially forged within the museum itself. Based on this observation, we felt it necessary to gather information from two distinct sources: the explainers themselves and their managers, for a convergence of different points of view on the same profession.

The aim of the study was to gather information to answer the various initial hypotheses: How is the profession of explainer perceived? Do managers and explainers see it the same way? What types of public do explainers address? Do adults constitute a large part? Does that change the way they work? What are the essential skills for becoming an explainer and what skills ought to be developed? In what way does each person's status affect his or her daily tasks? The study focuses on four main points:

- The professional development and career paths of science explainers. This includes a description of university programmes and professional experience.

- The core duties of the explainer: the main thrust of the job, with a more specific analysis of the more frequent activities or those considered to be the core duties: those in front of the public as well as those carried out beforehand involving the design and creation of communication medias. This is accompanied by a detailed analysis of the levels of expertise sought, as well as training needs.

- Skills: skills and/or know-how required for the activities carried out by explainers, in all fields of expertise, with a special focus on the adult public.

- Training: initial training and further training provided by the institutions, explainer training needs and requests, once again with special focus on the adult public.

More particularly, explainers also provided us with valuable information on their daily activities and their point of view on their level and training needs. Managers complemented this information on the status and role of explainers, and shed interesting light on the image they have of the explainer profession, the required skills and the tasks performed.

2.2 Data collection

The study focuses on the explainers in museums and science centres in the 27 countries of the European Union, as well as their managers, team leaders and department heads. The sheer size of the geographic area concerned did not make it possible to accompany the filling out of questionnaires on an individual basis, which is why we opted to use an on-line data collection interface: each explainer was invited to go to the questionnaire page to answer the different questions. The self-administered nature of the survey prevents us from verifying whether the questions have been understood or performing any checks on the quality of the answers and respondents. As such, we have no way of being certain that all of the explainers in the organisations, regardless of their status, were able to find out about the study and thus participate in it. What is more, since the questions could not be fully translated into all languages of the European Union, the questionnaire was only available in English.

The invitation to participate in the study was sent to all members of the Ecsite European network via its monthly e-newsletter. Information was also permanently posted on the home page of the Pilots Web site, and a personal invitation was e-mailed to all 300 members of the "Hub" platform, which supports the science explainer community. Lastly, all of the project partners mobilised their national networks to encourage explainers in each country to take part in the survey.

The two questionnaires were available on-line for eight months, from July 2009 to February 2010, to encourage as many people as possible to respond and conduct targeted follow-up action based on sample development.

A post-audit of the completed questionnaires was then carried out to draw up the final sample of the survey. All of the questionnaires filled in by explainers from

outside of Europe were thus removed from the sample (the hub includes European science explainers, as well as explainers from around the world and particularly the United States, who also received an invitation to take part in the study). This audit revealed that despite the lack of guidance given to respondents when filling out questionnaires, those submitted were, save in a few rare cases, fully completed. Nobody dropped the survey while filling out questionnaires. The few incomplete questionnaires were completely blank: the survey was either dropped very quickly, after the first three or four questions, or completed in its entirety.

One of the main biases of the method chosen was the lack of prior control of respondent quality. While both questionnaires were offered separately, the choice of answering one or the other was left solely to participants' own good judgement and understanding of the capacity of their position. There was no initial guarantee that the managers who answered the questionnaires were indeed managers. However, the breakdowns observed for certain questions included on both surveys, such as the age of participants, help remove any uncertainty by clearly showing two distinct populations with different characteristics.

3   A diversified study sample

After validation, the total sample of the study was comprised of 236 questionnaires. Two thirds of the sample were explainers (159 people) and one third managers (77 people) from 18 different European countries and working in 115 different museums, science centres and universities.

3.1 Unequal representation of the different European countries

This good diversity of profiles is not conveyed as strongly in the countries represented. French professionals alone represent a third of the sample, a proportion more or less equal for explainers and managers.
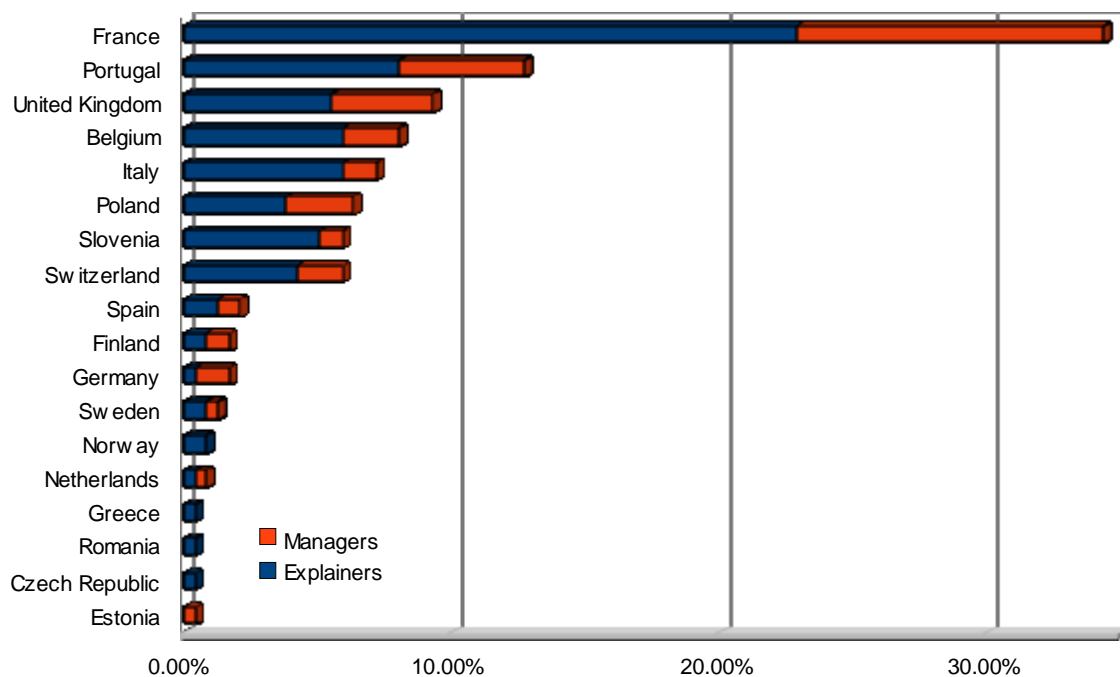

Fig. 1 – Breakdown of questionnaires received by European country - *Source: Pilots 2010*

The mobilisation of the national networks of the members of the Pilots project consortium provides a natural explanation for this over-representation: the five countries of the partner museums behind the project are among the top seven countries in terms of study participants. Two thirds of the professionals who answered the survey work in one of these partner countries, but not necessarily at the institutions associated with Pilots.

Conversely, ten European countries are not represented in the study, particularly those from Eastern Europe (Austria, Bulgaria, Hungary) and Northern Europe (Denmark, Latvia, Lithuania), as well as Cyprus, Ireland, Luxembourg and Malta.
We included countries like Switzerland and Norway in the study, even though they are not members of the European Union, since they develop action for the dissemination of scientific culture. The language barrier (the questionnaire was only available in English) no doubt also had an effect on study participation, preventing non-English-speaking explainers from answering. While this effect was apparent, it was nevertheless not as strong as the effect of the dynamics of the European and national networks. No Irish explainers participated in the study, but through the networking of The Association for Science and Discovery Centres (with 50 partners in the United Kingdom), British explainers were able to take part. The lack of partners is also what explains in part the low number of explainers from Eastern and Northern Europe.

3.2 A wide range of organisations represented

An average of two people from each institution represented answered the study. This average is almost identical in all countries, with the exception of Poland and above all Slovenia, where all participants were from the same science centre. As a member of the consortium set up for the Pilots project, it naturally encouraged its own explainers to answer the survey, in a small country that only has a few other science centres or museums.
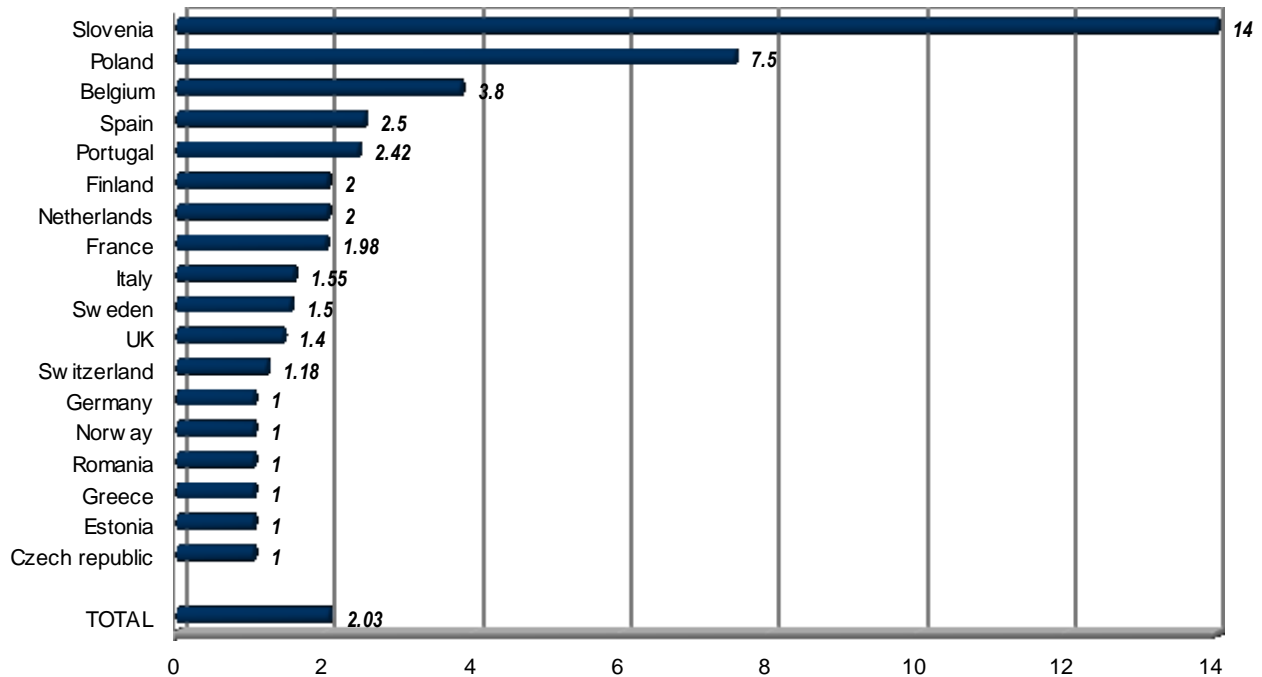
Fig. 2 – Average number of participants per institution by country of origin - Source: Pilots 2010

The quality of partners involved in the project is a direct result of the type of professional network that was mobilised in each country. The consortium thus comprises four science centres: Technopolis (Belgium), Universcience (France), the Pavilhao do Conhencimento (Portugal) and the House of Experiments (Slovenia), and one museum: the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci (Italy). The countries with the most science centres also include those whose partner in the Pilots project is precisely a science centre. Following this same logic, the Italian partner was able to mobilise participants within institutions of the same type, in this case other museums that make up over 70% of the Italian sample. The type of institution remains a key factor in network building, and consequently operational synergies. Each institution remains first and foremost sensitive to requests from its peers. Thus, the Cité des Sciences et de l'Industrie's (Paris, France) involvement in the project made it possible to rally a large national network of players who answered the questionnaire in great number (more than one out of three questionnaires were submitted by a French explainer). This was also the case,

to a lesser degree, with all of the other partners and particularly the Pavilhao do Conhencimento, which made it possible to include many members of the Portuguese network of science centres, Ciência Viva. The study also included major and outstanding institutions, in the same vein as the Cité des Sciences et de l'Industrie (1,000 employees, 30,000 m² of exhibition space), the Palais de la Découverte and the Deutsches Museum, each with a hundred or so explainers, who are nevertheless key players on the European cultural scene.
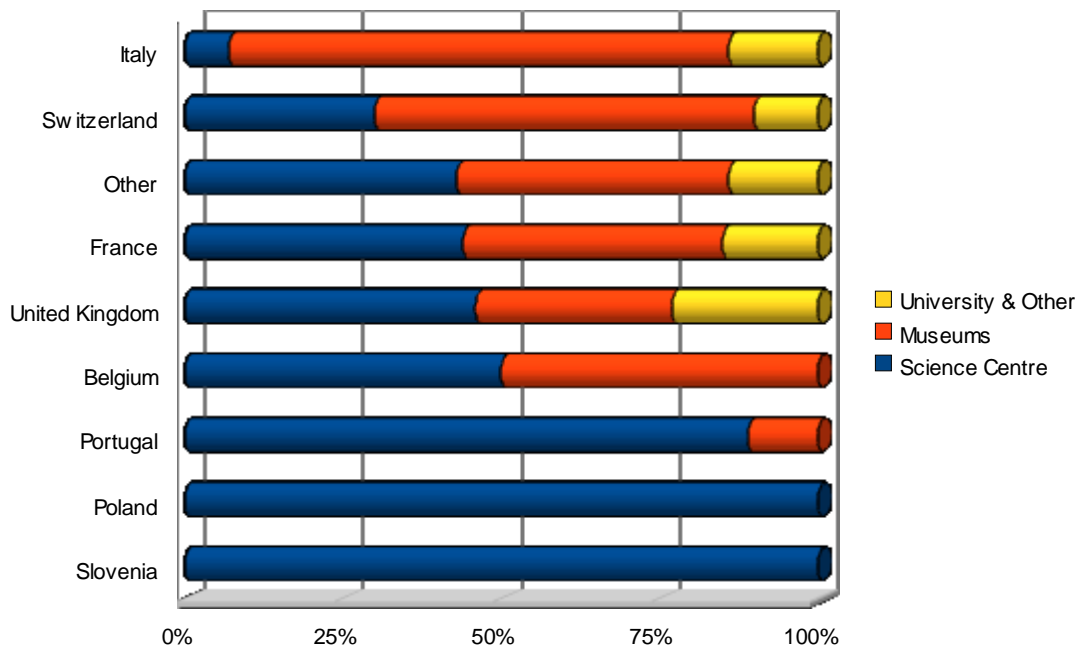
Fig. 3 – Types of organisation in which explainers work by European country - Source: Pilots 2010
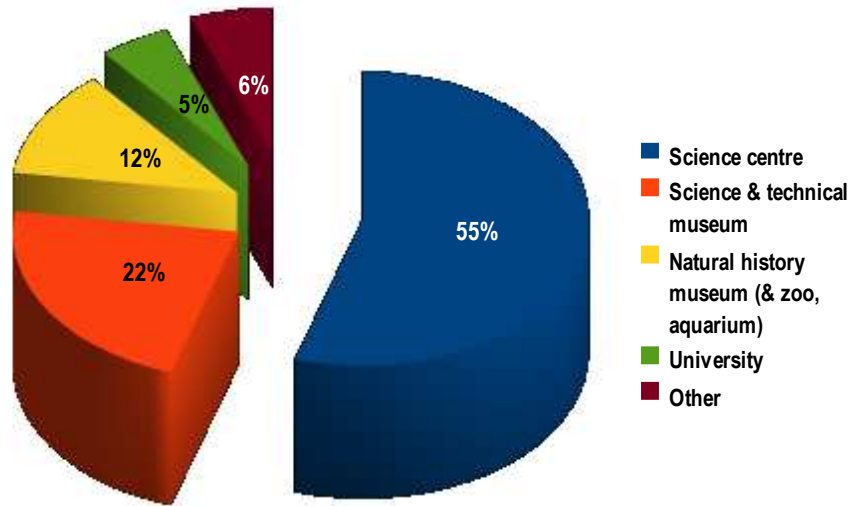
Fig. 4 – Types of cultural institution - Source: Pilots 2010

