Opening the Appetite: Data Skills for Global Development

Student Training Programme

INSTRUCTOR HANDBOOK

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Acknowledgements

Disclaimer

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1. Introduction

Welcome to the Instructor Handbook for the *Opening the Appetite: Data Skills for Global Development* Training Programme. The programme has been developed as part of the *Development Counts: Data Skills for International Development Careers* project - which is all about supporting the next generation of global development professionals to harness the power of data for global and social good. As the quantity and forms of data available globally continues to grow exponentially, development is amongst the areas seeking to harness its potential - as exemplified by the United Nations calling for a 'Data Revolution' in development[1]. This training programme has been designed for students on undergraduate social science related programmes with an interest in global development – a group who are often less confident about learning to work with data and perceive these skills are less relevant to their ambitions. This programme aims to tackle the resultant graduate skills deficit by adopting an accessible approach and closely aligning to the reality of working in global development.

This instructor handbook has been produced to enable social science lecturers to adopt all or parts of the training programme to support their students to enhance their data skills applied to global development. The programme is 'ready to go', and this instructor handbook has been designed for use both by lecturers with a background in quantitative methods and by those who are less familiar with teaching in this area.

The remaining sections of this introduction outline the design of the training programme, outcomes from the pilot run of the programme, and the structure of this instructor handbook.

1.1 Training Programme Design

The design of the training programme was informed by in-depth interviews with development professionals in Malta, Spain, Turkey and the UK about data skills requirements in the sector. The interviews highlighted that technical data skills alone are not enough: to successfully use data for good in global development graduates must be able to critically evaluate data and its quality, navigate the politics of data, and collaborate with and influence a range of stakeholders. A full analysis of the interviews has been published in Open Access format: Bennett, R., Alberti, G., Çibik, A., Eremenko, T., Formosa, S., Formosa-Pace, J., Jiménez-Buedo, M., Lynch, K., Salazar, L. and Ubeda, P., (2022) Bringing about the data revolution in development: What data skills do aspiring development professionals need?. *Journal of International Development*. **doi.org/10.1002/jid.3642**

Based on insights from the interviews, the training programme was designed to co-develop 'hard' skills in data handling with 'soft' skills such as international and intercultural collaboration and digital communication. One of the interviewees

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[1] United Nations. 2014. *A World That Counts* Available: https://www.undatarevolution.org/wp content/uploads/2014/11/A-World-That-Counts.pdf

encouraged the team to 'open the appetite' of future professionals to the possibilities of data for global development - mastering some basics and developing confidence to deepen and expand their skills in the future, as what's possible to achieve with data evolves. In a rapidly changing data landscape and against a backdrop of lack of confidence amongst students in this area, the project team thought this was a great metaphor for what the programme should try to achieve. It is not possible to create data experts with one programme for non-specialist students nor teach students all the data techniques that may be useful across the course of their careers (some of which may not yet exist). However, it is possible to provide foundational training and seek to build confidence and enthusiasm around working with data covering a range of different types of skills. Therefore, this phrase became the theme for the programme - with each section relating to a stage in preparing a meal (see Figure 1). The theme also hopefully makes the material more entertaining and accessible for students who may be apprehensive about learning in this area.

1) **Opening the Appetite**: What's the potential of data skills for global development?

2) **Assembling the Ingredients:** How can we source data?

3) **Preparing the Meal**: How can we analyse and visualise our data?

4) **Digesting the Meal**: How to communicate our findings and ensure they are used for high quality decision making?

5) **Still Hungry:** Where can we find resources to further develop our data skills?

Figure 1 Programme Sections based on 'Opening the Appetite' theme

There are three parts to the training programme:

- **PART 1:** Online self-study course organised into 5 modules to introduce key material, hosted on the UNED Abierta learning platform.

- **PART 2:** Plans for online live tutor-led activities to extend and consolidate learning from self-study modules and support team building.

- **PART 3:** Activities to support students to complete remote team projects, applying their learning to real world scenarios whilst developing cross-cultural teamwork and communication skills.

The training programme is designed for groups of students from different institutions and countries to complete together online over a one-week period. However, it is also possible to mix and match the parts of the learning resources most suitable for your students. All the resources (including this handbook) are available in Spanish and Turkish as well as English.

Table 1 outlines the timetable when the resources are used for a one-week online training programme. Across the first four days of the week, students complete 1-

2 self-study modules in the UNED Abierta online course each day (**PART 1**), then come together for a live online tutorial combining tutor-led activities (**PART 2**) with activities to develop their team projects (**PART 3**). The final day of the programme is devoted to working on team project outputs and delivering online presentations based on the projects.

Table 1 Timetable for one week training programme incorporating all parts of the programme

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Opening the Appetite	**Assembling the Ingredients**	**Preparing the Meal**	**Digesting the Meal**	**Team Project Conclusion**
UNED ABIERTA MODULE 0: Introduction **UNED ABIERTA MODULE 1:** Opening the Appetite	**UNED ABIERTA MODULE 2:** Assembling the Ingredients	**UNED ABIERTA MODULE 3:** Preparing the Meal	**UNED ABIERTA MODULE 4:** Digesting the Meal **UNED ABIERTA MODULE 5:** Still Hungry?	**Live Online Tutorial:** Kick off meeting & questions and answers *Independent student-led work creating presentation*
Live Online Tutorial **Tutor Led Activity:** Opening the Appetite **Team Project Activity:** Introduction to Projects	**Live Online Tutorial** **Tutor Led Activity:** Assembling the ingredients **Team Project Activity:** Team Formation & Existing Data Scoping Planning	**Live Online Tutorial** **Tutor Led Activity:** Preparing the meal **Team Project Activity:** Visualizing Existing Data & Information	**Live Online Tutorial** **Tutor Led Activity:** Digesting the Meal **Team Project Activity:** Developing Data Collation and/or Creation Strategy	**Live Online Project Presentations**

The UNED Abierta modules should take students approximately 3 hours per day to complete. The Live Online Tutorials across days 1-4 should take approximately 2 hours per day. The Live tutorials should be organised on an online video calling software such as Microsoft Teams or Zoom. There is a Find a Collaborator form on the Development Counts project website if you are interested in identifying universities in other countries to collaborate on programme parts 2 and 3 in order to run a joint training programme.

