

COURSE GUIDE:

Critical Data and Education

Session 2020/21 semester 2

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Welcome

Welcome to *Critical Data and Education*.

This course offers a range of critical perspectives on the increasing use of data and data-driven technologies in educational practice and governance. Recent years have seen a growing interest in using data collected from a range of information technologies to intervene in educational activity, with the intension of producing organisational efficiencies, making more precise pedagogical interventions, and enhancing student experiences. This course will surface important critical perspectives needed to examine how such technologies influence decision-making, from educational policies to everyday classroom activities.

The course is hosted on a publically accessible blog site (see below). This means that all course content, including your own blog space (but not including copyright-protected readings) is publicly available on the web. This course does, however, make use of Moodle for some introductory discussion, assignment submission and tutorial sign-ups (see below). We therefore ask you as course participants to undertake learning activities on this course 'in public', including some of the assessed elements. The key assessed element here will be a series of hand-drawn 'data visualisations', derived from any aspect of your participation in the course, and posted on your blog. There is more about this task below, however to summarise, this activity will encourage you to think carefully and critically about *what* data are, and *how* they might be useful in education, across the three thematic blocks of the course. Given the often 'public' nature of data, or at least its contested status and ownership, we hope that undertaking this course 'in the open' will be itself instructive, and provide you with an additional layer of experience through which to reflect on the course themes.

The other important aspect to emphasise at the outset is that this course is not a practical guide to using data-driven technologies. Rather, it is an opportunity to critically reflect on fundamental issues and questions, such as what we mean by 'data', and what kind of theoretical assumptions underpin the ways data-driven technologies are designed and deployed. However, through your data visualisation work, you will also gain practical skills in producing and interpreting data directly related to your own activity and experiences on the course. Ultimately, our work on the course will be experimental and speculative, and we hope you will embrace and enjoy the opportunity to be creative and critical with data! Best of luck over the coming semester.



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Course learning outcomes

The outcomes for this course are as follows. On its completion, you will:

1. Demonstrate a critical understanding of how data is defined, produced, analysed, and understood in educational contexts.
2. Exhibit a critical awareness of key data-driven technologies and practices as they relate to educational governance, institutional administration, and the activities of teaching and learning.
3. Identify and critically analyse published research
4. Engage critically and creatively with practical approaches to data collection and analysis
5. Effectively discuss, analyse, and evaluate key issues related to the use of data in education, demonstrating the conventions of academic discourse

Delivery mode and participation etiquette

The course is delivered – entirely online – through a WordPress blogging platform, and is available at:

<http://cde21.education.ed.ac.uk/>

This is where you will find the course content, readings, and activities, as well as your own personal blogging space. We will also be conducting synchronous tutorials - you'll find details of these below. As the course progresses we may also find it helpful to make use of other online environments: we will keep you posted on these.

As with other MSc in Digital Education courses, participation is flexible within certain bounds. However, you will need to keep up with the week by week structure, and to plan your time for the discussions, synchronous tutorials, and completing your weekly data visualisation task (more on this below).

As outlined in the introduction, the course is 'public', in the sense that the course site is openly accessible, as are your personal blog spaces. Your immediate public is of course your own peers and your tutors, but given that much of the course process and content is open, there is potential for a global audience. It's not necessary that you actively solicit this audience for your work on this course, though if you choose to do so you may find that it provides some interesting material for your reflections. We do however strongly encourage you to engage with the work of your peers on the course, through publically commenting on each other's work, and being open to a constructive dialogue with others.

The course also makes some use of a Moodle page – here:

<https://www.moodle.is.ed.ac.uk/course/view.php?id=1486> - for introductory discussion, tutorial sign-ups, and assignment submission.

Equipment you will need

As with other courses on the programme, you will require the usual computer equipment to view and create content. Please ensure that you have access to a computer which meets the requirements to view online videos, and that you have speakers or headphones so that you can hear sound. In addition, you will need to be able to take a picture of your hand-drawn visualisation work (see more in the Assessment section below), and upload it to your personal course blog. This is probably most easily done with a smart phone, but could also be achieved with a digital camera.

You will need access to Teams for synchronous video tutorials, and we recommend a Twitter account to take part in discussions.

Course structure and format

The course will be organised around three thematic blocks. The core learning activity throughout these three blocks will be the creation of weekly (nine in total) hand-drawn visualisations, with accompanying written reflections linking your work to the course themes. This will be supported by group discussions and synchronous group video tutorials. There will also be additional interactive tasks linked to the themes in each block. At the end of the course, you will produce a final assignment: the 'digital essay' (see the assessment section for more details).