More than half of the explainers and managers who answered the questionnaire work at science centres, and a third in a museum that conserves scientific, technical or natural history collections with both mounted and living specimens (zoo, aquarium). Universities also emerge as players in the dissemination of their scientific productions, directly organising modes of dissemination to the public by incorporating explainers into their science departments. This is especially the case in Switzerland and the United Kingdom, and to a lesser extent in Italy and France. The size of institution also varies. On average, each museum employs 20 explainers, although the number varies according to the type of museum: more than 35 explainers work in science and technical museums, as opposed to 12 in universities. Technical museums also present the widest range of interpretation team size.
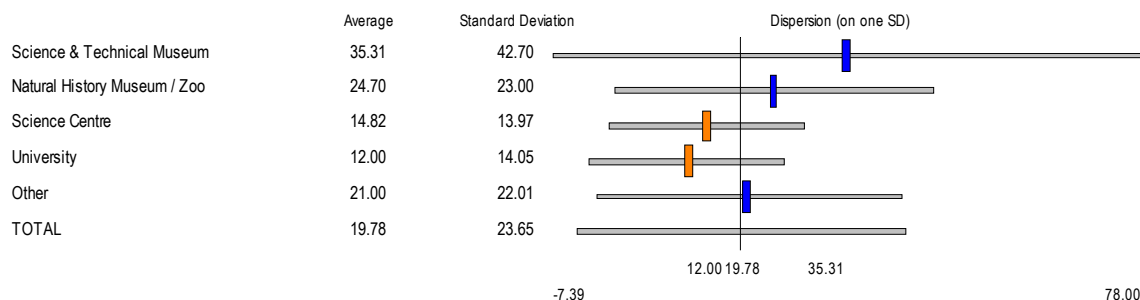
	Average	Standard Deviation	Dispersion (on one SD)
Science & Technical Museum	35.31	42.70	
Natural History Museum / Zoo	24.70	23.00	
Science Centre	14.82	13.97	
University	12.00	14.05	
Other	21.00	22.01	
TOTAL	19.78	23.65	

The distinction between science centre and science museum remains rather ambiguous. The ICOM (International Council of Museums) defines the museum as "***a non-profit, permanent institution [...] which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.***" (ICOM statutes, art.3§1). The notion of collection is central to the role, and consequently the definition of the museum. By contrast, the absence of a conserved and researched collection also makes it possible to define the notion of science centre. This distinction nevertheless remains subject to debate, and the concept of collections seems to be the only main difference between museums and science centres, which otherwise deal with many of the same issues. The ICOM itself suggests making the notion of collection an optional, and no longer obligatory, criterion in the duties of a museum. More importantly, this theoretical distinction is not necessarily fully understood by all those who work in the institutions.

4   Portrait of the European Explainer

4.1 A profession for highly educated women

First observation: it is a predominantly female profession. 61% of the explainers in European museums and science centres are women. This is exactly the same proportion that Adam Love-Rodgers and Bryony Kelly observed in 2001 for interactive centres in the United Kingdom[1]. "*Working with children is still viewed as a woman's job by some sections of society*", was the authors' conclusion, and the situation remains unchanged ten years later. There is still a strong feminine image attached to careers in teaching and working with children in the European Union, as confirmed by the study published in 2010 by the Education, Audiovisual and Culture Executive Agency (EACEA)[2]:

"Teaching has long been considered as 'a good job for a woman' by feminists and non-feminists alike. Feminists have seen teaching as part of the long struggle of women to gain access to the professions and to the public sphere; and non-feminists, as an extension to women's mothering and caring role in the family. Meanwhile, teaching has generally had a relatively low-status position in the hierarchy of the professions possibly due to its heavy reliance on female staff. In 2006 in all European Union countries (except Greece and Luxembourg) over 60 % of teachers in primary secondary education were women. For secondary schooling, while there are still more women than men, the gender 'gap' is much narrower."

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1   A. Love-Rodgers and B. Kelly, "A Survey of Explainer Management in Interactive Centres," 2001

2   EACEA and Eurydice, "Gender Differences in Educational Outcomes: Study on the Measures Taken and the Current Situation in Europe", 2010, p. 144.
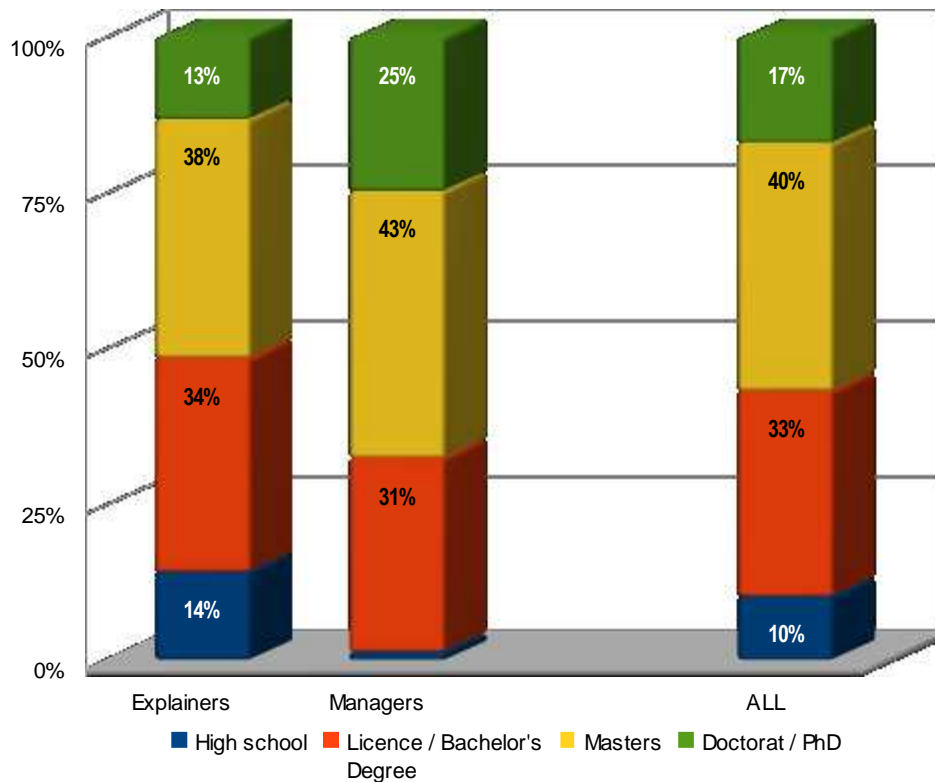
Fig. 6 – Level of education of European explainers and managers - Source: Pilots 2010

The second remarkable phenomenon is the high level of education of the explainers questioned: more than half of them hold a master's degree (38%) or a doctorate (14%). The rate is even higher for their managers: two out of three managers have a minimum of a master's degree, and one out of four holds a doctorate. In total, 57% of science interpretation professionals have a master's or doctoral level degree, compared to 28% for the 25–34 age bracket and 20% for the 35–64 age bracket in all of the European Union. The gap becomes even more significant for doctorate degree holders: less than 1% in the European Union (including the 25–34 age bracket) as opposed to 17% for interpretation professionals in science museums. This leads one to suppose that for some the explainer profession is in furtherance of their higher education. It remains to be seen whether the situation is one that has been chosen, out of a passion for science communication and contact with the public, or endured, with explainers making a career out of what they thought to be a temporary job for lack of other career prospects.
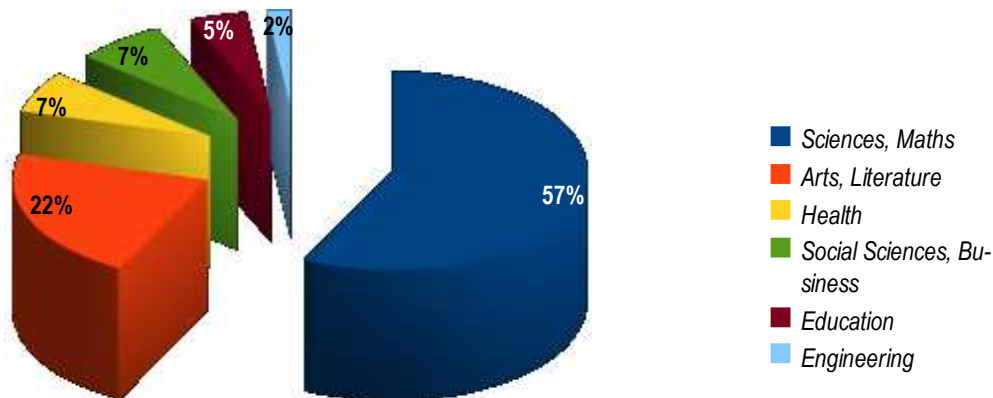
Fig. 7 – Disciplines studied - Source: Pilots 2010

The majority of science explainers have an education and background in science: more than half have a degree in one of the central sciences (maths, physics, biology). All of the disciplines that fall under the acronym STEM (science, technology, engineering, and mathematics) represent two thirds of the explainers' courses of study. Comprising 33% of the university programmes, the humanities and social sciences, including disciplines relating to arts and culture like art history, archaeology, museology and communication, also represent a strong path to the position of explainer. Nevertheless, 78% of explainers did not receive specific training in science communication during their initial training. For half of the explainers, the only approach to science communication they received was during their orientation training for the position. Although still a minority, the number of explainers trained in science communication during their university studies nevertheless tends to be greater than for their managers.

It also turns out that more than two thirds of higher-educated explainers (with graduate degrees) are women, as opposed to 50–50 for those with lower-level degrees.

High school: Men 50%, Women 50%
Licence / Bachelor's Degree: Men 48%, Women 52%
Masters: Men 30%, Women 70%
Doctorat / PhD: Men 29%, Women 71%

Axis: 0% 10% 20% 30% 40%

Legend: Men, Women
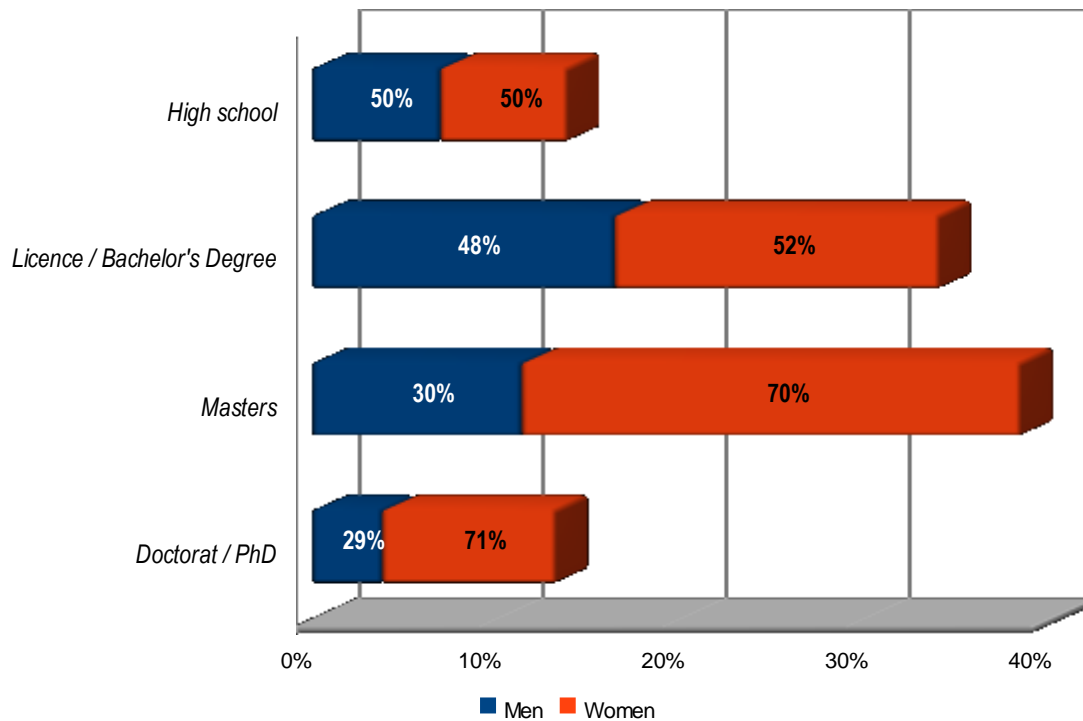
Fig. 8 – Level of education by gender - Source: Pilots 2010

The number of women within the European Union with a comparable level of education is significantly lower, at 44% of higher-education graduates. The rate for countries more strongly represented in the Pilots project varies from 37% in Belgium to 51% in Italy, but never achieves the gap observed for explainers.