1.2 Pilot Programme

The first iteration of the learning resources was piloted with students from partner universities 13-18 September 2021 – see Figure 2 for a screenshot from one of the live online tutorials.
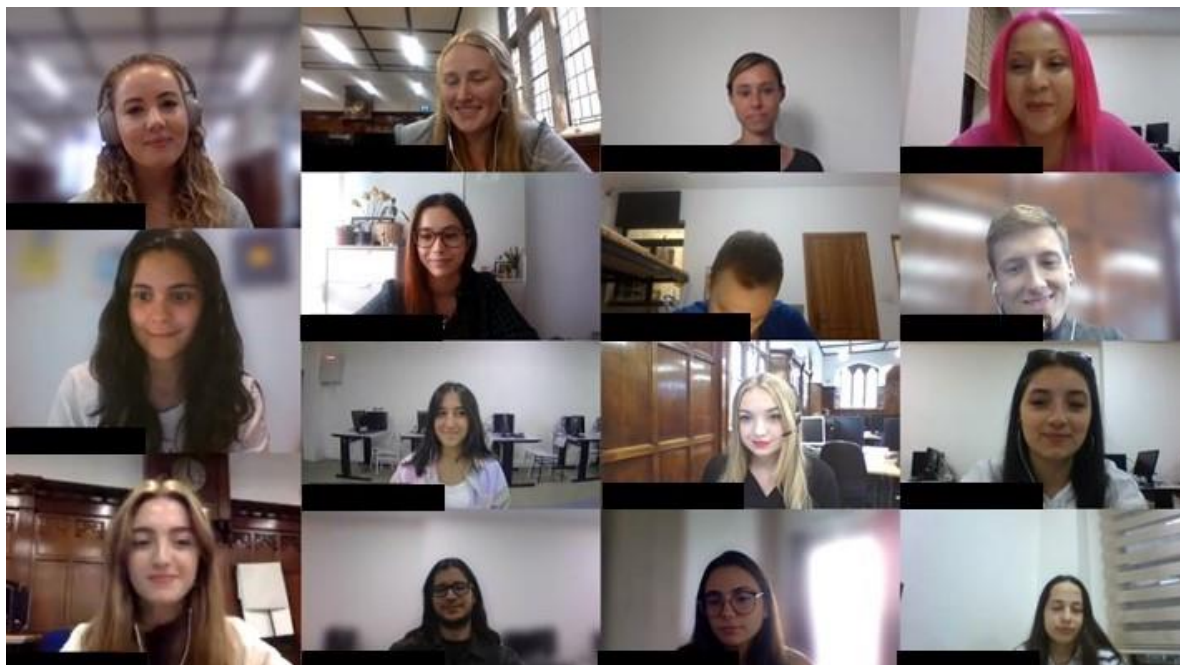
Figure 2 Undergraduate students from Gazi Üniversitesi, the University of Gloucestershire, L-Università ta' Malta and Universidad Nacional de Educación a Distancia taking part in the Development Counts remote pilot programme in September 2021.

In order to assess learning an attitudes survey on statistics was run twice; pre and post course delivery. Areas in this programme facilitated the reduction of anxiety for statistics course include i) interpreting the meaning of a table in a journal article; ii) when doing homework for a statistics course; iii) making an objective decision about empirical data; iv) entering data in a software program; v) asking for help to a professor to use a software and to interpret results; vi) trying to understand the statistical analyses presented in an abstract; vii) logging to take a statistics test; viii) enrolling in a statistical course; ix) going over a final examination in statistics post grading; x) studying for an examination as part of a statistics course xi) asking a fellow student for help when interpreting the results of an analysis; xii) deciding on which analysis is appropriate and xiii) finding that another student got a different answer to the same statistical query. In contrast, a slight increase in feelings of anxiety post course was noted for taking the final examination in a statistics course.

In terms of statements related to statistics, students who tend to be more subjective by nature solidified their opinion that objectivity in statistics was inappropriate for them. However, their fear of mathematics was reduced significantly after the course to the extent of changing their position on the worthiness of the use of statistics in their everyday life. Overall, post course there

was a positive attitude towards the enjoyment of statistics. This indicates that the course did impact positively the students' position towards statistics and the way statistics is delivered.

The course delivery through the hands-on use of statistical software yielded a positive impact on the students' preference to make use of statistical software. The students' attitudes towards the use of computers and the internet changed slightly post course.

In view of course satisfaction, students generally found the videos and powerpoints used in the course very useful and delivery was also clear. Also, students noted with satisfaction the utility of the pre-meeting (each university held an informal introductory meeting just with their own students before the start of the programme) and there was positive feedback on the opportunity of working with international students highlighting intercultural awareness and group-work. Teamwork was looked upon positively even though 1/3 of the participants mentioned communication difficulties related to language barriers. This suggests that whilst international teamwork presents challenges, students found the experience beneficial.

