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Building skills on open science: creation of a MOOC

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<u>Abstract</u>

PhD students are a key audience that needs to be reached as a matter of priority if we are to transform research practices and make open science a default practice. With more than 4000 PhD students each year, the Sorbonne University Alliance, an alliance of 6 higher education institutions, decided in 2019 to produce a MOOC dedicated to open science. Sorbonne University and the National Museum of Natural History's libraries join forces to conduct this project, resulting in a MOOC launched in March 2022. The main goals were to train on a large scale and encourage the attendees to reflect on their practices and the state of research. The MOOC comes within the scope of the French National Plan for Open Science, which aims to develop open science skills within doctoral schools. It is also the result of the SU Alliance's strong commitment to open science. This article analyses the choices that were made concerning pedagogy, methodology and openness. Moreover, it shares the first results as well as the future of the project.

Keywords: MOOC; open science; training; PhD students; universities alliance

1. Introduction

How to train on a large scale in open science? By producing a MOOC and drawing on the strengths of collaboration between institutions. <u>The MOOC "Open Science"</u> designed by the Sorbonne University Alliance and put online on the FUN MOOC platform in 2022 is a response to an institutional commitment to train all its doctoral students and to national policy for open science.

In France, the open science policy is carried out by the Ministry of Higher Education and Research. The objectives are described in the French National Plan for Open Science, first adopted in 2018 and updated in 2021. In the first version of the plan, the Ministry calls for "develop[ing] open science skills, especially in postgraduate schools" (French Ministry for Higher Education and Research, 2018).

The institutions of the Sorbonne University Alliance had also adopted a strong policy in this area. The Sorbonne University Alliance is made up of six associated institutions: two universities (Sorbonne University, University of Technology of Compiègne), two research and/or higher education institutions (National Museum of Natural History, Artistic creation higher education institution Paris Boulogne-Billancourt), a public administrative institution (France Education international) and a non-profit graduate business school (INSEAD). It is a group of institutions that share the same priorities and carry out common projects. Open science is one of their main axes and their policy in this area is based on the Sorbonne University's strategic five years-plan. In the open access policy adopted by Sorbonne University's research commission in 2019, the institution commits to "rais[e] awareness in the academic community of the societal and scientific issues regarding open access and open science by (...) [Train] all new doctoral candidates in the challenges and practices of open science, as of

September 2020") (Sorbonne University, 2019). The National Museum of Natural History (MNHN) is also committed to an open science policy and is a pioneer in citizen science (National Museum of Natural History, s. d.).

The Sorbonne University Alliance was therefore to develop open science skills in postgraduate schools and had the ambition to train all these PhD candidates in the practices of open science. The target audience was more than 4000 PhD students of the Sorbonne University Alliance. The only solution to meet this ambitious objective was therefore to develop a massive online course. Nearly 26 000 euros (excluding salary costs) were made available through the Investments for the Future programme (Programme d'investissements d'avenir) to fund the MOOC (equipment, storage, translation services, hosting on FUN MOOC).

Why did we create a MOOC from scratch without taking into account the existing teaching material available online? As far as we know, there were no general MOOC courses on open science. For example, two MIT MOOCs "Science and Communication" and "Survival Skills for Researchers: The Responsible Conduct of Research" from the 2010s address the issues of publications, research ethics and data management and sharing. The French MOOCs are tackling the issue of open access in small steps (IRD MOOC - Writing and publishing a scientific article) or data management and openness (University of Bordeaux-Montaigne MOOC - Scientific integrity in the research professions). At that time (2019/2020), the University of Delft's MOOC did not yet have a section on citizen science and does not deal in any detail with the evaluation of research (TU Delft -Open Science: Sharing Your Research with the World). In addition, the University of Potsdam's MOOC (Openness in Science and Innovation) had not yet been published (Free Online Course: Openness in Science and Innovation from FutureLearn). That is why we thought it would be a good idea to create a MOOC, both in English and French, on open science, covering the main principles and giving some background and history for PhD students. our

2. Pedagogical choices

The online training format was chosen to meet the objectives set: to train the PhD students of the Sorbonne University Alliance on a large scale and to give them a common base of skills in open science. In addition, it offers greater flexibility for learners who are in control of their time management and learning process. In order to open it to all, the choice was made to use a Massive Open Online Course (MOOC).