	Graduate Diplomas	Sciences, Maths	Humanities, Literature, Arts
Belgium	**37.4%**	28%	62%
Germany	**42.5%**	43%	73%
Spain	**47.6%**	36%	62%
France	**41.8%**	36%	71%
Italy	**51.3%**	53%	74%
UK	**44.0%**	38%	62%
Portugal	**48.2%**	44%	66%
Poland	**49.4%**	45%	77%
Slovenia	**45.8%**	36%	72%
EU 27	**44.1%**	**40%**	**69%**
PILOTS	**70.7%**	**69%**	**82%**

Fig.9 –Percentage of women with a master's or PhD in Europe by discipline and country
Source: eurostat 2009 & Pilots 2010

The over-representation of educated women in science museums exists, regardless of the discipline studied. So, while women represent 40% of Europeans with a master's degree or PhD in mathematics, physics and biology, 69% of women working in European museums hold a degree at this level and in these disciplines. This same difference can be seen in arts and humanities graduates: 69% of European graduates in these disciplines are women, but 82% of these graduates work as science explainers.

So while science explainers tend to reverse the phenomenon of horizontal segregation observed in higher education in Europe (the fact that women and men choose different fields of study, women being under-represented in engineering and sciences), their situation seems to be a direct consequence of the second major concern regarding gender equality in European higher education: vertical segregation. "*This problem is related to the 'glass ceiling' that currently exists in higher education: while there are more women with degrees than men, they are slightly under-represented in doctoral studies and among the academic staff in universities",* notes the EACEA[3]. This means fewer women than men have access to research positions. The professional selection of scientists tends to widen the gender gap observed in universities even further. Thus, while women represent 55% of the students who enter university in France, they represent only 40% of those with a doctorate and a mere 30% of recruitments for a career in research or teaching at the university level.

Entered university	58%
PhD students	46%
Post-doc	41%
Teacher/Research fellow	31%
Professor/Research director	15%

Fig. 10 –Percentage of women in university in France - Source: MESR 2005

As such, due to a lack of career prospects in scientific research, women fall back on interpretation careers in science centres and museums. These abrupt changes in

3   EACEA and Eurydice, "Différences entre les genres en matière de réussite scolaire: étude sur les mesures prises et la situation actuelle en Europe," 2010, p. 144.

career path are partially voluntary, with young researchers working on their thesis opting for science-based careers that deal with the public. These decisions appear even more radical upon completion of the thesis, however, when the person has already spent several years working in a scientific position. Most importantly, the phenomenon seems to involve more women than men.

4.2 More than just student employment

The third observation comes as no surprise: European explainers are young. Half are under the age of 30, as opposed to 11% of their managers. Nevertheless, the average age of explainers is established at 31, which might seem higher than the frequently conveyed idea that explainers are generally students, as in the study conducted as part of the Dotik[4] project, which states that "*all over Europe most of the explainers are people doing this as a part time or temporary job, while completing their studies or looking for another job. 41% are students, working as explainers during their studies*". Although, according to Adam Love-Rodgers and Bryony Kelly[5], in 2001 56% of explainers in the United Kingdom were under 30 years of age—which is still comparable to the results obtained here—the findings are not the same for younger explainers under the age of 25: one third were under 25 in 2001, but that figure dropped to 15% in the 2010 Pilots study.

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4   S. Fantoni, "DOTIK - European Training for Young Scientists and Museum Explainers," 2007

5   Op. cit.
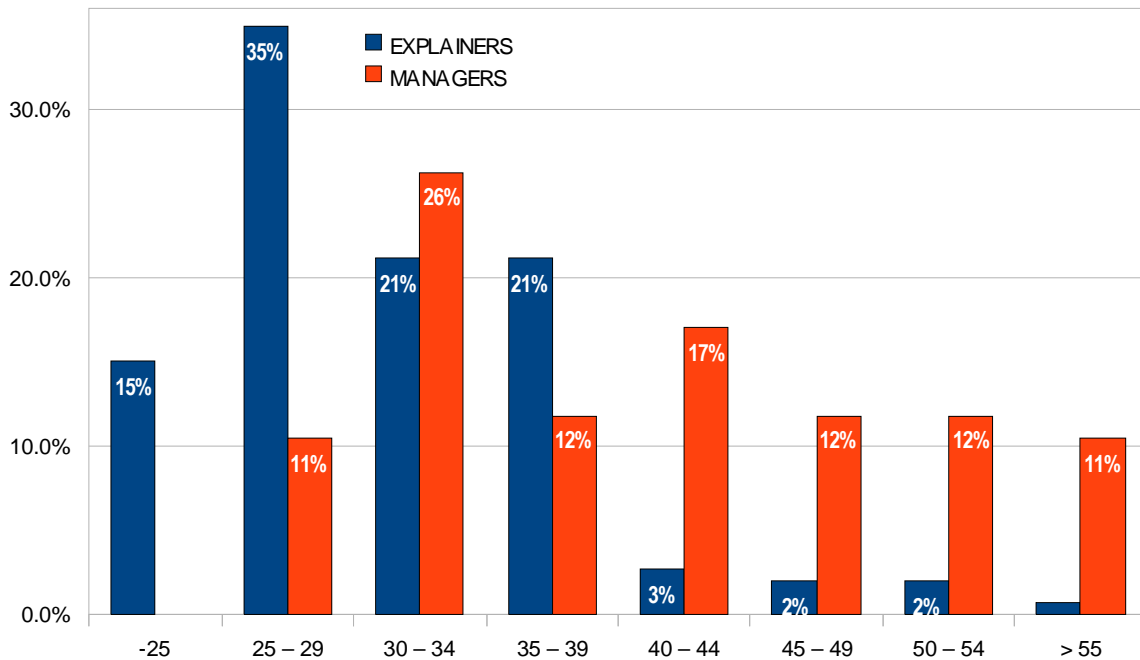
Fig. 11 – Breakdown of European explainers by age - Source: Pilots 2010

The generation observed by Adam Love-Rodgers and Bryony Kelly in 2001 seems thus to have aged while continuing to occupy the same position of explainer in institutions. The conclusion that "*the post of Explainer is a relatively junior position, thus attracting people near the beginning of their careers in this area*"[6] seems still to apply today. However, this start to their career is no longer a transition, but an area in which explainers become firmly established. It is more that the progression within and outside of institutions seems to have broken down, forcing a generation to make a career out of what should have been simply an entry into the workforce. This specific process of professionalisation requires adapted coaching through museums and science centres, particularly for those with higher levels of education, who, as we have seen, sometimes occupy these explainer positions by default, especially since wage conditions can be far from the salaries to which candidates could have aspired in another professional field.

6   Op. cit.

Managers of explainers are comparatively older, averaging 40 years of age. The two populations are clearly distinct in terms of age, thus confirming the quality of the study sample. One out of four managers previously held an explainer position, of which more than 60% were in the same institution. One of the possible career developments for explainers occurs naturally in the supervision of science communication teams, the in-depth knowledge of the profession lending obvious legitimacy. That said, there are fewer positions, and access to them is not reserved for explainers: a quarter of managers have never worked in interpretation, and they are certainly hired on the basis of their equally necessary management expertise.

Fig. 12 – Average age of European explainers by country - Source: Pilots 2010

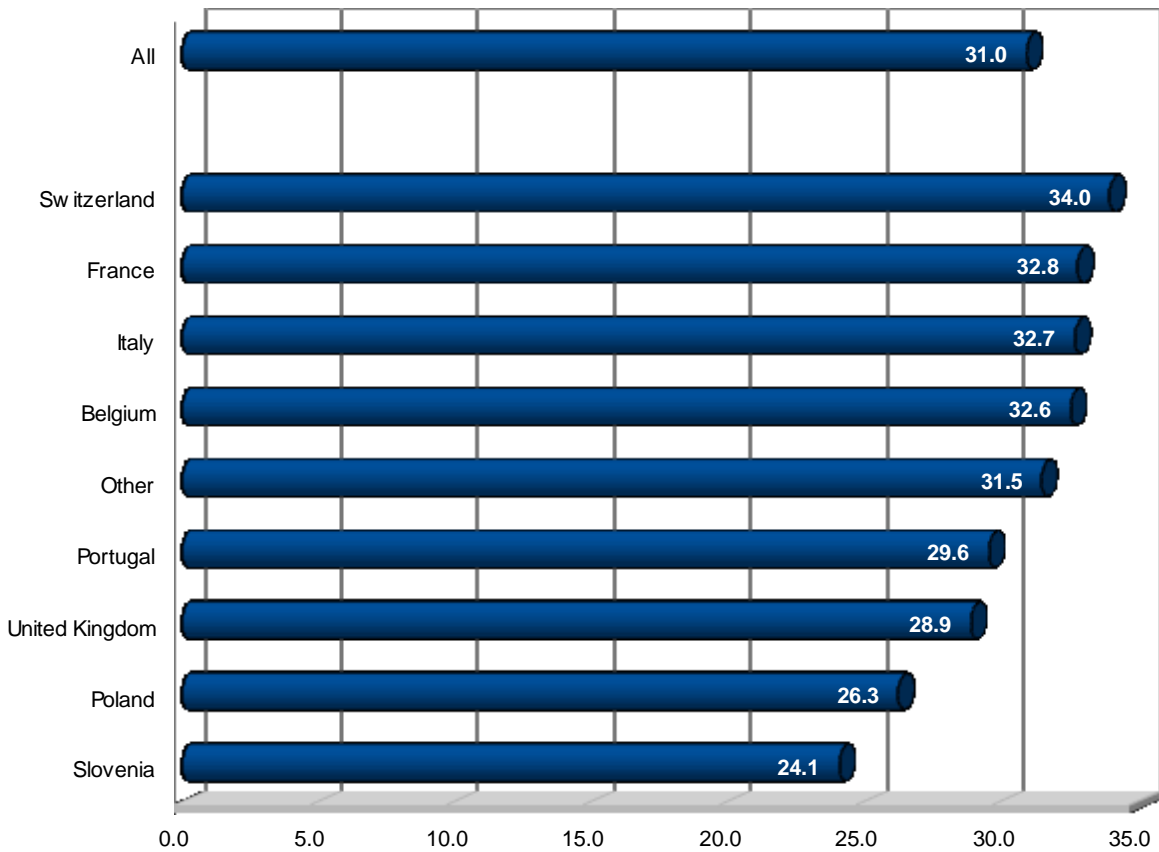Eastern European explainers are the youngest, particularly in Slovenia due to the particular way the project's partner science centre operates: its strong ties to the

University of Ljubljana mean that the role of explainer is often filled by students, in keeping with the results of the Dotik study. The situation is, on the contrary, very different in Switzerland and France, where the average age of 34 and 33 is obviously not one of a student population. The technical conditions of the study (Web-based dissemination, questionnaire in English and invitation sent through institutions) may have prevented it from reaching the younger explainers, who, due to job insecurity (substitute or seasonal employment), do not necessarily have an e-mail address at the institution or are not included in its internal communication processes. A brief but exhaustive study conducted with Pilots partner museums on all explainers in each organisation nevertheless shows comparable findings to those observed here. As such, the Ciência Viva network in Portugal comprised of 19 centres throughout the country has a total of 126 explainers with an average age of 30.4. The ages observed in the Pilots project thus seem to reflect the European reality.

The study sample offers a wide spectrum of explainer profiles, from temporary, student positions to senior explainers well established in their careers. The analysis of the different types of contract and status governing explainer employment confirms this wide variety. Approximately half of explainers have precarious employment contracts, either fixed term or seasonal. But the situations vary greatly from one country to the next: almost 90% of Swiss explainers hold permanent contracts, which is not the case for a single explainer in Poland, and less than 20% in Slovenia. There is a strong correlation between the age of the explainer and the type of contract, with experience and seniority lending greater stability to employment status. While the open-ended contract remains the norm, this is the case mainly for older explainers. Around a quarter of explainers over the age of 35 still have precarious employment contracts. Conversely, three out of four explainers between the age of 25 and 30 have a seasonal or fixed-term contract.
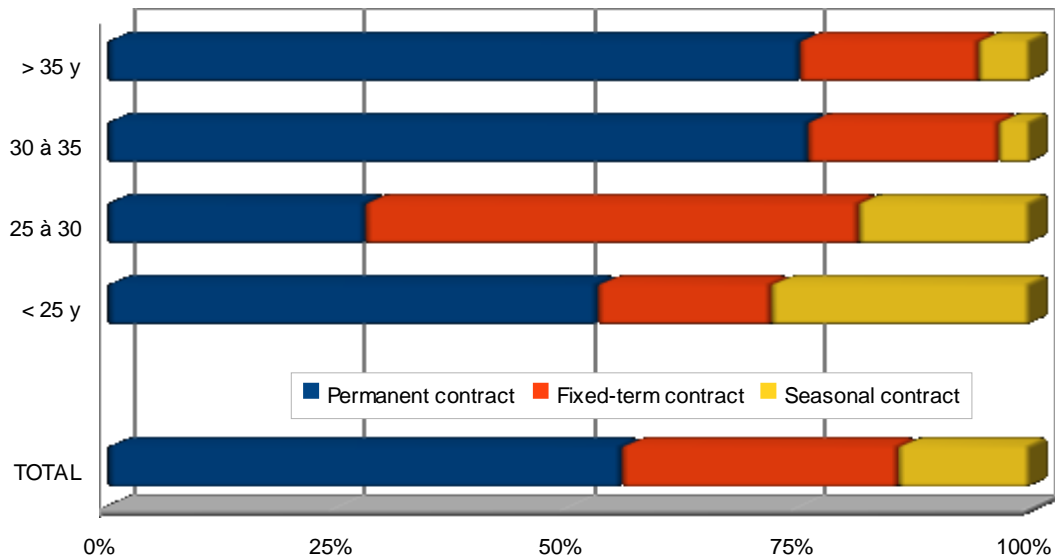
Fig. 13 – Type of employment contract by age - Source: Pilots 2010