> *"The course was beyond perfect. I really enjoyed working on R although it was challenging. The lessons were simple and fun."* Ayana Onurlu, pilot programme participant & undergraduate student at Gazi Üniversitesi, Turkey

> *"It has been a very interesting experience! I would like to highlight the international aspect of the course. It has been very satisfying to work with people from different countries. In addition, we have been able to deepen a relevant project with current and real problems. A very dynamic and well-organised training."* Elena Dacal Picazo, pilot programme participant & undergraduate student at Universidad Nacional de Educación a Distancia, Spain

1.3 Structure of the Instructor Handbook

The remaining chapters of this instructor handbook explain how to use the learning resources associated with the training programme.

Section 2 explains the online self-study course on the UNED Abierta learning platform including the style of learning materials and practical information on how to enrol on the course and gain accreditation for completion.

Section 3-6 cover each tutor led activity for the live online tutorials in turn: 'Opening the Appetite', 'Assembling the Ingredients', 'Preparing the Meal' and 'Digesting the Meal'. They explain the intended learning outcomes of the relevant activities and how to run the activities.

Section 7 explains how to facilitate the team projects, including the supporting activities to be included in the live online tutorials.

Section 8 provides links to templates of documents used to run the programme. It also provides details of how to stay up to date with the project.

2. UNED Abierta Self-Study Course

2.1 Registration for the Course

The self-study course **Data Skills for Global Development Training Programme** is hosted on the UNED Abierta platform (see Figure 3), which allows access to open educational resources created at UNED: multimedia repositories, as well as free Massive Open Online Courses (MOOCs).
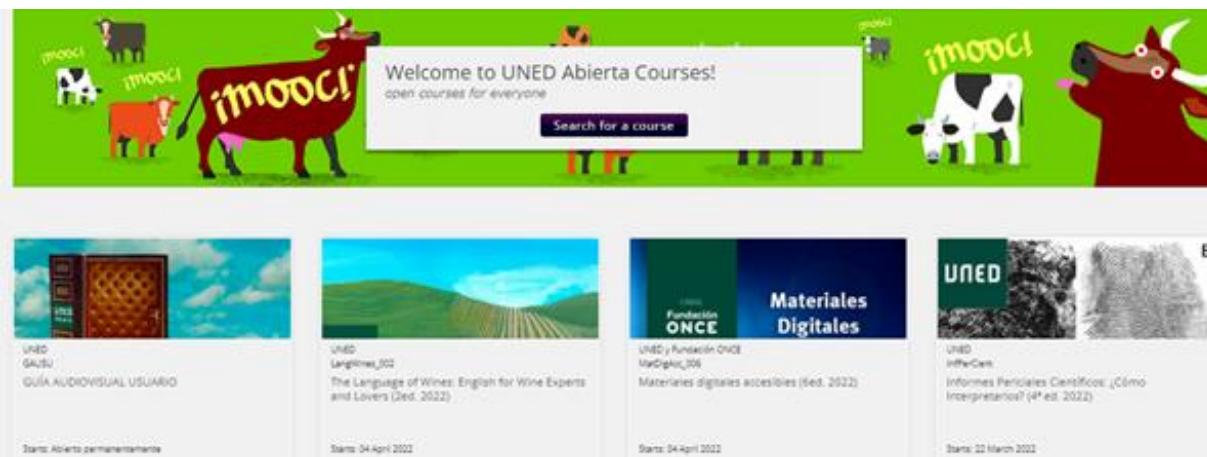
Figure 3 Screenshot of UNED Abierta Platform

To access the MOOCs, learners need to register on the UNED Abierta platform:

1. Create an account on UNED Abierta: https://iedra.uned.es/. Each user needs to provide a **valid email**, their **complete name** (which will appear on the certification of the completed course), and **username** (the latter cannot be changed).

2. Once learners have created an account, they can register for a specific course. The homepage displays courses which are currently open for registration. There is also a search function that allows users to search on functions based on the language and starting date. To choose a course, you need to click on **"Learn more" (circled red below)**

3. Once the user clicks on the course a new tab will open with additional information on the MOOC- to enrol the user should click on "**enrol on this course"** (circled in red below).

In case of any difficulties while registering, please visit the FAQ page.

2.2 Navigation in the Course

Once learners are enrolled in course they should click on "**VIEW COURSE**". This provides access to the contents of the course (see Figure 4), as well as get an overview of the program, participate in discussion forum, an option to monitor progress and contact the instructors.
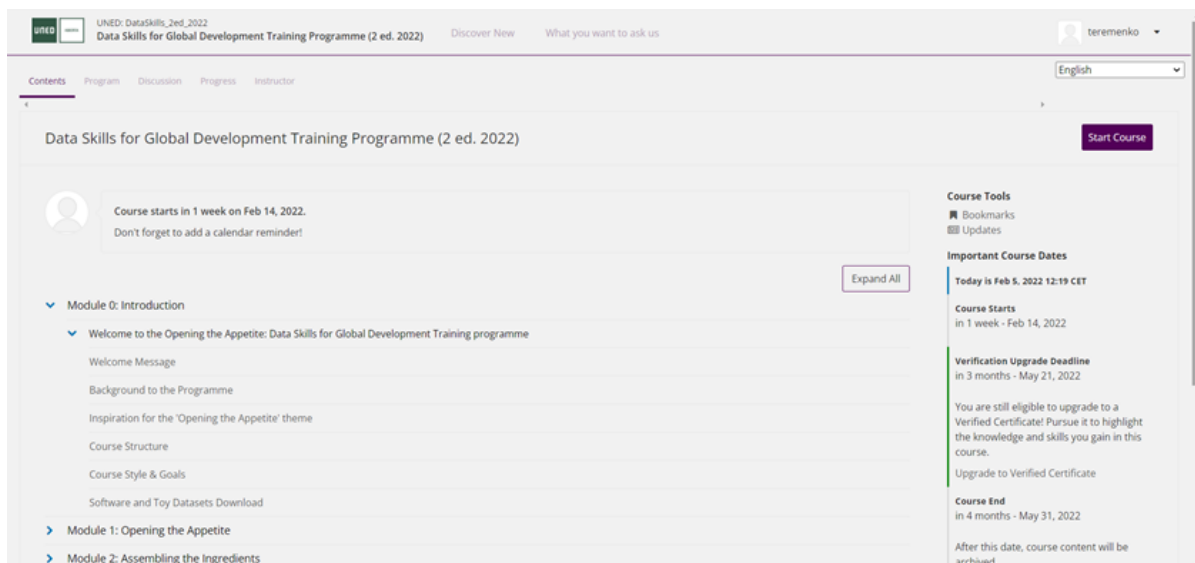
Figure 4 Screenshot of Contents Page for UNED Abierta Self-Study Course