2.1. Map of the course

The MOOC consists of more than 60 videos, texts, images, interactive infographics and a thesaurus; it is structured in 6 parts (fig. 1):

- 1. **Introduction**: gives the first elements of definition on open science and which draws up the stakes of open science,
- 2. **Publications**: deals with the functioning of academic publishing and its transformations, and explains what open access publishing is,
- 3. **Data**: deals with the definition of research data, the legal aspects of their openness and the challenges of their management,
- Evaluation: discusses peer review (and its openness) as well as the research assessment and its levers to generalise open science practices,
- 5. **Citizen sciences**: gives a historical and practical point of view since several citizen research projects are presented,
- 6. **Science and society**: evokes the way in which open science makes it possible to rethink the relationship between science and society,
- 7. **Perspectives**: concludes with the point of view of PhD students about their future in research.

The MOOC focuses primarily on the opening up of publications and data, on open peer-review and on citizen science. Elements that make up open science, such as open software and open education, have been deliberately set aside with a view to creating a MOOC that can evolve over the long term. The main



Figure 1. Map of the course

pillars of open science have therefore been prioritised for this first version.

2.2. Speakers: image of the scientific community

The videos that make up the central structure of the MOOC have been edited from long interviews that have been cut and assembled to evoke a thematic point. The same video can therefore gather extracts from several interviews of different people. In order for the MOOC to be representative of the research community, we interviewed 38 speakers. They have different profiles and jobs, they work in 17 different institutions (Sorbonne University and MNHN of course, but also Max Weber Centre-Saint-Etienne University, Montreal University, King's College of London, OurResearch, French National Centre for Scientific Research, etc.) and are involved in open science through different angles. They have different fields of expertise. We can listen to a biologist, a chemist, an anthropologist, a linguist...

And so they have different ways of dealing with open science and there is a great diversity of talks, shared sometimes in the same video. It was really important because the Alliance institutions are multidisciplinary and we wanted all our communities to engage in dialogue on the subject of open science.

As our work was primarily dedicated to our PhD students we also chose to interview some of them, to share how they see the actual movement and its future.

2.3. Accessibility

The MOOC is particularly rich. In order to make it accessible, two categories of content are differentiated: the content required for validation and the supplementary material which is not subject to any quiz or exercise and which is differentiated by a grey rectangle on the upper right corner of the section. Thus, the learner is required to follow an 8-hour path to certification and he / she can go deeper into certain subjects, depending on the time available, thanks to the supplementary material.

In addition, for accessibility reasons, each video has been subtitled and all content has been produced in a bilingual French/English version. The MOOC is therefore aimed at both English and French speakers.

2.4. Dynamic content and active learning

Online training requires a strong incentive on the part of the learner, as there is no supervision or personalised follow-up as in a traditional training program.

The pedagogical choices have been made in order to compensate for the lack of interaction:

- **Different contents**: videos constitute the main structure of the MOOC while infographics deepen the subject by giving more context or definition elements (ex : <u>"A typology of open access"</u>, <u>"The life cycle of research data"</u>, <u>"A wide variety of projects [in citizen science]"</u> The goal is to give rhythm to the MOOC.
- The videos were designed so that **the speakers respond to each other** (for example: <u>https://tubedu.org/w/m7CJrpJaPhgHq1XcxeG1cK</u>). The objective was to make the discourse more dynamic than the presentation of a specialist in front of a camera or a classic interview which remains quite statistical.
- Educational animations are superimposed on certain videos (for example: <u>https://tubedu.org/w/vrMx7PeVGCnxVS9Rdk7B6d</u>). The aim is to facilitate learning by visually structuring the subject.
- **Practical exercises** asking the learner to do research on the website of a journal for example. They allow the learner to put into practice what he/she has learned in the MOOC and to go beyond a simple restitution of knowledge (fig. 2).

A young researcher in **geography**, whose project is partly funded by an ANR (French National Research Agency) grant, wishes to publish the results of her work in the journal *Geo: Geography and environment* (published by Wiley).

You will find below a series of questions related to the situation of this young researcher. To answer them, you will need to collect information on the journals and funding agencies mentioned above. We encourage you to visit the websites of the journals and organizations listed, as well as cOAlition S' "journal checker tool", to check or complete your information. You must answer all the questions of the exercise before validating, if you hesitate you can reset your answers (before validating). Be careful, as you can only try three times.