Approximately 60% of explainers have full-time contracts. There again, age is a determining factor in the access to full-time employment, for even if it becomes the norm for explainers over 25, preference is given to part-time contracts for younger explainers pursuing their education.
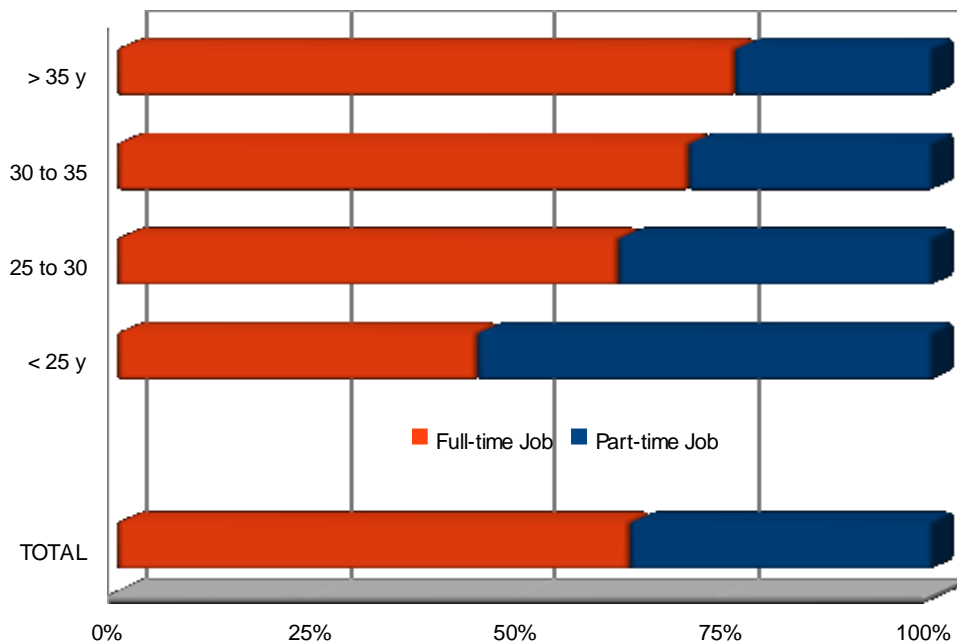
*Fig. 14 – **Rate of full-time employment by age** - Source: Pilots 2010*

A country-by-country comparison reveals different explainer profiles, according to age, type of contract or whether they are working full or part time. France and Belgium present the most stable situations with a high rate of permanent (65 to 80%) and full-time (86%) employment for relatively older explainers (age 32), contrary to younger Slovenian and Polish explainers (age 24 to 26) in fixed-term and part-time jobs (89 to 92%).

Through this variety of situations, we can see the typical career path of the explainer in museums and science centres. The youngest start out in more precarious situations (seasonal work) and then move on to fixed-term contracts, but always part time. The confirmation of their experience is characterised by contracts that are still seasonal and fixed term, but now full time. Explainers form an integral part of the museum; they occupy a full-time position. The average age of employees with full-time but fixed-term contracts nevertheless remains high and over 30. Only after the age of 30 will candidates receive confirmation in their position and be awarded a permanent contract, first part time, and then finally full time.

	Moyenne		Dispersion (sur 1 écart-type)
Part Time - Seasonal contract	26,21		
Part Time - Fixed-term contract	28,44		
FullTime - Seasonal contract	29,17		
FullTime - Fixed-term contract	30,27		
Part Time - Permanent contract	32,15		
FullTime - Permanent contract	33,14		
TOTAL	31,06		

26,21   31,06   33,14

22,47   40,65
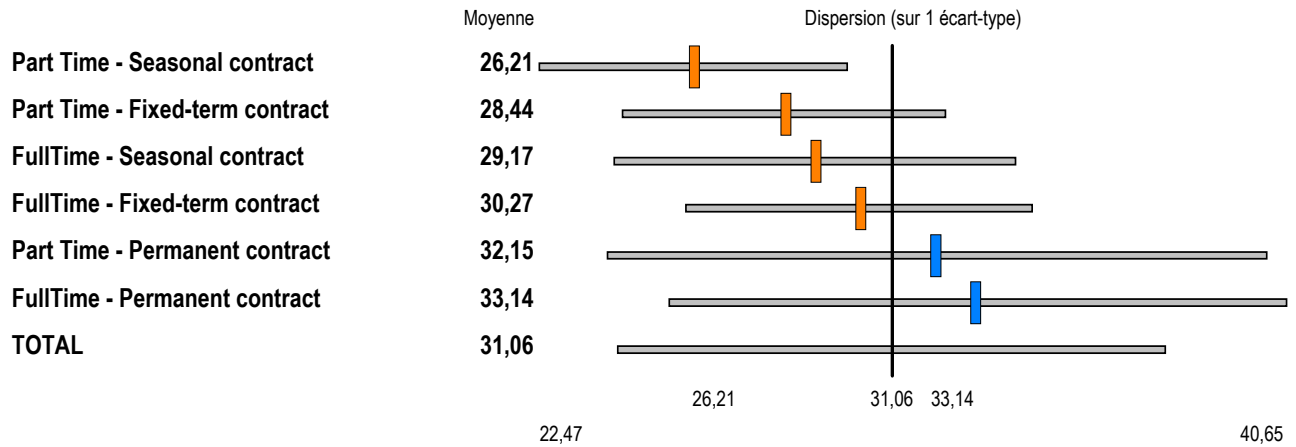
Fig. 15 – Average age of explainers based on type of employment contract

Source: Pilots 2010

This quick scenario is nevertheless based on average ages, since access to all types of contract occurs at 22 to 25 years of age. On the contrary, no one over the age of 36 holds the most precarious contracts (part-time fixed-term or seasonal). But do they drop out of science interpretation for lack of career prospects, or are they given long-term contracts? We do not have the facts necessary to delve deeper into this issue of careers, which would require a study in its own right. Indeed, the question of salaries was not included in the Pilots study, since the main objective was to learn the profiles of European explainers, their duties and their needs with respect to training.
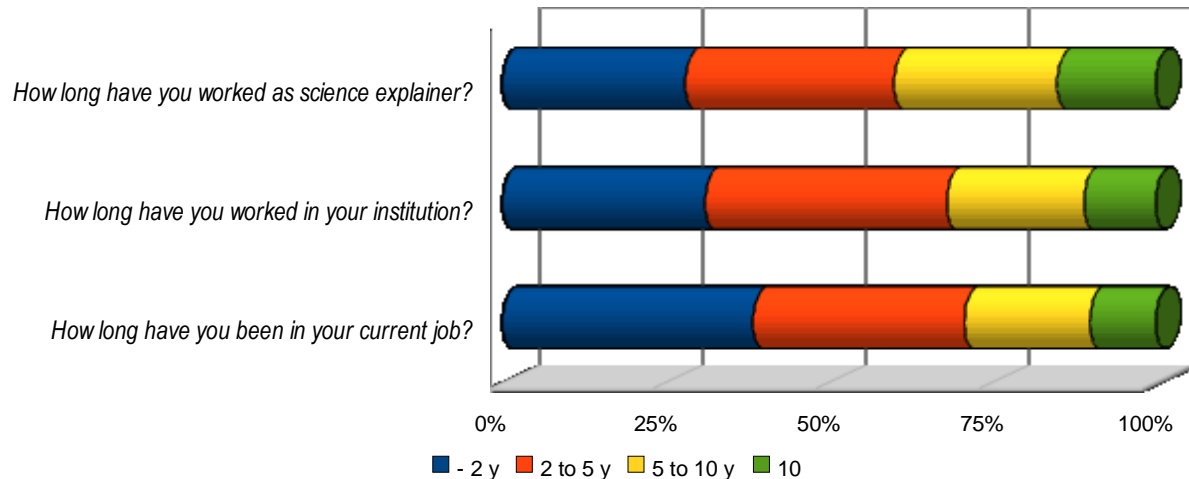
Fig. 16 – Seniority as an explainer and in the current position - Source: Pilots 2010

The only information that touches on this notion of career is seniority in the position: while 38% of the explainers who participated in the study have occupied their position for less than two years, only 28% have been a science explainer for such a short period of time. On the contrary, 40% have worked as explainers for more than five years, while only 29% have done so in their current position for the same period of time. Explainers have thus had previous interpretation experience before occupying their current position. But this observation does not make it possible to identify the specific career strategies at play and the types of career paths, in particular the number of similar positions occupied over the course of each explainer's brief career.

It is important to gain a better understanding of both their motivations for entering the profession (passion, chance or necessity) and the reasons that push explainers to either abandon their position or, on the contrary, settle into a long-term career opportunity, as many of them do. Fatigue and repetitiveness of tasks are often put forth as the initial reason for short-term dropouts, but what is its real significance in the face of other arguments such as the lack of career prospects or lack of recognition? Moreover, the position of explainer has developed extensively over the past 15 years or so in museums and cultural facilities. It would be wise now to conduct a study of the career paths of former explainers to find out the potential for

advancement within organisations, or identify the complementary skills and experience that university programmes contribute and their importance in career choice opportunities.

5 Representations and realities of the explainer in action

Versatility is no doubt one of the main characteristics of the science explainer, which is conveyed particularly in the formulation of the dilemma that sets activities "in the field", in close contact with the public, against "office" activities that are meant to be the creative core of the profession. As such, the explainer can be called upon to serve as author, director and actor of the communication strategy, and these role changes can also apply to various other projects conducted in parallel.

5.1 A shared representation of the profession

To illustrate this wide-ranging diversity of tasks and activities, explainers and managers were invited to rank eight professions based on how closely their skills match those of the explainer, using a simple scoring scheme between 0 and 5, with 0 indicating strong disagreement.
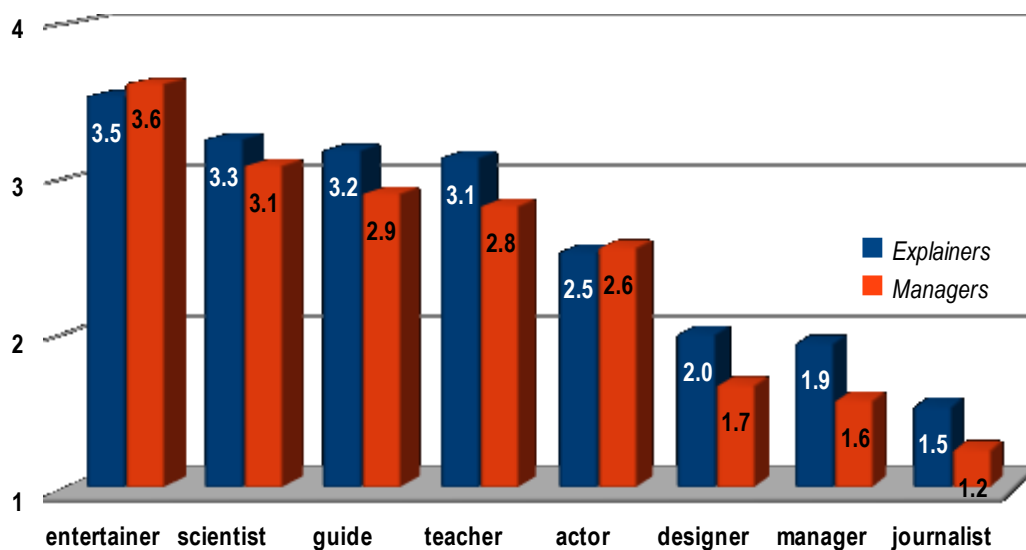
Fig. 17 – To do their job, explainers should also be… (5 strongly agree / 0 strongly disagree) -
Source: Pilots 2010

This comparison shows that explainers and managers share the same general perception of the profession. There are no apparent differences in ranking, and the averages given for each are also very similar. There is a general consensus on the role of explainer among European professionals, for explainers and managers alike, and regardless of their type of organisation or seniority. They all see the explainer first and foremost as an animator who adds something "fun": 70% of managers and 55% of explainers gave a score of four or five to this statement. But the explainer must also know how to be a scientist, guide and teacher. In contrast, explainers do not need to share the same sets of skills as journalists or managers (averages lower than two): more than half of managers disagreed with these two statements. Explainers are most divided on the matter of whether they need to be actors, while managers did not have a very decided opinion.

We can thus paint the typical portrait of the explainer based on the various facets of the job, with each of the aspects symbolised in a standard profession, and in different proportions, calculated on the overall basis of positive answers received for each statement.

Fig. 18 – Relative share of professions cited in the explainer's job - Source: Pilots 2010

Thus for 70% of their job they need to be first and foremost an entertainer, as well as a scientist, a guide and a teacher, and to a lesser extent an actor. The journalistic and management aspects appear secondary. The "entertainment" role appears more important to managers, for whom it represents 30% of the job. Promoting "learning while having fun" sums up the primary role of the explainer well: they have to transmit scientific content either formally, through teaching, or informally, by offering guidance but in a "fun" way. The skills relating to activities "in front of the public" remain predominant over those that take place "behind the scenes", which may play a less central role than relations with the public, but nevertheless constitute a complementary and indispensable aspect of the job.

5.2 A wide variety of activities

The same hierarchy is found in the details of activities regularly carried out by explainers. In their regular duties, 80% of explainers lead workshops or science shows, and 60% are available to help visitors at museum exhibitions. Nearly 50% also play a role greeting the public and providing general information, more often in science centres than museums. These reception and exhibition guidance tasks are more particularly carried out by the same explainers.