If you have ever done other MOOC courses the interface and navigation may be familiar to you as it uses the same technology as other organizations (OpenEdx).

In the **introductory module** (MODULE 0) there is an explanation of the rationale for this course, as well as the course structure. Each of the following modules is centred around a series of questions laid out in Table 2.

Table 2 UNED Abierta self-study course module content

MODULE 1: Opening the Appetite	How are data & data skills useful for global development? What's the reality of using data in global development? What are the career possibilities of using data in global development? What is a data strategy?
MODULE 2: Assembling the Ingredients	What is data and what are the most frequent types of data social researchers use? How can we obtain data? How to assess and ensure data quality? How can we be ethical in our use of data?
MODULE 3: Preparing the Meal	What is data visualisation and why it is important? How can we describe and analyse tabular data? How can we describe and analyse continuous data: graphical and numerical approaches?
Module 4: Digesting the Meal	What can data tell us about the real world (…and what it cannot tell us)? How can we communicate data messages to non-experts & support the use of data for decision-making?
Module 5: Still Hungry?	Where to go to further develop data skills & keep up to date? What opportunities are there to put new skills to good use?

Each module follows a similar structure:

- An introduction including the objectives of this module
- Several short and concise blocks of content - "Learning pills" – around a specific subject
- Self-review quiz: at the end of each module. These will contribute to the final evaluation.

There is a variety of learning material in in each module:

- Short videos in which instructors cover a specific topic
- Text boxes that define main concepts, but also provide links to additional material (documents, websites, etc.) with details on subjects covered in the module
- Exercises in which learners will be invited to reflect on the material presented in the module

At the end of the course, learners are asked to evaluate the MOOC with a short survey.

2.3 Obtaining Official Credentials

When learners enrol for a course, they will have the option of auditing the course or paying for accreditation. We recommend enrolling as an audit and paying for accreditation once the course has been passed. It is possible to change the level of accreditation on the homepage of the course (see Figure 5).
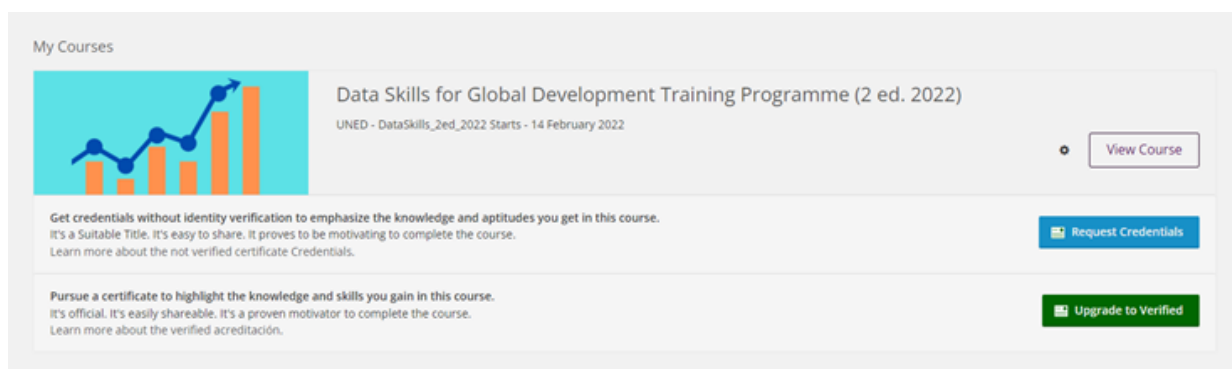

Figure 5 Homepage for UNED Abierta Self-Study Course showing credential options

As an auditor, learners can access the course for free and have complete access to all the course material, activities, tests, and forums. Learners will get a badge if they pass the minimum grade determined in each course. For this, they will need to go the section "Progress" and "Generate accreditation" (the option only appears if the learner has passed the minimum grade).

Badges are awarded automatically as the self-assessment process progresses, they are an informal and free form of accreditation and therefore do not academic recognition or effect. They serve to accredit the competences and skills acquired in the module, define the learner's professional profile, as well as the achievement of certain levels of practice through mutual recognition among peers and participation in the DISCUSSIONS and review of course content. They attest to having achieved a task, developed a competence or actively participated in the course. Badges can be shared on Badgr and other social networks such as LinkedIn:

https://badgr.io/signup

https://badgr.io

https://badgr.com/

However, if a learner wants to provide proof for an employer, school, or other institution that they have successfully completed an online course, they may want to obtain a verified certificate. There are 2 levels of accreditation:

- Credential (*Credencial*): The credential includes the applicant's name and surname, the title of the course satisfactorily completed, the course dates, the date the credential was issued by the user and the number of hours of the course. It is obtained completely on-line. Its cost will vary, depending

on each course, according to the amounts and procedures approved by the Social Council of the UNED (15 euros as of 01/02/2022).