(4 points possibles)

01. La revue permet-elle la publication d'articles en Open Access "natif", c'est-à-dire en libre accès directement sur le site de l'éditeur et en plaçant l'article sous une licence Creative Commons ou équivalente ?

01. Does the journal allow the publication of articles in "native" Open Access, i.e. immediate and free access directly on the publisher's website, with the article placed under a Creative Commons or equivalent license?

O Oui, gratuitement | Yes, for free

O Oui, à condition de payer des frais de publication (APCs) | Yes, if you pay Article Processing Charges

O Non | No

Figure 2. Example of a practical exercise involving a real-life situation ("Publications" module)

- Active learning with peer review exercise that allows the learner to put himself in the position of a examiner. The goal is to facilitate learning by getting the learner to think for him/herself, to apply what he/she has learned and to exercise a critical eye. We felt that the subject of research evaluation was an appropriate module for this type of exercise. Learners were invited to express their ideas about the research assessment by writing several propositions to transform it. They were then asked to complete a questionnaire to evaluate the proposals made by 3 of their fellow MOOC students. This evaluation was visible to the authors of the proposals to contribute to their final grade. Unfortunately, some students didn't take things seriously and, in order to validate this part, arbitrarily entered a series of characters instead of evaluating their peers correctly. For version 2 of the MOOC, we therefore decided to abandon this exercise.
- A **forum** was added to the MOOC. The discussion group was designed to centralise questions about the content of the MOOC and encourage exchanges between participants. Unfortunately, it mostly consisted of technical questions and bug reports or to know when the attestation will be issued.

3. Methodology

The Museum's and Sorbonne University's libraries staff dedicated to research support were already working together when the project of the Open science MOOC was launched.

The idea of the project driven by the open science policy was born during a meeting between the research support teams from the Museum's and Sorbonne University's libraries. The statement made was that we were both very involved in open science training, particularly towards the young researchers, PhD students, counting on them to spread the word in their teams. We wanted to join forces on this mission and the idea of a MOOC arose.

3.1 The people behind the project

The MOOC was created by a task force of four people: three librarians, two working in Sorbonne University and one in the Museum, and an instructional designer. They had all different work experiences. For example:

- one of the librarians studied cinema at university and had attended several film shoots,
- one had worked in a library based on public participation and where the library management was co-shared by each member of the team,
- one was involved in information literacy trainers' networks,
- the instructional designer had a researcher and teacher past and had developed skills in scientific illustrations as a hobby.

The four different profiles helped to give different angles while creating the MOOC. In addition, 11 colleagues also lent a hand during the MOOC making.

All along the conception of the project, there were progress reports with a steering committee, giving the orientations to be followed, on the proposals of the task force. Among the steering committee were head librarians from the Alliance University institutions, supervisor of PhD schools, Vice President for digital resources.

3.2 Choice of the speakers

Like many MOOCs, ours stands on many videos, so we had to pick speakers and to shoot interviews with them. Therefore, an important question is: how do we chose our speakers?

We identified some of them for being experts in their domain, spotted through our information watch. Heather Piwowar for example was chosen as an international advocate for open science, Cofounder of Our Research, the non-profit behind Unpaywall in particular. In France, Lionel Maurel is well-known for his expertise in open data, Anne Dozieres is at the head of a federation of citizen science initiatives at the Museum and has created a training course in this domain with her colleague Laure Turcati. As far as citizen sciences are concerned, we also used the website which lists all the projects from Alliance Sorbonne University: https://www.science-ensemble.org/en/ Moreover we went back to people who had contacted our libraries' staff for questions regarding open science. We wanted PhD students to be speakers in our MOOC: some of them were picked in our pieces of training while some others were already working in the libraries. We tried to have a diversity of profiles and different fields of work.

3.3 Shootings and content creation

The shootings were made by librarians from both institutions helped by PhD students and all of them learned by themselves how to use all the technical installations. As far as the technique is concerned, two cameras were bought, with tripods, a light with reflectors associated, and a portable digital audio recorder with two microphones. For each shooting, at least three people were present: two managing the technique and one asking the questions. Those were prepared before each shooting and shared with the speaker but some of them came naturally in the course of the interview.

The MOOC creation was disrupted by the COVID pandemic and the shutdown in France. Consequently, it was chosen to shoot as much as possible in real life in our institutions but to mix with recordings of videoconference when our speakers could not join us.