Then training activities are those most often carried out: self-training or participation in training sessions for 40% of explainers, as well as training colleagues or teachers, a task performed by the most senior explainers who have been in the job for more than three years.
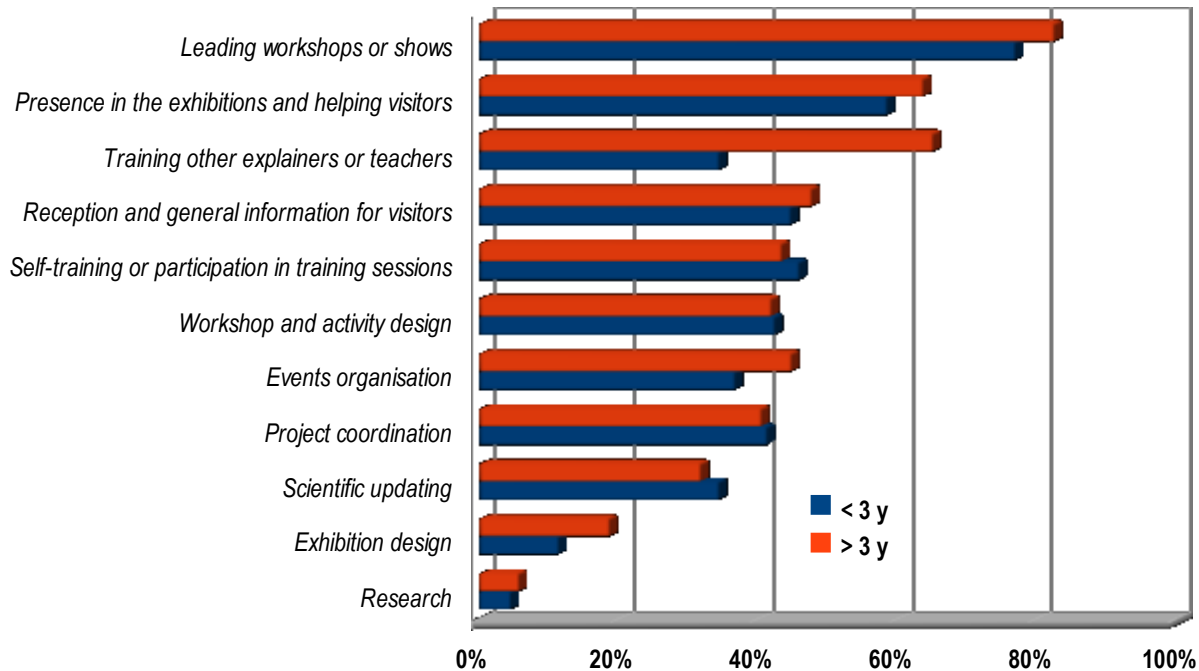
Fig. 19 – Regular explainer activities based on seniority - Source: Pilots 2010

Coordination and design activities are third in line, and form a closely linked group. Explainers who coordinate projects also organise events and participate in the

development of interpretation or exhibition activities, while pursuing their activities with the public.

In such a way, three main categories of activity can be distinguished: those relating to visitor information, those relating to the design and production of science communication activities and, lastly, those relating to project management behind the scenes. It is important to note that in some institutions, information activities are not carried out by science explainers, but professional reception agents.

All of these duties are carried out by all explainers, irrespective of age, education, job status or seniority. Tasks are undertaken equally. It is more a matter of cumulative logic, where some tasks are added on to the core duties of the job that remain accompanying the public in exhibitions or during workshops and shows. Participation in project management or design activities seems to depend more of an organisational logic within the institutions, as opposed to advancement tied to professional experience. Contact with the public never seems to be totally abandoned, even if, in certain museums, the interpretation teams are not comprised of the same people as the teams that design activities.

Communication activities can take on a wide variety of forms, from workshops to theatre shows, not to mention debates and games. Of all of these activities, the majority of explainers regularly perform demonstrations and lead workshops. Exhibitions also comprise a major share of the activities, with guided tours or simple, informal explanations of hands-on exhibits. In contrast, lectures and theatre performances are not as frequent: less than one mediator in ten gives lectures on a regular basis. Managers and explainers share similar views on the modes of activity carried out, as well as the visitors to whom the interpretation action is addressed. Thus, for all, the public is primarily family based, comprised of children or teens on their own or entire families.
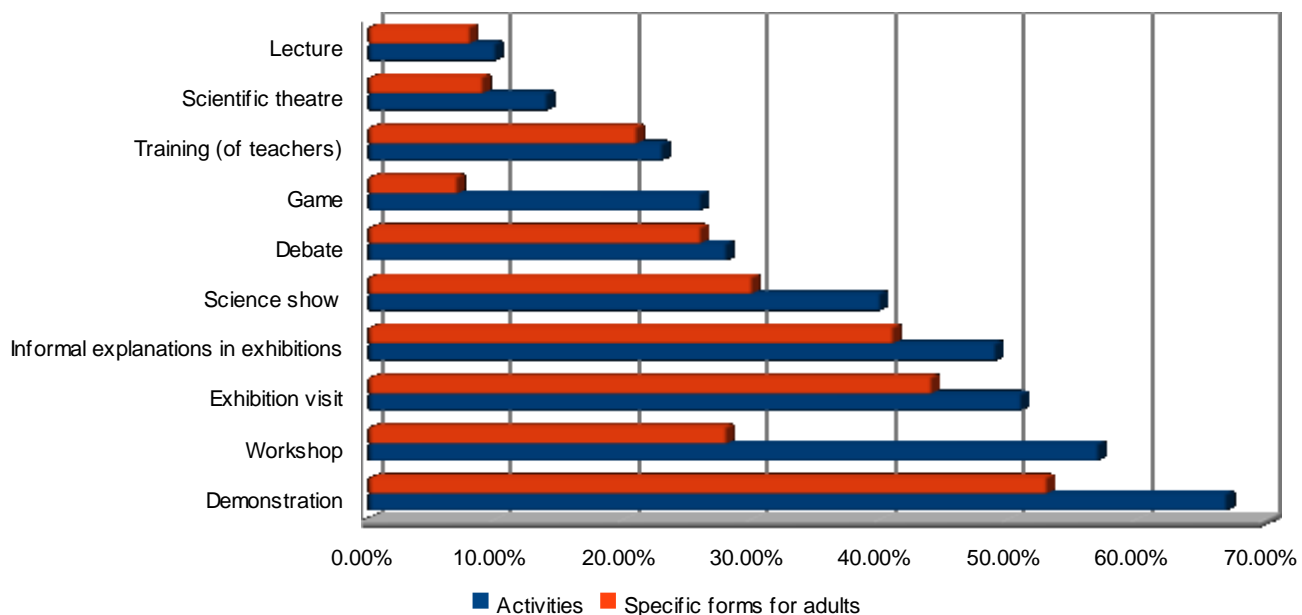
Fig. 20 – Forms of interpretation activity based on public - Source: Pilots 2010

While adults represent a minority of the public (1/3 of explainers declare working with adults as opposed to ¾ with children), explainers and their managers alike agree when it comes to the skills required: more than eight out of ten people feel that special skills are required to develop interpretation activities for adult audiences. But they use conventional forms, without any one being more specially developed for this type of audience. Specific forms for children such as games and workshops are simply used less with adult audiences. The specific features of the adult audience do not seem to be taken into account in the choice and design of interpretation activities. Adults are not considered to be a special audience with specific characteristics that imply a separate method of communication, either due to lack of awareness about this audience, or because of their lower attendance in science centres—or interpretation areas in any event—that do not make the need to create special measures a priority.

6   Required skills and training needs

6.1 Apart from the obvious, needs are not always heard

The same list of 22 skills characteristic of the explainer profession was given to both explainers and their managers. Managers had to choose what they felt were the ten most important skills for a successful explainer. Their point of view focused mainly on skills used when explainers are interacting with the public.

The place of the explainer is seen above all as being in front of visitors. This first series of eight skills thus groups the statements ranked among the top ten by more than two thirds of managers: adapting communication, encouraging public participation, interacting with a group of visitors, speaking in public or sharing knowledge, i.e. the five essential public relations skills, received the most positive response from managers (cited in over 80% of answers), complemented by more general skills such as team work, being inventive and having a keen interest in science. This core of the profession is supplemented by a second group of skills for which managers have divided opinions, with only half ranking them as the most important. These skills involve having a good knowledge of visitors, developing and designing activities or working with teaching professionals, all clearly more focused on behind-the-scenes work.

Lastly, a third, larger group of 11 skills includes statements that managers more rarely cited as essential (less than 25%), mainly administrative skills involving project management (coordinating projects, forging partnerships, organising training, conducting an evaluation) or staff management (managing a working group, working with subcontractors), general knowledge (having a degree in science, knowing the key players in science communication) or knowledge dissemination (developing exhibitions or writing "popular science" texts).
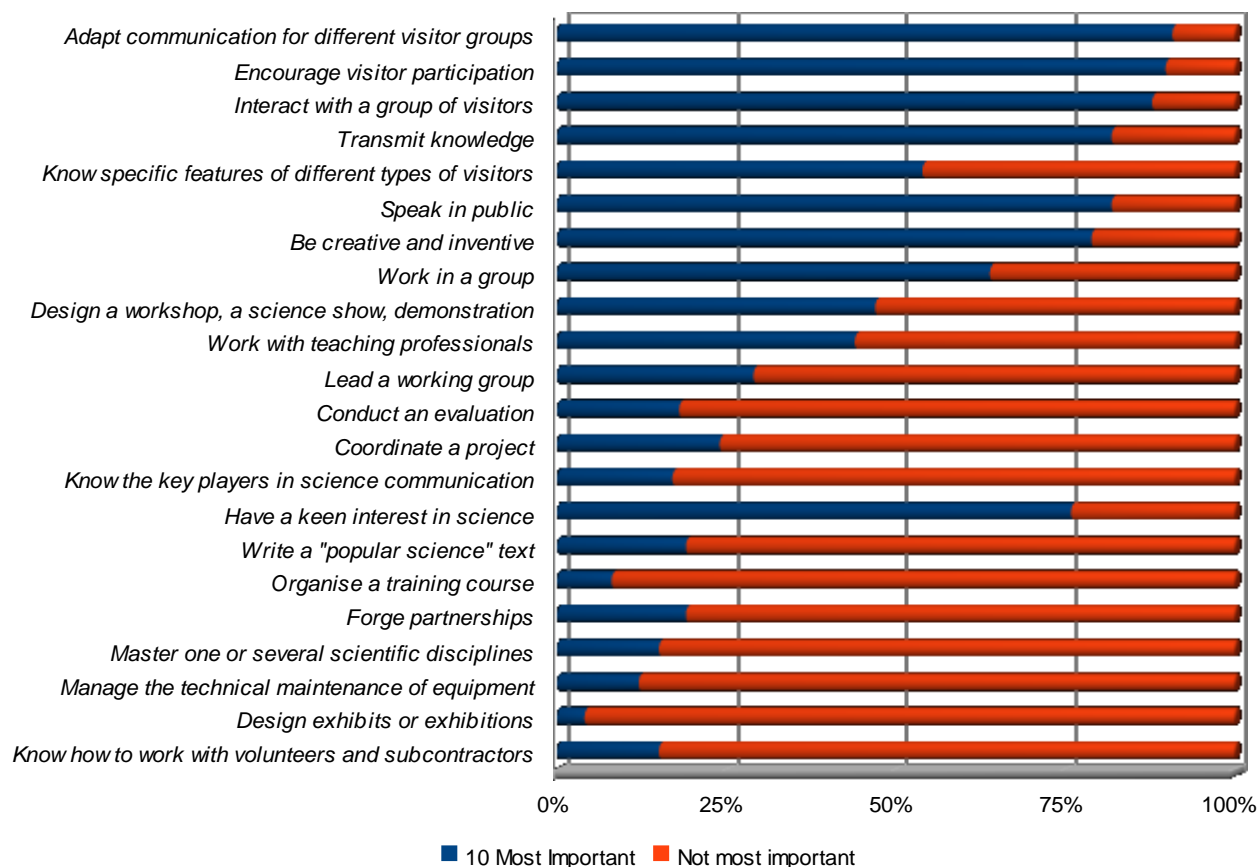
Fig. 21 – Most important skills from the managers' point of view - Source: Pilots 2010

Explainers were asked, for each of the same 22 skills, if they considered them to be acquired, if they were necessary or required additional training, or if they would not be useful to fulfil their duties.

All statements were deemed necessary by a minimum of three out of four participants, and an average of 90% of explainers. All of the skills proposed were as such considered essential to practising their profession.