- Verified credential (*Certificado*): This is the highest level of official accreditation issued by the UNED in IEDRA and has ECTS credit recognition (currently 1 ECTS for the Data Skills for Global Development Training Programme). The certificate contains the applicant's name, surname and ID number, the title of the course successfully completed, the date of issue of the credential, the number of hours of the course, the number of ETCS credits recognised and, on the reverse side, the course syllabus (40 euros as of 01/02/2022). It includes a rector-signed certificate with the institution's logo.

To apply for accreditation following a MOOC course learners should:

- Check in their profile that their first and last names are correct. If they are not, they should change them in their Dashboard.

- Check on the Progress page of the course that they have a sufficient pass mark (in "Pass" the percentage of passing is indicated). If a learner pays for the accreditation and does not reach the minimum pass mark, the money will not be refunded.

3: 'Opening the Appetite' Tutor-Led Activity

The intended learning outcomes for the 'Opening the Appetite' Tutor-Led Activity are:

- ✓ To become familiar with other team members
- ✓ To appreciate the value of a team-based approach for achieving tasks more effectively and efficiently
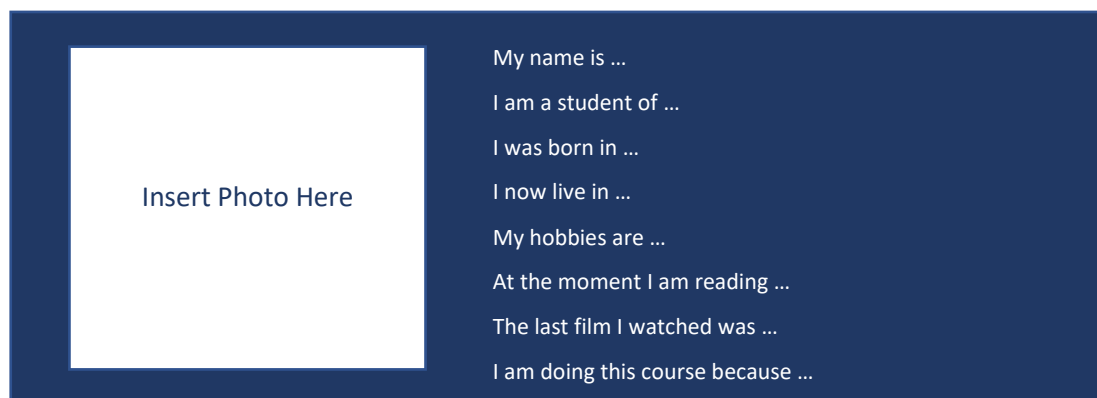
3.1 Opening Activity

The first task in this live online tutorial is designed to facilitate introductions between students and staff participating in the programme. Each programme participant posts some information about themselves on a shared online board and uses this as a prompt for giving a verbal introduction to themselves at the start of the tutorial. Students AND staff should post a profile to help reduce barriers between the groups and support students to feel comfortable asking staff for help later on.

The team recommends using Padlet.com to host the activity. Here is a step-by-step guide to setting up the activity:

1. Create a Padlet.com account and login into your account
2. Click '**create a Padlet**' and then select '**Wall**'
3. Click on the '**Modify**'(⚙) button to change the title and colour scheme to suit
4. Click on the **'Share'** button and ensure the privacy settings are set to **'secret'** and **'visitors can edit'**
5. Click **'copy link to clipboard'** to get a shareable link

Follow these steps to deliver the activity:

1. Circulate the shareable link to the Padlet to all participants prior to the first day of the course
2. Ask all participants to post a profile of themselves using the template show in Figure 6 before the start of the course
3. At the start of the tutorial share screen to show the Padlet and invite each participant to introduce themselves making reference to their profile

Insert Photo Here	My name is … I am a student of … I was born in … I now live in … My hobbies are … At the moment I am reading … The last film I watched was … I am doing this course because …

Figure 6 Template for Padlet Profile

3.2 Collaborative Mapping Activity

The main task in this tutorial is designed to encourage a team-based approach by illustrating that a task be achieved more effectively and efficiently as a team. The task is based on students collectively populating a blank map of Africa with country names.

The team recommends using Mural.Co to host the activity. Here is a step-by-step guide to setting up the activity:

1. Create a Mural.Co account and use THIS TEMPLATE on Mural.
2. Ensure the Mural settings allow access for anyone with the visitor link, giving them rights to access and edit the mural (you can adjust this under visitor settings).
3. Create a shareable link for the Mural by using the 'share' button at the top of the screen. Copy the link into the chat of the tutorial video call and ask students to use it to join the Mural. Mural will assign them a random username and their icon will appear at the bottom of the screen.

Follow these steps to deliver the activity:

1. Show the students how to create a sticky note in the Name Bank box on the Mural. You access the sticky menu by clicking on this icon on the sidebar and selecting the size, shape and colour you want. Drag it onto the Name Bank. Double-click it and a text cursor appear to type in the country name. You can re-size it, but it is recommended that you keep the Name Bank stickies uniform size. They can be re-sized at the next stage.

2. Set the Timer to 5 minutes. You can access it via the stopwatch icon at the top of the screen

3. Give the students 5 minutes to add country names to the list in the Name Bank. After 5 minutes the stopwatch alarm will sound. Ask everyone to stop and encourage them to review and edit the list to remove duplicates, check spelling and see if any on the list trigger memories of any additional countries. This can take about 5-10 minutes.

4. You can prompt them by telling them there are 55 members of the African Union. You may want to give them some clues, by describing the countries. For example, some are Francophone, some Anglophone, some are Lusophone, and some are Arabic. Some are great footballing nations, some have many internationally competitive long-distance runners, some are good at rugby, some are popular holiday destinations.