All these shootings gave us 36h30 of video rushes that we needed to edit and put them together, making speakers "answer" to each other on the same topics on open science. More than 150 hours of video editing were necessary to give birth to our video clips.

All the videos were subtitled using the software Subly and YouTube automatic service. Nevertheless, they have their limits and a lot of corrections had to be made. To be widely open the MOOC was translated into English with the help of a service provider.

In addition to videos, the same team that realised the shooting created contents: explanation texts, infographics, and exercises.

All along the process, PhD students were involved, giving us a hand on shooting and contents but also bringing their point of view, their experiment on open access.

3.4 Beta-test

Once the first version was ready, we made a beta-test of the MOOC. Our users were mostly voluntary PhD students from Sorbonne University Alliance and some librarians from the Alliance and other institutions. They all gave us their feedback on the content, on the methodology employed, and on the time needed to complete each part, which was difficult for us to estimate. In addition to these written feedbacks, we conducted a focus group with PhD beta-testers to know their experience with MOOCs, their expectations, and their satisfaction or the flaws they detected. Two issues were tackled: the fact that the part dedicated to publications was way longer than the other parts and that the first two parts, publications and data represented 75% percent of the MOOC. All this led us to reorganise the MOOC syllabus and make more parts with the same overall content. In particular, videos from the publication course changed from the compulsory part to supplementary materials. To give visibility to the time needed for each part, we added an average timing for all of them. Last but not least, we redefined the overall time that would be implemented in the final attestation which goes to 8 hours.

The beta-test helped us calibrate the MOOC and make corrections, including typographic ones. Moreover, it gave us the first feedback which was positive and comforted us in our work. We learnt that graphic design really catches the eye. They found that the exercises were well-adapted and offered practical applications and that the progression of the course allows them to go around all the questions.

3.5 Communication

Our MOOC needed to find its public so communication was the last step before the launching of the project. In summer 2021 we issued a teaser, presenting the project and the content, with a slight touch of humour. The MOOC was to be published in March 2022 so we had a communication campaign beginning at the end of January. Many media were used: posters, pages on the institutions' websites, social networks and professional mailing lists. As the MOOC project was known for several months, the French librarian community was waiting for it. We communicated with librarians by offering a launch webinar presenting the context of creation, content and methodology. We also presented the MOOC at professional events (LIBER conference 2022, French associations ADBS and ADBU).

Graphic design is one of the strengths of the MOOC. As a consequence, we used it extensively in our communication. A series of posters featuring the graphics of the various modules (fig. 3) were produced and sent out to Alliance institutions.





Figure 3. Examples of posters (general poster, publications, science and society, perspectives modules posters)

4. Applying to our work the openness principles

As we were promoting open science, we thought it would be consistent to work as much as possible in openness both in using open content and in sharing all that we produced.

4.1 Reusing open contents

The graphic design of the MOOC, i.e. all the images that create an uniform graphic environment, were made using the creative collage technique. To do so, the pedagogical engineer in charge of this part used only materials under open licences or in the public domain. They were mainly found in institutional digital libraries such as the library of congress or biodiversity heritage library.



Figure 4. Example of graphic design: the Data Life Cycle

Each video begins and ends with a theme music : it's an excerpt from <u>"Mircoobee" by Keinzweite</u>r which is under a free licence.

As far as the infographics were concerned they were created with an open-source storytelling tools offered by the Northwestern University Knight Lab who designed themselves as "a community of designers, developers, students, and educators working on experiments designed to push journalism into new spaces". Two of their softwares helped us make interactive infographics: Storymap and Timeline. For example, the data life was represented with a Storymap in which the learner can navigate between the seven elements of the circle: https://uploads.knightlab.com/storymapis/9f92960a84634edfe7436233b1d848b0/research-datacycle/index.html. This tool was chosen for three reasons: it met our needs to create interactive content, it was open and it was issued by a university.

4.2 Sharing in openness

While creating a MOOC we needed a platform to host it. With its international audience, edX was our first idea. Yet, new conditions were set on edX as we were working and for a free MOOC each page contained an advertisement to pay for the associated certification. To our eyes it was not compatible with our subject, open science. We finally chose the FUN MOOC platform, a French national provider for MOOC, which is funded by many universities and which offers the content freely for learners.

For our MOOC to be reusable we also post all the videos on <u>YouTube</u> and an open platform <u>PeerTube</u> so that anybody can broadcast them in a training session or give a precise link to watch. All the contents were deposited on the European open repository <u>Zenodo</u>. As far as the images are concerned, we dedicated to them a special account on <u>Flickr</u>.