Second point, explainers share their managers' views on the order of importance of these skills. The ranking of statements from most to least necessary for explainers corresponds in the main to how managers ranked them by order of importance, with a few exceptions like knowing the characteristics of different types of visitor: ranked in the top ten by 54% of managers, it is nonetheless deemed necessary by 95% of explainers, with a high demand for further training in this area.
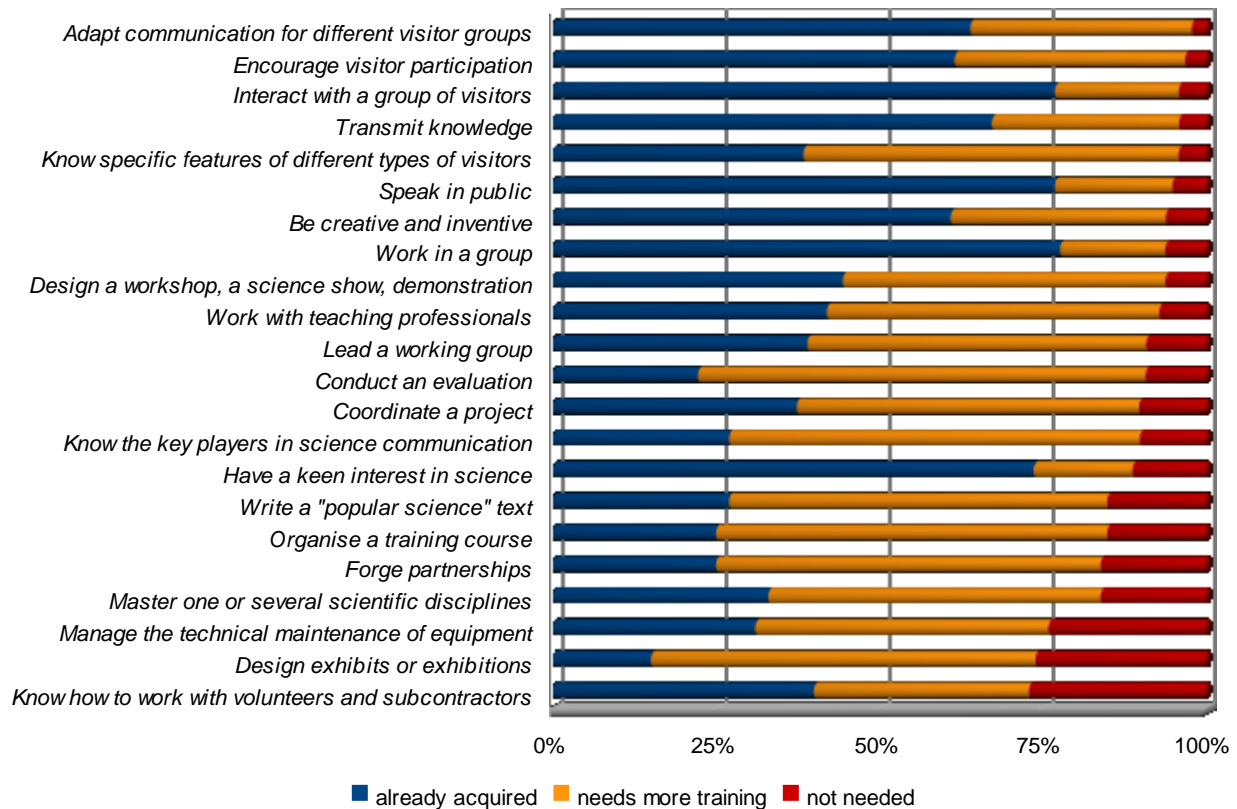
Fig. 22 – Degrees of acquisition of different skills according to explainers - Source: Pilots 2010

In such a way, four main categories of skills can be distinguished, based on the rankings given by both managers and explainers.

- obvious skills: this category includes skills deemed most important by over 64% of managers, and also predominantly considered as already acquired by 60% of explainers. Nevertheless, 15 to 30% of explainers request further training on these aspects of their job. These are the basics of the profession, mainly focused on modes of communication with the public. While training provision remains and will remain necessary, these are not the skills for which there is the greatest need for training.

	already	needs	**10**	**most**

	acquired	more training	important
Adapt communication for different visitor groups	**64%**	34%	**91%**
Encourage visitor participation	**61%**	35%	**90%**
Interact with a group of visitors	**77%**	19%	**88%**
Speak in public	**77%**	18%	**82%**
Transmit knowledge	**68%**	29%	**82%**
Be creative and inventive	**61%**	33%	**79%**
Have a keen interest in science	**73%**	15%	**76%**
Work in a group	**77%**	16%	**64%**

Fig. 23 – Degree of acquisition and importance of skills in the practice of the explainer profession -

Source: Pilots 2010

– shared needs: this category groups the skills that half of managers consider to be important, and for which the majority of explainers request additional training. Many explainers feel they already have these skills, deemed necessary by over 90% of them. These more general skills focus less on relations with the public than the first set, and touch on the hidden side of the explainers' work, behind the scenes, in the design phases of their activities.

	needs		
	already acquired	**more training**	**10 most important**
Know the specific features of different types of visitor	38%	**57%**	**54%**
Design a workshop, science show, demonstration	44%	**49%**	**47%**
Work with teaching professionals	42%	**51%**	**44%**

Fig. 24 – Degree of acquisition and importance of skills in the practice of the explainer profession -

Source: Pilots 2010

– unrecognised needs: this category groups the skills that a minority of managers consider to be important (less than 30%, and generally less than 20%) and for which the majority of explainers request additional training (between 50 and 60%). These needs relate more globally to project management, knowledge of the professional milieu and design of activities.

		needs	
	already acquired	more training	10 most Important
Lead a working group	39%	**52%**	**29%**
Coordinate a project	37%	**52%**	**24%**
Forge partnerships	25%	**59%**	**19%**
Write a "popular science" text	27%	**58%**	**19%**
Conduct an evaluation	22%	**68%**	**18%**
Know the key players of science communication (museums, science centres, etc.)	27%	**63%**	**17%**
Organise a training course	25%	**60%**	**8%**

Fig. 25 – Degree of acquisition and importance of skills in the practice of the explainer profession - Source: Pilots 2010

– secondary duties: this last category is comprised of the skills that are not only deemed less important by managers (less than 15% include them in the ten most important), but also fairly unnecessary by explainers (over 25% feel they are not useful). These are duties that, although not completely without merit, appear secondary in the daily practice of the explainer profession. The issue of exhibition design is rather exceptional: a duty managers almost unanimously feel falls outside the scope of the explainer's job (only 4% cited it under important duties), the majority of explainers request training in this area, even though a quarter of them also feel it is of little use, one of the highest rates observed for the need criterion.

	already acquired	needs more training	**10 most Important**
Work with volunteers and subcontractors	40%	33%	**15%**
Master one or several scientific disciplines	33%	51%	**15%**
Manage the technical maintenance of equipment	31%	45%	**12%**
Design exhibits or exhibitions	15%	59%	**4%**

*Fig. 26 – Degree of acquisition and importance of skills in the practice of the explainer profession -
Source: Pilots 2010*

Training efforts naturally need to continue to focus on "obvious" skills mainly relating to activities with the public and the core duties of the profession, but in which the majority of explainers feel they have been trained. Ultimately, training challenges lie in the shared needs and above all those requested by explainers but not considered a priority by managers. It is important to identify those requests from explainers that correspond to expected duties and the needs of the institutions. The issue of exhibition design provides a good illustration: while almost three out of five explainers would like to receive training in this area, managers do not feel this skill falls within the scope of their position. They see it as a separate profession within the museum. Nevertheless, all of the skills tied to the development of activities and, more generally, to project management are vital to the structuring and professionalisation of the explainer, in addition to more general knowledge of the professional context, knowledge of the key players in science communication and characteristics of the public. N. Montoya[7] states, for example, that "*explainers still rarely confront the enmeshment of their publics' practices and experiences. Cultural explainers have a tendency to build unitary representations of the aesthetic experience and the relationship with the public, which tend to ignore the 'poaching' practices (Certeau) and the 'unimagined backgrounds of occasional consumers, temporary and superficial satisfactions' (Roman). Jean-Claude Passeron had a similar criticism of cultural action, which he suspected of misunderstanding the reception practices of the milieu in which it operates, and lacking 'sociological imagination'".*

7   N. Montoya, "Médiation et médiateurs culturels : quelques problèmes de définition dans la construction d'une activité professionnelle," *Lien social et Politiques*, vol. 60, 2009, pp. 25-35.

Understanding the public in all its complexity and no longer in an undifferentiated way will no doubt open up new horizons for developing activities.
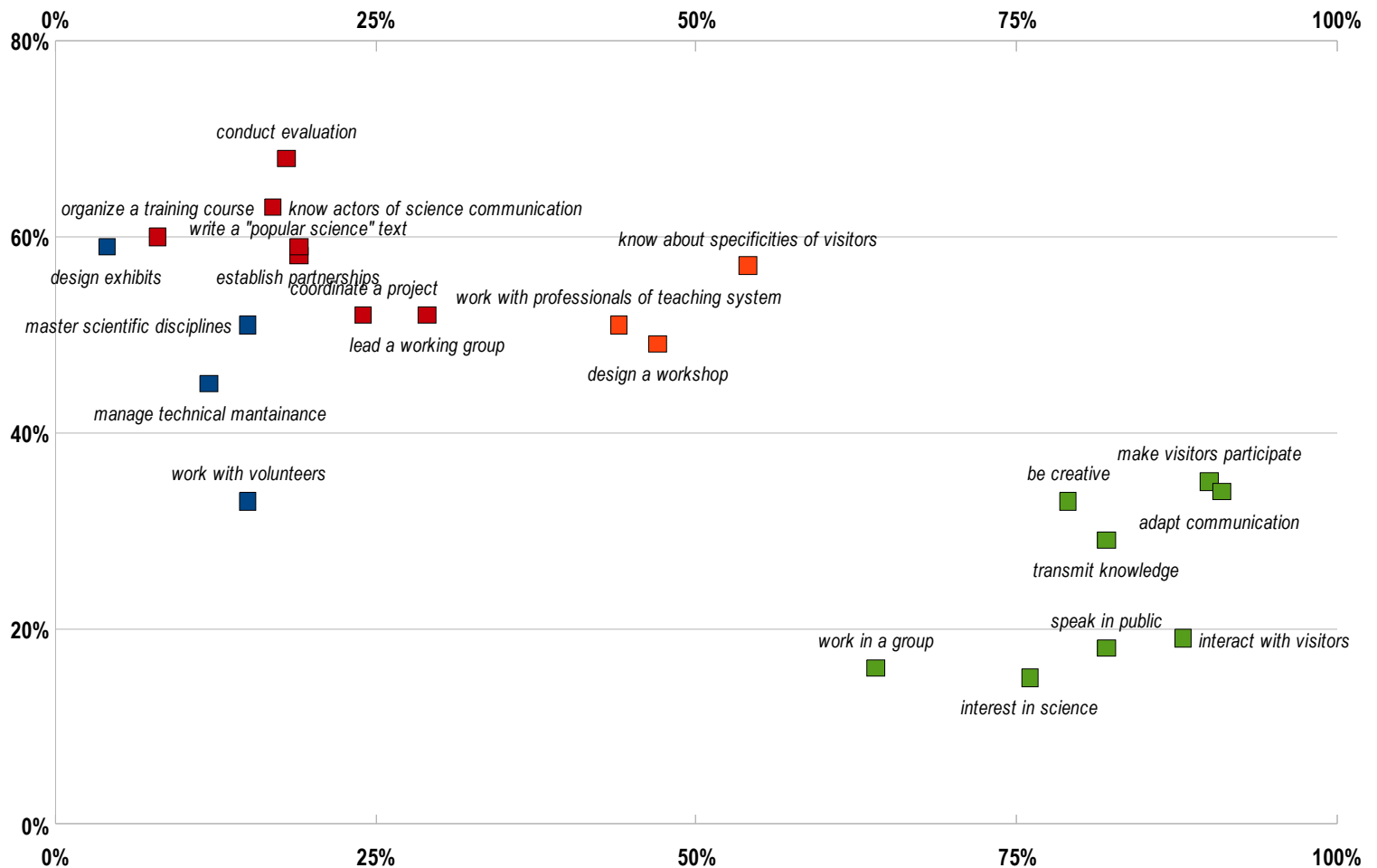
Fig. 27– Skills classified by degree of need or acquisition (vertical) and degree of importance (horizontal)- Source: Pilots 2010

As for the explainer's "office" activity, these duties nevertheless seem to remain invisible for managers, who see the role of the explainer as first and foremost before the public. The organisation of European explainers' work schedules thus warrants closer study to determine whether most of their time is actually spent with the public, or if it actually represents just the tip of the iceberg.

6.2 Different perceptions of implemented means

Museums and science centres generally provide initial training for newly hired explainers. The majority of explainers (over 60%) declare having received training on the scientific content specific to the themes of the museum's collections or the activities developed by the science centre, as well as on the public communication skills required for their future activities.
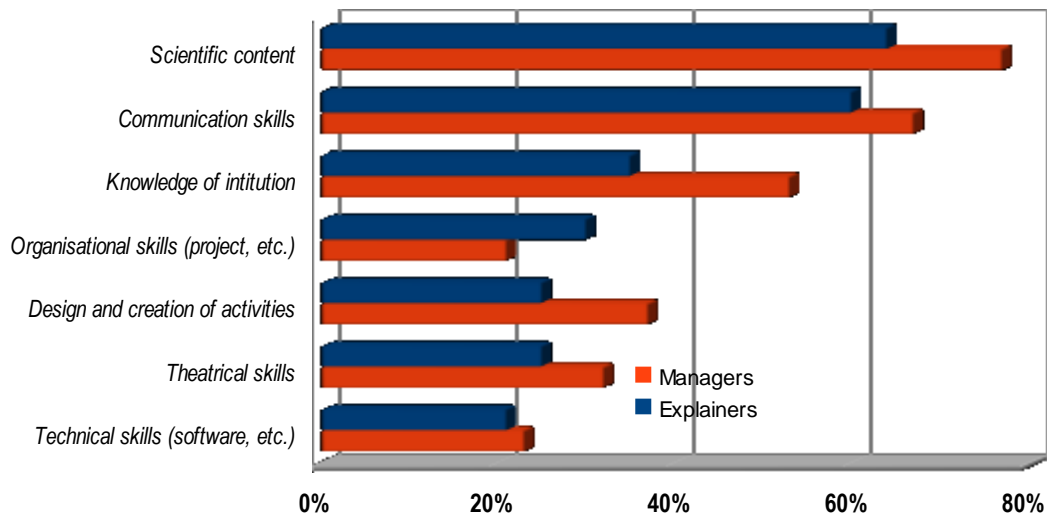
Fig. 28 – *Content of explainer orientation training given by the institution*
- Source: Pilots 2010

Managers confirm this point: nearly 80% declare providing training on scientific content and over two thirds on communication techniques. The other fields of skills are secondary, but touched on nevertheless: approximately 30% of explainers approach the issue of project management and knowledge about the new institution, particularly with regard to its administration. Aspects relating to design, theatrical skills and technical matters are mentioned by approximately 20% of explainers. All of the skills fields reveal that managers have a more optimistic view of training.