5. When they have completed this phase of the activity, demonstrate how to drag stickies onto the map to the right of the Name Bank and re-size them.

6. Set the timer to 10 minutes.

7. Give the students 10 minutes to drag the stickies to their location on the map. They may want to re-size them to ensure they fit and make room for other countries.

8. Compare the finished map with a map from an authoritative source such as the CIA political map of Africa

The map should look something like Figure 7! – Hopefully students will have enjoyed the exercise and taken on board the point about the power of teamwork.

Figure 7 Result of Online Collaborative Mapping Activity from pilot programme

4: 'Assembling the Ingredients' Tutor-Led Activity

The intended learning outcomes for the 'Assembling the Ingredients' Tutor-Led Activity are:

✓ To be able to look up for a specific data from an appropriate source.

✓ To be able to check out the reliability of the data source and obtain metadata.

✓ To be able to interpret and present obtained data results.

✓ To be able argue about the competence of original aim of the collected data and their purpose of gathering the data.

4.1 Opening Activity

To start this online live tutorial, the tutor might begin by talking with students about the learning goals and their opinions on the day's modules in the UNED Abierta and respond to any queries they may have. In addition, a warm-up activity for the main task would be ask students to individually look up a particular statistic from an official body. For example 'What is the average household size in Turkey?' (Answer available at Turkstat).

4.2 Data Scavenge Activity

The main task in this tutorial is an online 'data scavenge' where students are divided into teams to try and identify development indicators for two contrasting countries. Teams should be given their own breakout room and a set amount of time – 45 minutes - to find as much of the required data as possible and reflect on its quality. Teams are then asked to present their findings to the rest of the group and the team with the highest quality and most complete data is deemed to be the winner. It can be useful to use a Padlet for teams to be able to post their findings on a common board (see section 3.1 for instructions on creating a Padlet).

Here is how the activity can be introduced to students:

There are hundreds of economic, political and social indicators of development, ranging from 'Hard' economic indicators such as Gross National Income (and all its variations), to various poverty and economic inequality indicators, to the Sustainable Development Goals, which focus much more on social indicators of development such as education and health, all the way down to much more subjective development indicators such as happiness. The most commonly used indicators collected by some of the major development institutions are:

- GDP per capita (PPP) (in US Dollars)
- The unemployment rates.
- Military expenditure (% of GDP)
- Mortality Rate for male adult (consider per 1,000 male adults)
- Life expectancy at birth, total (years)

Your task is to find these data for African Country Chad and European Country Switzerland for only year 2018. Prepare different tables for both countries and post them on the Padlet [provide link in online meeting chat]. Your table might look like (not necessarily, encourage students to design it in their own style):

Country	GDP	The unemployment rate	Military expenditure	Mortality Rate	Life expectancy
Chad	…	…	…	…	…
Switzerland	…	…	…	…	…

As you look up for data, also record some of the metadata and reflect on data quality/bias. E.g., you should define if it is a reliable source, what the indicator tells us and whether it is biased to particular groups. Is the main aim of data collection directly coherent with your purpose? Please discuss these issues shortly.

Consider the article mentioned in the MOOC training of today under the topic "Starting the data search". Answer the following questions

- What is the data used by the authors to make this affirmation?
- Which institution produced the data?
- Are there other years for which there exists similar data?
- Does the initial data source contain information on other areas where Indians encounter difficulties in accessing their rights?

At the end of the activity, your Padlet should look something like Figure 8 – Hopefully student teams will have risen to the challenge and identified the data as well as showing an appreciation of its quality and credentials.

Figure 8 Results of the Online Data Scavenge activity in the pilot programme

5. 'Preparing the Meal' Tutor-Led Activity

The intended learning outcomes for the 'Preparing the Meal' Tutor-Led Activity are:

✓ Reinforce understanding of what data visualisation is and why it is important
✓ Practice visualising data

5.1 Opening Activity

To start this online live tutorial, recap key content from the UNED Abierta 'Preparing the Meal' module. In this respect, the instructor may want to make reference to the content of the section **What is data visualisation and why it is important?** which provides basic information about the relevance of data visualisation in general. Also, the instructor might want to make reference to the short video in the sub-section **Purpose(s) of data visualisation** to illustrate the following principles for an effective data visualisation:

- Showing the data effectively and concisely
- Inducing the reader to think about the data being presented
- Avoiding distorting the data
- Presenting many numbers with minimum ink
- Making large data sets coherent
- Encouraging the reader to compare different pieces of data, and
- Revealing otherwise hidden features of the data.

The instructor should bear in mind that, via the online documentation, students have been exposed to two main overarching themes centred on tabular (**How can we describe and analyse tabular data?**) and continuous data (**How can we describe and analyse continuous data: graphical and numerical approaches**). The first section provided students with examples of the use of visual aids to show frequency tables and cross-tabulations graphically. The second section provided students with ideas on how to make continuous data speak. This huge topic was approached from specific perspectives: understanding and graphic frequency distributions, gauging data central tendency, flagging outlying values, visually comparing groups by means of boxplots, exploring relationship between pairs of variables via scatterplots.

Before running the main activity, the instructor should check whether the students have MS Excel and R installed on their computers. Chances are that they do not have R readily available. In this case, students may download and install **R (click here)** followed by **RStudio (click here).**

The **Excel datasets** to be used during the tutorial can be found in this Google Drive folder (CLICK HERE). The same folder also contains plain text files that can be opened in RStudio and that store lines of code to be used to fed data into R

and to produce the same plots exemplified in the online material. The instructor might want to bring to the students' attention that the lines of code used in the online material can be actually copied and pasted into RStudio. This is made clear in the sub-section **Dotplots in R** where the following is stated: *before proceeding, it's worth noting that throughout this section (as well as other ones in this module), you can copy and paste the chunks of code on the R console to either create datasets or produce visualisations, or both*.