Two licences are applied to these contents: a creative common one, CC BY, which is the most open for creators in France, and the French licence for public data, Etalab.

We would have liked to share our video rushes to let anyone reuse them. Unfortunately, we didn't find which cloud can host it indefinitely, as the files were very large, so they can only be made available by mailing us.

5. Feedbacks - How is the MOOC used?

5. 1. What is the profile of participants?

The MOOC began with a session held from 7 March to 1 April 2022 before being opened without calendar restrictions from July 2022. The evaluation of the MOOC focuses on this first session.

For this first session, we had almost 2845 registrations and 461 participants, which is a normal ratio for a MOOC. Among the participants:

- the success rate is 70%. It is a success when you get at least 50% of the final score.
- the completion rate is 60%. That is to say that 60% of the participants have both obtained a certificate and have completed all the exercises.

The slight difference between these two numbers shows us that difficulty did not prevent the participants from progressing.

FUN MOOC provides information on participants' profiles on the platform registration form. We know that this first session was attended mainly by people aged over 35, who are not students, doctoral students or young researchers (fig. 4). Moreover, people came mostly from France and a significant number from Africa (fig. 5).

Figure 4. Attendees by date of birth

Born in 1987 or later	1126
Born before 1987	1226
Born before 1963	140
Not Available	488

Figure 5. Attendees by geographical origin

France	2054
Île-de-France (Paris' region)	685
Outre-Mer (Overseas regions)	26
Not Available	66
African countries	437
Other countries	162
Not Available	187

FUN MOOC also provides additional information. The platform asks participants to complete forms at the start of the MOOC to gather information about their profile (country, estimated level of knowledge of the MOOC subject, etc.) and at the end of the MOOC to gather information about their satisfaction. The forms take a relatively long time to complete and are not compulsory. We received 176 responses. We know that people have mostly a Master degree level and consider themselves to be at a beginner or intermediate level in open science (fig.6 and fig.7).

Figure 6. Attendees by level of training

PhD	Master	Licence	DEUG / BTS / DUT/Bac
51	79	16	10

Figure 7. Attendees by previous level of knowledge on the

Expert	2
Advanced	17
Intermediate	74
Beginner	60
Not Available	23

The form proposed by FUN MOOC could be adapted by adding questions. In order to find out more about the number of participants from the Sorbonne University Alliance, we added a question about the institution from which they came: of the 176 responses to the optional questionnaire, 33 stated that they belonged to the Sorbonne University Alliance.

5.2. How is it used within the Sorbonne University Alliance?

As the FUN MOOC forms did not provide sufficiently representative information (176 responses out of 2845 registered) on our target audience, the Sorbonne University Library launched an internal questionnaire for its PhD student.

Of the 89 respondents, 26 said they had registered for the MOOC, 19 of whom had completed all the exercises. Two-thirds are enrolled in the Faculty of Science and Technology. Although it was specified when the survey was distributed that it was also intended for people who had not taken the MOOC, the response rate was insufficient to draw any precise conclusions about the participation of Sorbonne University doctoral students in the MOOC.

Our next step is to integrate the MOOC into Sorbonne University's PhD students management platform. This platform, Adum, is used to manage the progress of PhD students, from registration to the publication of their thesis. It also lists training courses, allows PhD students to include a

certificate of attendance in their training portfolio (PhD students must attend a certain number of hours of training before they can defend their thesis) and provides follow-up statistics. Adding the MOOC to Adum's Sorbonne University will make it easier to track PhD students who have taken the MOOC.

5.3. How can the MOOC be reused?

Several universities are using a local platform of Adum and have already integrated the MOOC. This is the case at the University of Franche-Comté and at the University of Pau and Pays de l'Adour. It is one of the open science courses offered to doctoral students. The University of Franche-Comté integrated the MOOC into ADUM in January 2023. As of today, 136 people have registered, 19 of whom have already completed the MOOC. This figure is set to rise as one of the doctoral schools has made it compulsory to take a course on open science, and the MOOC is one of the options available on this theme. The second university added the MOOC to the range of courses listed on its Adum platform in January 2023. Six months later, out of their 500 PhD students, 30 had registered and 13 had added their certification. The MOOC is a way for them to provide an in-depth presentation of open science that would otherwise require a major investment of several hours by trainers. In addition, the library trainer in charge of PhD students has reused videos from the MOOC to enhance her training courses: the words of young researchers are a way for her to introduce the subject. The interviews with PhD students have an "ice-breaker" effect that helps to launch the debate and fuel the discussions. She uses the questions raised by the video as a basis for the rest of the course. She concludes the session with a final video featuring directors of institutions (e.g. the president of MNHN) as a way of handing over confirmed researchers to young researchers. The trainer stressed that the subtitles were also an essential element that enabled her to use the training in front of a non-French-speaking audience.