The managers' optimistic view is even more pronounced when it comes to the type of orientation training provided to newly hired explainers.
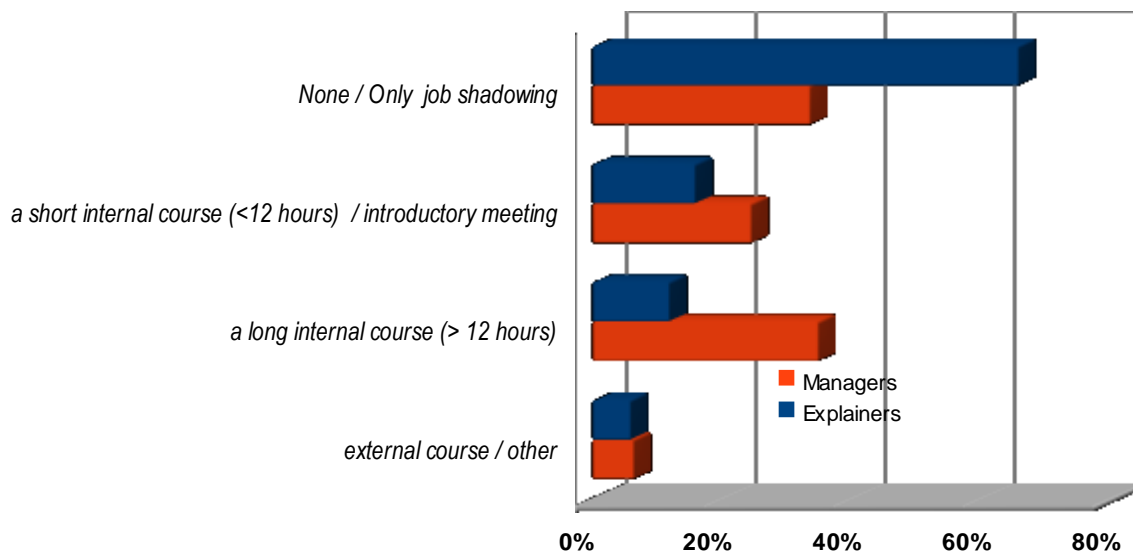
Fig. 29 – Types of training given by institutions - Source: Pilots 2010

Approximately 20% declare they received absolutely no training, not even job shadowing a senior member of staff. But only 5% of managers acknowledge not providing training. In all, whether due to lack of accompaniment or merely accompaniment provided by other explainers, two thirds of explainers declare they received no formal training upon their arrival, in contrast with only a third of managers.

On the contrary, 35% of managers affirm setting up "long" in-house training sessions, while only 12% of explainers benefited from them. The notion of "long training" is in itself surprising, since it is defined by a relatively small number of hours. Nearly 85% of explainers receive less than 12 hours of orientation training. The lack of prior training, sometimes difficult to implement for want of time, is compensated by the opportunity for explainers to participate in professional development training sessions (nearly 60% receive training one to four times a year) or conferences (70% attend one to ten conferences a year) on a regular basis throughout the year.

This underscores the need for the kind of further training the PILOTS project aimed to create. This training nevertheless needs to touch on the full palette of skills that forge a successful explainer, naturally with regard to relations with the public in terms of modes of communication and types of activity, but also the less visible tasks of the job performed behind the scenes, which are undoubtedly just as numerous and diverse. It is thus important to examine skills relating to project design, organisation and management, as well as general knowledge of the professional context, i.e. types of public, and science communication and cultural interpretation professionals.

The professional development of explainers within museums and science centres will be facilitated firstly by their command of project design and management skills, combined with their scientific expertise, rather than their abilities to speak to the public and promote "learning while having fun". The profession's lack of recognition and an image that is reduced to its activity with the public are above all linked to poor knowledge of the complexity of the job, the level of expertise mobilised and the diversity of tasks performed. The explainer has only the rather frivolous role of animator. Nevertheless, while three quarters of managers have been explainers, and more than six out of ten at the same institution, they themselves convey a simplistic image of the role of the explainer.
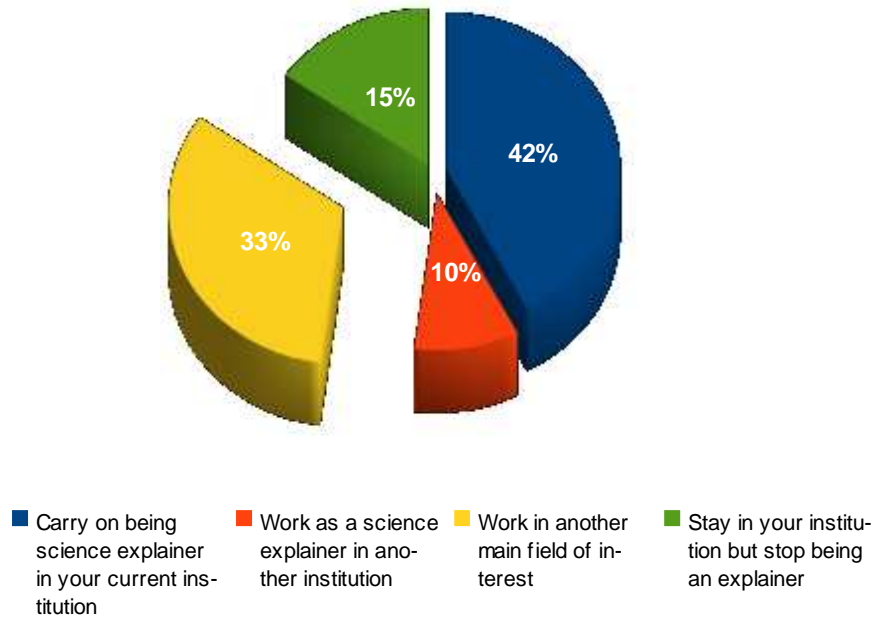
Fig. 30 – Where explainers see themselves in five years - Source: Pilots 2010

Despite the diversity of tasks, explainers suffer from a lack of recognition that appears indirectly through the fact that their training needs are not taken into account and through the simplistic view their superiors have of their role. As such, a third of explainers would like to work in another field within the five next years, and 10% remain with the museum but in a different position. This is independent of the type of museum in which they work, the type of contract they have or their age. Only seniority in the position seems to accentuate the phenomenon slightly. Those who wish to perform the same job but in another institution have been working in the position on average a little over two years, while those who wish to stop working as an explainer, either remaining at their current institution or completely changing fields, have on average four years' seniority. A form of fatigue in the position seems to occur, no doubt due to the repetitiveness of the tasks. The lack of career prospects and recognition also eats away at their motivation.

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8 APPENDIX

8.1 TABLES OF ANSWERS FROM BOTH QUESTIONNAIRES.

(Managers' answers in orange)

Table 1 - In which country is your institution located?

	No.	Rate
France	54	34%
Portugal	19	12%
Belgium	14	9%
Italy	14	9%
United Kingdom	13	8%
Slovenia	12	8%
Switzerland	10	6%
Poland	9	6%
Spain	3	2%
Norway	2	1%
Sweden	2	1%
Finland	2	1%
Greece	1	1%
Netherlands	1	1%
Czech Republic	1	1%
Romania	1	1%
Germany	1	1%
TOTAL OBS.	159	100%

Table 1 - In which country is your institution located?

	No.	Rate
France	54	34%

Portugal	19	12%
Belgium	14	9%
Italy	14	9%
United Kingdom	13	8%
Slovenia	12	8%
Switzerland	10	6%
poland	9	6%
Spain	3	2%
Norway	2	1%
Sweden	2	1%
Finland	2	1%
Greece	1	1%
Netherland	1	1%
Czech republic	1	1%
Romania	1	1%
Germany	1	1%
TOTAL OBS.	159	100%

Table 2 - In which country is it located? (Managers)

	No.	Rate
FRANCE	27	35,00%
Portugal	11	14%
United Kingdom	9	12%
Poland	6	8%
Belgium	5	6%
Switzerland	4	5%
Germany	3	4%
Italy	3	4%
Slovenia	2	3%

Spain	2	3%
Finland	2	3%
Estonia	1	1%
The Netherlands	1	1%
Sweden	1	1%
TOTAL OBS.	78	

Table 3 - In which country is it located?

	No.	Rate
France	**81**	**34%**
Portugal	30	13%
United Kingdom	22	9%
poland	15	6%
Belgium	19	8%
Switzerland	14	6%
Germany	4	2%
Italy	17	7%
Slovenia	14	6%
Spain	5	2%
Finland	4	2%
Estonia	1	0%
Netherland	2	1%
Sweden	3	1%
Norway	2	1%
Czech republic	1	0%
Romania	1	0%
Greece	1	0%
TOTAL OBS.	236	

Table 4 - Number of museum, managers and explainers by countries

	NB museum	Managers	Explainers	TOTAL	Quest / museum	% EXP	% Museums	% Respondents
Czech republic	1		1	1	1	100%	0,9%	0,4%
Estonia	1	1		1	1	0%	0,9%	0,4%
Greece	1		1	1	1	100%	0,9%	0,4%

Romania	1		1	1	1	100%	0,9%	0,4%
Netherlands	1	1	1	2	2	50%	0,9%	0,9%
Norway	2		2	2	1	100%	1,7%	0,9%
Sweden	2	1	2	3	1,5	67%	1,7%	1,3%
Finland	2	2	2	4	2	50%	1,7%	1,7%
Germany	4	3	1	4	1	25%	3,5%	1,7%
Spain	2	2	3	5	2,5	60%	1,7%	2,1%
Switzerland	11	3	10	13	1,18	77%	9,6%	5,6%
Slovenia	1	2	12	14	14	86%	0,9%	6,0%
Poland	2	6	9	15	7,5	60%	1,7%	6,4%
Italy	11	3	14	17	1,55	82%	9,6%	7,3%
Belgium	5	5	14	19	3,8	74%	4,3%	8,2%
UK	15	10	11	21	1,4	52%	13,0%	9,0%
Portugal	12	11	18	29	2,42	62%	10,4%	12,4%
France	41	28	53	81	1,98	65%	35,7%	34,8%
TOTAL	115	78	155	233	2,03	67%	100,00%	100,00%

Table 5 - What kind of institution?

	No.	Rate	No.	Rate	TOTAL	% TOTAL
Science centre	85	53%	45	58%	130	55%
Science & technical museum	40	25%	13	17%	53	22%
Natural history museum (& Botanic Garden, zoo, aquarium)	18	11%	10	13%	28	12%
Other (please specify)	9	6%	5	6%	12	5%
University	7	4%	5	6%	14	6%
TOTAL OBS.	159	100%	78	100%		

Table 6 - kind of institution by countries

	Natural history museum (&	Science & technical museum	Science centre	University	Other

	Botanic Garden)				
France	9%	31%	44%	4%	11%
Portugal	0%	11%	89%	0%	0%
Belgium	50%	0%	50%	0%	0%
Italy	7%	71%	7%	7%	7%
United Kingdom	0%	31%	46%	15%	8%
Slovenia	0%	0%	100%	0%	0%
Switzerland	50%	10%	30%	10%	0%
poland	0%	0%	100%	0%	0%
Other	0%	43%	43%	7%	7%
TOTAL	11%	25%	53%	4%	6%

Table 7 - What kind of organisation?

What kind of organisation?	No.	Rate
Non-profit	59	38%
Profit	6	4%
Private	19	12%
Public	67	44%
Research	3	2%
TOTAL CIT.	154	100%

Table 8 - What kind of organisation?

Organisation	No.	Rate
Non-profit	45	46%
Profit	4	4%
Private	11	11%
Public	30	31%
Research	7	7%
TOTAL CIT.	97	100,00%

Table 8 - kind of institution by type of organisation

	Non-profit	**Private**	**Profit**	**Public**	**Research**
Natural history museum (& Botanic Garden)	22%	0%	0%	78%	0,00%
Science centre	46%	14%	1%	32%	1%
Science & technical museum	23%	18%	5%	53%	3%
University	29%	0%	0%	71%	0%
Other	56%	0%	33%	0%	11%
TOTAL	37%	12%	4%	42%	2%

Table 9 - How many explainers work at your institution ?

	No.	Rate
Moins de 5	18	23%
De 5 à 10	22	29%
De 10 à 25	18	23%
De 25 à 50	13	17%
50 et plus	6	8%
TOTAL OBS.	78	

Table 10 - Which is your gender ?

	No.	Rate	No.	Rate	No.	Rate
Female	97	61%	44	56%	141	*60%*
Male	61	39%	34	44%	95	*40%*
TOTAL CIT.	158	100%	78	100%	236	100%

Table 11 - What is your level of qualification?

	No.	Rate
High school	23	14%
Licence / Bachelor's Degree	54	34%
Masters	61	38%
Doctorat / PhD	21	13%
TOTAL CIT.	159	100%

Table 12 - What is your level of qualification?

	No.	Rate
High school	1	1%
Licence / Bachelor's Degree	24	31%
Masters	33	42%
Doctorat / PhD	19	24%
TOTAL OBS.	78	

Table 13 - How old are you?

	No.	Rate
Moins de 25	35	24%
De 26 à 30	44	30%
De 31 à 35	30	21%
36 et plus	37	25%
TOTAL CIT.	146	100%

Minimum = 21, Maximum = 57 Moyenne = 30,95 Ecart-type = 6,67

Table 14 - How old are you?

	No.	Rate
Moins de 25	2	3%
De 26 à 30	8	10%
De 31 à 35	22	28%
De 36 à 45	19	24%
De 46 à 55	18	23%
56 et plus	7	9%
TOTAL OBS.	78	

Minimum = 25, Maximum = 62 Moyenne = 40,88 Ecart-type = 9.94

Table 15 - Have you worked as science explainer?

	No.	Rate
No, never	18	23%
Yes, in another institution	11	14%
Yes, in this institution	48	62%
TOTAL OBS.	78	

Table 16 - Average age by countries

France	32,83
Portugal	29,58
Belgium	32,57
Italy	32,73
United Kingdom	28,92
Slovenia	24,09
Switzerland	34,00
poland	26,25
Other	31,50
TOTAL	30,95

Table 17 - Did you get a specific training in science communication during your degree ?