5.2 Practicing Data Visualisation Activity

Running this task entails building on the theory covered in the above-mentioned sections to create simple, but effective, data visualisations in **MS Excel** and **R**. For this purpose, students may use either the data files stored in the above-mentioned Google Drive folder, or the reproducible example that can be created by copying/pasting the chunks of code available on the online documentation. Given that the tutorial features practical components and, considering that those also entail the use of software (namely R) with which students might not be familiar, the instructor might want to consider launching a poll (using Google Form for instance; see Figure 9 for the result of this from the pilot programme). The poll might ask the students which data visualisation procedure they would like to be covered during the tutorial. According to the allocated time, the instructor might want to opt for (say) the three most voted procedures.

The online material of Module 3 covers a number of data visualisation aspects. On which of the following topics would you like to have some practical experience during this tutorial?

15 risposte
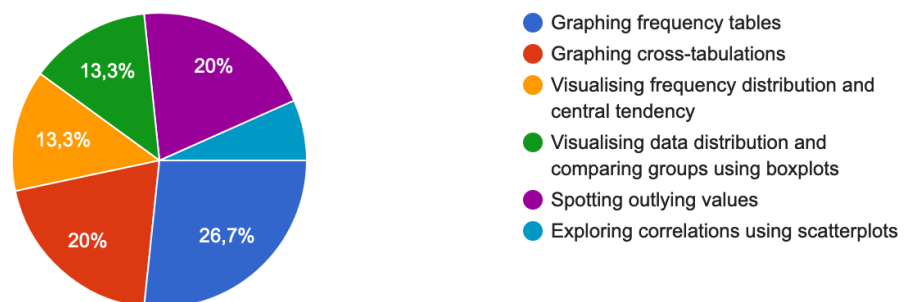

Figure 9 Results of poll on practical activities during the pilot programme

By the end of the tutorial, students should have produced their own versions of visualisations like those in Figure 10. Hopefully students' confidence will have grown in their ability to create high quality visualizations from raw data.
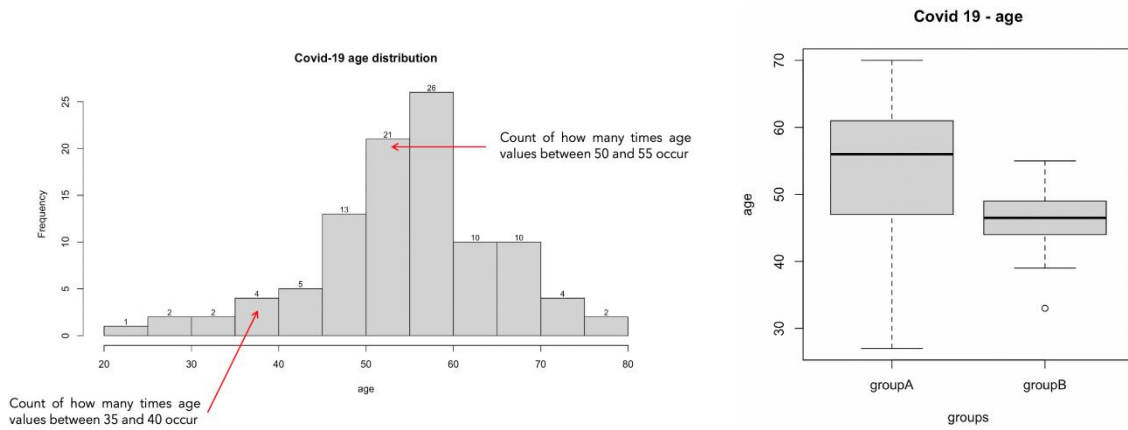

Figure 10 Results from data visualisation activity in pilot programme

6. 'Digesting the Meal' Tutor-Led Activity

The intended learning outcomes for the 'Digesting the Meal' Tutor-Led Activity are:

✓ To understand the data given by a map or graphics
✓ To be able to discuss the replicability and clarity of a given graphics
✓ To define the feasibility and involved audiences when considering the implications of given data

6.1 Opening Activity

Start the online live tutorial with a group discussion around one of the examples from the 'Digesting the Meal' UNED Abierta self-study course module.

6.2 Real World Data Scenario Activity

The main activity for this tutorial focuses on exploring the implications of a 'real world' data story. Divide students into teams of 3-5 and set up break out rooms in the online call to allow them to have team level discussions. Ask each team to review a current development data related issue. In our pilot programme we used this resource [CLICK HERE] produced by the New York Times on water stress.

Firstly, teams were asked to consider these questions to critique the evidence:

1. What were the original data sources used for the graph/map were? Are they clearly stated? Are they rigorous/trustworthy? Are the analyses (graph/map) replicable? Are there alternative (better) sources?
2. What urban areas are included/excluded in the sample and what is the inclusion criterion? Is this well justified or justifiable? Does this choice entail any important bias?

Secondly, teams were asked to consider the applied implications of these data and make meaningful recommendations for various audiences. To do this they were asked to identify a fact from the data, establish the implications of the fact and the interested audiences and then make recommendations.

Teams were given 45 minutes to complete the tasks and then asked to present their findings to the whole group.

By the end of the tutorial, students should have come up with ideas like those in Table 3. Hopefully students will have developed confidence in assessing the real-world implications of data findings.