Other universities have also taken up the MOOC. It is promoted at doctoral schools open days and the certificate of completion of FUN MOOC gives rise to training credits (a certain number of hours of which are required to defend the thesis). This is the case, for example, at the Bretagne Sud University. The MOOC is not always used for PhD training sessions: for instance, the University of Artois has used videos in courses aimed at third-year university students to present library services to researchers, with a strong open science focus. This has provided a simple presentation of the scientific publishing professions and what research data is. As part of a hybrid course for Masters students, the Library at the University of Cergy (Paris' region) has reused the MOOC on their Moodle training platform: videos have been integrated and used to create a debate, while the quizzes have been integrated directly into Moodle to enable students to be better assessed.

6. What next?

The MOOC is therefore the result of three years' work and has involved four people, between 50% and 10% of their working time. In addition, 11 colleagues also lent a hand during filming, writing texts, implementing subtitles, etc. It's true that specific skills were present in the team at the outset

(e.g. experience of filming), but they also had to learn on the job and develop their skills. This type of project is therefore accessible as long as you can provide the human resources. The PIA funding also enabled the project to be carried out comfortably (purchase of equipment).

The MOOC can be reused by anyone, thanks to its open licence and the deposits made. It will be expanded on the points that were not prioritised in the first version and updated as the open science landscape evolves (e.g.: open software).

At present, we would like to be able to better quantify the uptake of the MOOC and to make it more widely adopted within our institutions. How can we do that? The first area for improvement will be to integrate the MOOC into Adum, the PhD students monitoring platform, to give it greater visibility and institutional monitoring of registrations. The second area for improvement is to take advantage of recent changes in the legislative framework for doctoral programmes and produce a version 2 of the MOOC. In France, a decree published in August 2022 amended the text governing training and the procedures for awarding the doctoral degree. Training in research ethics and scientific integrity is now mandatory for doctoral schools. The decree also encourages PhD students to be aware of the challenges of open science. To meet this new obligation, the MOOC has been updated in 2023: the section on scientific integrity has been expanded with additional videos and one infographic, which has also necessitated a revision of the compulsory course to obtain a certificate. The module originally entitled "Assessment" has been renamed "Assessment, trust and integrity". The new section now consists of three videos: 1) Scientific integrity: what are we talking about? 2) The systemic challenges of scientific integrity 3) Open science and scientific integrity: are open science practises an accelerator for improving the reliability of research? These videos are supplemented by a text describing the missions of the Scientific Integrity Advisors, which every French research establishment must now have, and of the Ethics Advisors. The doctoral oath that concludes the thesis defence is also mentioned. Finally, an infographic on breaches of scientific integrity complements and illustrates the subject of the sequence.

At the same time as the MOOC was being updated, a working group was set up, made up of colleagues from the Sorbonne University library and the doctoral college, the scientific integrity referent and the director of the research ethics committee. Its task was to define a common set of skills for Sorbonne University PhD students in the areas of scientific integrity, research ethics and open science. It has also aligned the training offered by the institution with these skills. The MOOC is therefore a response offered to doctoral schools to validate the skills in this reference framework for their PhD students and to meet the new legal requirements in France. Defining a common set of skills for Sorbonne University PhD students, have brought together various actors from the university involved in the training of doctoral students, and made it possible to better support the follow-up of the MOOC. At the start of the academic year 2023-2024, the doctoral college has communicated on the fact that the MOOC must be taken during the first year of the PhD students and has included in the form of the thesis monitoring committee, which meets each year before the re-registration of the PhD student, a box to tick on the MOOC achievement.

The new version of the MOOC (version 2) was published at the start of the 2023-2024 academic year. The team will then begin to work on the next evolution (version 3), which will involve an

update of institutional policies on open science (e.g. requirements of funders, evaluation of research with the development of COARA, etc.).

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