	No.	Rate	
Never.	41	26%	
			78 %
No, only a training course when I started this kind of job.	82	52%	
Yes, it was a complete training on scientific communication	18	11%	
			22 %
Yes, it was an optional course during my scientific degree	18	11%	
TOTAL OBS.	159	100%	

Table 18 - Did you get a specific training in science communication during your degree ?

	No.	Rate	
Never.	28	36%	
			84 %
No, only a training course when I started this kind of job.	37	47%	
Yes, it was a complete training on scientific communication	5	6%	
			16 %
Yes, it was an optional course during my scientific degree	8	10%	
TOTAL OBS.	78	100%	

Table 19 - What type of contract do you hold?

	No.	Rate
Fixed-term contract	46	30%
Permanent contract	83	54%
Seasonal contract	23	15%
Volunteer	3	2%
TOTAL CIT.	155	100%

Table 20 - Type of contract by ages

	Fixed-term contract	Permanent contract
Moins de 25	50%	50%
De 25 à 31	72%	28%
De 31 à 36	24%	76%
36 et plus	27%	73%
TOTAL	45%	55%

Table 21 - Type of contract by level of qualification

	Fixed-term contract	Permanent contract
Doctorat / PhD	71%	29%
High school	43%	57%
Licence / Bachelor's Degree	46%	54%
Masters	39%	61%
TOTAL	46%	54%

Table 22 - Type of contract by countries

	Fixed-term contract	Permanent contract
France	37%	63%
Portugal	67%	33%

Belgium	14%	86%
Italy	62%	38%
United Kingdom	38%	62%
Slovenia	82%	18%
Switzerland	10%	90%
poland	100%	0%
Other	50%	50%
TOTAL	46%	54%

Table 23 - Type of contract by ages

	Fixed-term contract	Permanent contract	Seasonal contract	Volunteer
moins de 25	17%	49%	26%	6%
>25 à 30	52%	27%	18%	0%
>30 à 35	20%	73%	3%	0%
> 35	19%	73%	5%	3%
TOTAL	29%	52%	14%	2%

Table 24 - What is your main status?

What is your main status?	No.	Rate
Free-lancer	10	6%
Museum employed	108	69%
Scientist	7	4%
Student	21	13%
Teacher	10	6%
TOTAL CIT.	156	100%

Table 25 - Is your position as explainer a full-time job?

	No.	Rate
No	58	37%
Yes	99	63%
TOTAL CIT.	157	100%

Table 26 - Full time job by countries

	Yes	No
France	87%	13%
Belgium	86%	14%
Other	86%	14%
United Kingdom	62%	38%
Portugal	58%	37%
Italy	43%	50%
Switzerland	10%	90%
poland	11%	89%
Slovenia	8%	92%
TOTAL	62%	36%

Table 27 - Full time job by time in current job

	No	Yes
moins de 1	50%	50%
de 1 à 5	43%	57%
de 5 à 10	11%	89%
10 et plus	19%	81%
TOTAL	36%	64%

Table 28 – How long have you worked...

	less than 1	de 1 to 2	de 2 to 3	de 3 to 5	de 5 to 10	10 and +
How long have been in your present job?	19%	19%	17%	15%	19%	10%
How long have you worked in your institution	16%	15%	16%	21%	21%	11%
How long have you worked as science explainer	16%	12%	12%	20%	25%	15%

Table 29 – Time in current job by countries

	Fra	Port	Bel	It	UK	Slov	Swit	pol	Other
moins de 1	33%	7%	13%	3%	17%	7%	7%	10%	3%
de 1 à 5	30%	11%	5%	7%	10%	12%	6%	6%	12%
de 5 à 10	28%	21%	14%	21%	0%	0%	7%	0%	10%
10 et plus	75%	0%	13%	6%	0%	0%	6%	0%	0%
TOTAL	35%	11%	9%	9%	8%	8%	6%	5%	9%

Table 30 – In your opinion, to do his job, an explainer should also be... (5 strongly agree / 0 strongly desagree)

	5	4	3	2	1	0
an entertainer	25%	30%	24%	16%	4%	2%
a teacher	15%	27%	31%	14%	10%	4%
a scientist	20%	22%	33%	15%	7%	3%
an actor	9%	23%	15%	25%	21%	7%
a guide	16%	30%	27%	14%	8%	4%
a manager	3%	10%	24%	22%	20%	20%
a designer	6%	10%	21%	25%	15%	23%
a journalist	2%	7%	15%	24%	22%	30%

Table 31– In your opinion, to do his job, an explainer should also be... (5 strongly agree / 0 strongly desagree)

	5	4	3	2	1	0
an entertainer	28%	41%	9%	11%	7%	4%
a teacher	16%	24%	20%	17%	14%	9%
a scientist	21%	21%	25%	16%	12%	5%
an actor	7%	17%	25%	33%	9%	8%
a guide	21%	18%	22%	14%	19%	6%
a manager	0%	8%	18%	20%	28%	25%
a designer	1%	12%	12%	23%	26%	25%

a journalist	0%	7%	8%	22%	30%	34%		

Table 33 – In your opinion, to do his job, an explainer should also be… (5 strongly agree / 0 strongly desagree)

	Av	4 – 5	2 – 3	0 – 1	Av	4 – 5	2 – 3	0 - 1
an entertainer	3,53	55%	39%	5%	3,61	69%	20%	11%
a teacher	3,13	42%	45%	13%	2,82	39%	37%	24%
a scientist	3,25	42%	48%	10%	3,08	42%	41%	17%
an actor	2,52	32%	40%	28%	2,55	24%	59%	17%
a guide	3,18	46%	41%	13%	2,90	39%	36%	25%
a manager	1,93	13%	46%	41%	1,56	8%	38%	54%
a designer	1,99	16%	46%	38%	1,66	14%	36%	51%
a journalist	1,52	9%	38%	53%	1,24	7%	30%	64%
Ensemble	2,63	32%	43%	25%	2,44	31%	37%	32%

Table 34 – What are your regular activities?

	No.	Rate
Reception and general information for visitors	74	47%
Presence in the exhibitions and helping visitors	98	62%
Animation of workshops or shows	127	80%
Scientific updating	54	34%
Workshop and activity design	68	43%
Events organization	65	41%
Exhibition design	24	15%
Training of other explainers or teachers	76	48%
Self-training or participation in training session	70	44%
Project coordination	64	40%

	No.	Rate
Answer to the structure's needs	5	3%
Research	8	5%
TOTAL OBS.	159	

Table 35 – What are the regular activities of explainers in your institution?

	No.	Rate
Reception and general information for visitors	44	56%
Presence in the exhibitions and helping visitors	59	76%
Running workshops or shows	60	77%
Keeping up to date with the latest research	24	31%
Workshop and activity design	49	63%
Events organization	48	62%
Exhibition design	21	27%
Training of other explainers or teachers	53	68%
Self-training or participation in training session	48	62%
Project coordination	37	47%
TOTAL OBS.	78	

Table 36 – Regular Activities by time in current job

	less than 1	1 to 5	5 to 10	10 and +	TOTAL
Reception and general information for visitors	47%	48%	41%	44%	47%
Presence in the exhibitions and helping visitors	63%	60%	62%	56%	62%
Animation of workshops or shows	83%	74%	93%	75%	80%
Scientific updating	30%	33%	34%	38%	34%

Workshop and activity design	43%	40%	48%	44%	43%
Events organization	33%	38%	38%	69%	41%
Exhibition design	7%	15%	17%	25%	15%
Training of other explainers or teachers	27%	41%	76%	75%	48%
Self-training or participation in training session	50%	47%	45%	25%	44%
Project coordination	40%	41%	45%	38%	40%
Answer to the structure's needs	7%	2%	0%	6%	3%
Research	3%	6%	7%	0%	5%
TOTAL	100%	100%	100%	100%	100%

Table 37 – Regular Activities by types of contract

	Fixed-term contract	Permanent contract
Reception and general information for visitors	46%	54%
Presence in the exhibitions and helping visitors	48%	52%
Animation of workshops or shows	44%	56%
Scientific updating	46%	54%
Workshop and activity design	43%	57%
Events organization	40%	60%
Exhibition design	33%	67%
Training of other explainers or teachers	35%	65%
Self-training or participation in training session	46%	54%
Project coordination	44%	56%
Answer to the structure's needs	0%	100%
Research	75%	25%
TOTAL	43%	57%

Table 38 – Regular engagement forms

	EXPLAINERS		With Adults		MANAGERS	
Demonstration	107	67%	85	53%	60	77%
Workshop	91	57%	44	28%	60	77%
Exhibition visit	81	51%	70	44%	48	62%
Informal explanations in exhibitions	78	49%	65	41%	56	72%
Science show	63	40%	48	30%	39	50%
Debate	45	28%	42	26%	26	33%
Game	42	26%	11	7%	29	37%
Training (of teachers)	36	23%	33	21%		
Scientific theater	23	14%	15	9%	16	21%
Lecture	16	10%	13	8%	11	14%
TOTAL OBS.	159		159		78	

Table 39 – Visitor type

	No.	Rate	No.	Rate
Children	120	75%	69	88%
Teens	81	51%	34	44%
Adults	54	34%	31	40%
Families	83	52%	53	68%

Table 40 – Do you think that explainers need specific skills to interact with adults ?

	No.	Rate	No.	Rate
No	21	14%	13	17%
Yes	125	86%	62	83%
TOTAL CIT.	146	100%	75	

Table 41 – 10 most important skills to be an explainer

	No.	Rate
To be able to adapt communication for different visitor groups	71	91%
To know how to make visitors participate	70	90%
To know how interact with a group of visitors	69	88%
To know how speak in public	64	82%
To know how to transmit knowledge	64	82%
To be creative and inventive	62	79%
To have a strong interest in science	59	76%
To be able to work in a group	50	64%
To know about specificities of different type of visitors	42	54%
To design a workshop, a science show, demonstration	37	47%
To work with professionals of teaching system	34	44%
To lead a working group	23	29%
To coordinate a project	19	24%
"To write a ""popular science"" text"	15	19%
To establish partnerships	15	19%
To conduct an evaluation	14	18%
To know the actors of science communication (museum, science centers...)	13	17%
To master one or several scientific disciplines	12	15%
To know how to work with volunteers or subcontracting persons	12	15%
To manage the technical mantainance of materials	9	12%
To organize a training course	6	8%
To design exhibits or exhibitions	3	4%
TOTAL OBS.	78	

Table 42 - Skills of explainers

	already acquired	needs more training	not needed
To know how interact with a group of visitors	77%	19%	4%
To know how speak in public	77%	18%	5%
To be able to work in a group	77%	16%	6%
To have a strong interest in science	73%	15%	11%
To know how to transmit knowledge	68%	29%	4%
To be able to adapt communication for different visitor groups	64%	34%	2%
To know how to make visitors participate	61%	35%	3%
Be creative and inventive	61%	33%	6%
To design a workshop, a science show, demonstration	44%	49%	6%
To work with professionals of teaching system	42%	51%	7%
To know how to work with volunteers or subcontracting persons	40%	33%	27%
To lead a working group	39%	52%	9%
To know about specificities of different type of visitors	38%	57%	4%
To coordinate a project	37%	52%	10%
To master one or several scientific disciplines	33%	51%	16%
To manage the technical mantainance of materials	31%	45%	24%
To know the actors of science communication (museum, science centers...	27%	63%	10%
To write a "popular science" text	27%	58%	15%
To organize a training course	25%	60%	15%
To establish partnerships	25%	59%	16%
To conduct an evaluation	22%	68%	9%
To design exhibits or exhibitions	15%	59%	26%
Ensemble	46%	43%	11,00%

Table 43 - Training skills when explainers first starting job

Training skills	No.	Rate	No.	Rate
Scientific contents	101	64%	60	77%
Communication skills	95	60%	52	67%
Knowledge of intitution	55	35%	41	53%
Theatrical skills	39	25%	25	32%
Organsiation skills (project...)	47	30%	16	21%
Design and conception of activity	39	25%	29	37%
Technical skills (software...)	34	21%	18	23%
TOTAL OBS.	159		78	

Table 44 - Training when explainers first starting job?

	No.	Rate	No.	Rate
No	32	20%	4	5%
Yes, by senior explainers, through imitation	67	42%	22	28%
Yes, in an introductory meeting	8	5%	5	6%
Yes, through a long internal course (more than 12 hours)	18	11%	27	35%
Yes, through a short internal course (less than 12 hours)	16	10%	14	18%
Yes, through an externally organized course	5	3%	2	3%
Yes, through an other type of course	4	3%	3	4%
TOTAL OBS.	159		78	

Table 45 - How many times a year do you participate to training course

H	No.	Rate	No.	Rate
Never	28	19%	9	12%
Occasionally (1 – 4 times a year)	85	57%	52	68%

A few times a year (5-10 times a year)	28	19%	9	12%
Monthly	9	6%	7	9%
TOTAL OBS.	150		77	100%

Table 46 -How many times a year do you go to conference

	No.	Rate	No.	Rate
Never	33	22%	12	16%
Occasionally (1 – 4 times a year)	67	44%	53	71%
A few times a year (5-10 times a year)	47	31%	9	12%
Monthly	5	3%	1	1%
TOTAL OBS.	152		75	100%

Table 47 - In the next 5 years, you would like...

	No.	Rate
Carry on being science explainer in your current institution	61	38%
Work in another main field of interest	36	23%
Stay in your institution but stop being an explainer	22	14%
Being a science explainer in another institution	14	9%
Other	11	7%
TOTAL OBS.	159	

Table 48 – Wishes by level of diploma

	PhD	Master's	Bachelor's Degree	High school	TOTAL
Carry on being science explainer in your current institution	43%	38%	33%	48%	38%
Work in another main field of interest	10%	20%	35%	13%	23%
Stay in your institution but stop being an explainer	19%	13%	15%	9%	14%
Being a science explainer in another institution	14%	16%	2%	0%	9%
Other	0%	5%	6%	22%	7%