Table 3 Example result from real world data scenario activity in pilot programme

Fact	Implication of the Fact	Interested Audiences	Recommendations
1. There are extremely stressed cities in all continents (water stress is a global concern)	With climate change, water stress might increase and promote (inter)national conflicts over resources management	1. National governments 2. International organizations 3. Media 4. Firms	- Grant universal access, reduce waste, invest in ad hoc research - Ensure access in low-income countries - Increase citizens' awareness - Produce new/cheaper technology to access clean water

7. Team Projects

The intended learning outcomes for the team projects are:

- ✓ To apply data skills training to a current global development data challenge
- ✓ To develop skills in collaborative working within international teams
- ✓ To persuasively communicate well-evidenced data-related messages

7.1 Introduction to the Projects

The projects are based on tackling development data blind spots. Teams are tasked with researching a particular data blind spot and developing a compelling strategy for how it should be filled. Each team presents their work online to the to the rest of the group on the final day of the programme. Then, taking on board feedback from the presentations, each team creates a final summary briefing paper during the period after the programme.

To help the projects feel authentic to students, they are asked to pitch their outputs as if they were to be presented at the UN World Data Forum - a movement that brings together data experts and data users from across governments, civil society, the private sector, the donor community, academia, the media and other professional bodies globally to foster data innovation and high-level support for data for sustainable development. Students are given the overall purpose for the outputs of securing support and funding for implementing their ideas.

The four data blind spots used in the pilot programme are shown in Figure 11 as examples. These could be adopted to blind spots that are particularly topical at the time of running the programme and/or the specialisms of students on the programme.

Asthma & African Populations	Unemployment & Poverty during the COVID-19 Era
Data related to asthma is often drawn from non-African populations, which limits our understanding of how Asthma affects African populations.	Data on unemployment & poverty during the COVID-19 era broken down by *multiple* characteristics (e.g., age, gender, sexuality, ethnicity, nationality, disability) is often not available – which limits our ability to understand who is most vulnerable.
Homelessness & Gender	**Education in Humanitarian Emergencies**
The causes and solutions to homelessness globally often vary by gender, however there is poor availability of data on homelessness in general across the world let alone broken down by gender.	Complete data on education settings in humanitarian emergencies is often missing, which makes it difficult to plan responses and monitor progress.

Figure 11 Development Data Blind Spots for Team Projects

7.2 Timetable of Team Project Activities

Table 4 provides a summary of how the projects are developed across the one-week training programme.

Table 4 Summary of Team Project Activities

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Opening the Appetite	**Assembling the Ingredients**	**Preparing the Meal**	**Digesting the Meal**	**Team Project Conclusion**
Team Project Activity: Introduction to Projects	**Team Project Activity:** Team Formation & Existing Data Scoping Planning	**Team Project Activity:** Visualizing Existing Data & Information	**Team Project Activity:** Developing Data Collation and/or Creation Strategy	Kick off meeting & questions and answers
The projects are introduced & students are asked to research which Development Data Blindspot they would like to focus on	*Teams are announced & initial team level meetings take place supported by a staff member. The meetings focus on team introductions and planning initial research on the data blind spot.*	*Teams meet independently of staff to share findings from previous day's research & decide how to visualise existing data on their topic.*	*Teams meet independently To develop a strategy to fill the data blind spot and consider how to build a compelling narrative for their strategy.*	*Independent student-led work creating presentation* Live Online Project Presentations

On **Day 1**, students are presented with the project brief [*available in the online depository of supplementary materials*] and tasked with exploring initial background reading on the data blind spots in order to support their choice of project. Students are asked to submit their first and second choice project preferences ahead of the day 2 live online tutorial.

On **Day 2**, teams are announced during the live online tutorial. Teams should include 3-6 students each and formation should be based on student project preferences and ensuring a mix of institutions/countries are represented in each team. There should then be team level meetings for team members to get to know each other and plan initial research on their data blind spot ready for a second team meeting on day 3. The day 2 team meetings should be joined by a staff member to support students with initial planning. It can also be helpful to create an online folder for shared documents – e.g., via OneDrive or DropBox.

On **Day 3**, teams should meet to share findings from previous day's research, decide how to visualise/represent the data and decide who will create the data visualisations ahead of day 4.

On **Day 4,** teams should meet to develop their strategy for filling the data blind spot and consider how to build a convincing case for their strategy.

On **Day 5**, teams should create their presentations ready for the afternoon session. It is helpful to run a kick-off question & answer session with all students at the start of the day to answer queries. The presentations are a chance for students to develop oral and visual communication skills and learn about each other's research and receive feedback on their own before creating their final summary briefing paper.

7.3 Outputs from the Team Projects

The briefing papers written by the students who participated in the pilot programme are published on the Development Counts project website – creating a permanent record that students can refer to on CVs and job applications. If you would like to publish briefing papers created by your groups as part of this training programme on the website, please email Dr Rachel Bennett: rbennett3@glos.ac.uk.

8. Supporting Online Materials & Project Contact Details

8.1 Supporting Online Materials

The following supporting materials for the programme available to download from the Development Counts project website:

Student Welcome Briefing
This document explains the course structure and should be shared with students before the programme starts.

Student Team Project Briefing
This document outlines the topics, outputs, purpose, intended audience and daily activities for the team projects. It should be shared with students during the day 1 live online tutorial.

8.2 Project Contact Details

The Development Counts Project website can be found at: www.dataskillsproject.eu

In addition to hosting the online materials, there is also the 'Find a Collaborator' tool mentioned in section 1 with and the student briefing papers from the team projects in the pilot programme mentioned in section 8.

If you are interested in keeping up to date with the project, please follow us on twitter: @DataSkills4Dev

To connect with the students and staff who have been part of this project please join our LinkedIn Group: Development Counts: Data Skills for International Development Careers Project Associates

If you have any questions or comments, or would like advice on running the programme, please email Dr Rachel Bennett (project lead): rbennett3@glos.ac.uk

Good luck running the programme from the Development Counts project team!