Introduction (weeks 1 & 2)

The introductory fortnight of the course will support you in two key ways. Firstly, in developing a critical understanding of the central term and idea in this course: *data*. Through engagement with selected readings and group discussion, this part of the course will provide you with a foundational sense of the topic, working across technical and social understandings of data and their associated technologies. Secondly, the introductory period will assist you in preparing for subsequent course activity: setting up your personal course blog space, and preparing for the data visualisation task (more on this below).

Block 1: 'Learning' with data (weeks 3-5)

This first block will consider data in education from the perspective of 'learners' and 'learning', focusing on how data-driven technologies are shaping, not only the student experience, but the underlying assumptions of being a 'learner'. During each week of this block, you will produce a hand-drawn data visualisation depicting some aspect of your activity around the course. These visualisations should be posted in your blog each week, and be viewable by your peers (more about this below, in 'Assessment'). You will begin the block by participating in a 'Tweetorial' (week 3), progressing to the 'track some personal data' task (week 4), and finally producing a reflective blog post on the theme of 'learning' with data (week 5).

Block 2: 'Teaching' with data (weeks 6-8)

The second block of the course will shift to considering 'teaching' and the perspective of teachers in relation to educational data, focusing on how particular data-driven technologies are being design and deployed to assist with, and intervene in, pedagogical practices. During each week of this block, you will continue to produce hand-drawn data visualisations depicting some aspect of your activity around the course. These visualisations should be posted in your blog each week, and be viewable by your peers. You will begin the block by participating in a group video tutorial (week 6), progressing to the 'build a teaching dashboard' task (week 7), and finally producing a reflective blog post on the theme of 'teaching' with data (week 8).

Block 3: 'Governing' with data (week 9-11)

The final thematic block will consider the ways data have informed policy and educational governance, examining the ways data-driven approaches align with broader shifts in the sector towards management, measurement, and accountability. Again, you will continue to produce hand-drawn data visualisations each week depicting some aspect of your activity around the course. As before, these visualisations should be posted in your blog each week, and be viewable by your peers. You will begin the block by participating in a 'Tweertorial' (week 9), progressing to the 'visualise some public data' task (week 10), and finally producing a reflective blog post on the theme of 'governing' with data (week 11).

Conclusion (week 12)

The final week of the course will be devoted to two activities: firstly, preparing and submitting your data visualisations blog posts, along with your final written reflection (see 'Assessment' below); and secondly, planning your final assignment, the 'digital essay' (again, see below for further details). You will work independently on this task, with the opportunity for individual support from your tutor.

Week by week plan

Introduction

	activity	medium	mode	assessment
week 1: 11 th – 17 th January	What are 'data'? Reading core and additional literature	Teams video tutorial Moodle discussion forum	Synchronous video group discussion Group discussion	none
week 2: 18 th – 24 th January	Exploring data visualisation	Blog posts and comments Moodle discussion forum	Sharing ideas and peer feedback	none

Block 1: 'Learning' with data

	activity	medium	mode	assessment
week 3: 25 th January	Reading core and additional literature Hand drawing data visualisation	Tweetorial Blog posts and comments	asynchronous Twitter exchanges Sharing and peer feedback	Data visualisation
week 4: 1 st February	Task: track some personal data Hand drawing data visualisation	Blog posts and comments	Sharing and peer feedback Blog commentary	Data visualisation
week 5: 8 th February	Hand drawing data visualisation Reflective end-of-block blog post	Blog posts and comments	Sharing and peer feedback blog commentary	Data visualisation Reflective blog post

Block 2: 'Teaching' with data

	activity	medium	mode	assessment
week 6: 15 th February	Reading core and additional literature Hand drawing data visualisation	Teams video tutorial Blog posts and comments	Synchronous video group discussion Sharing and peer feedback	Data visualisation
week 7: 22 nd February	Task: build a teaching dashboard Hand drawing data visualisation	Blog posts and comments	Sharing and peer feedback blog commentary	Data visualisation
week 8: 1 st March	Hand drawing data visualisation Reflective end-of-block blog post	Blog posts and comments	Sharing and peer feedback blog commentary	Data visualisation Reflective blog post

Block 3: 'Governing' with data

	activity	medium	mode	assessment
week 9: 8 th March	Reading core and additional literature Hand drawing data visualisation	Tweetorial Blog posts and comments	asynchronous Twitter exchanges Sharing and peer feedback	Data visualisation
week 10: 15 th March	Task: (digitally) visualise some public data Hand drawing data visualisation	Blog posts and comments	Sharing and peer feedback blog commentary	Data visualisation
Week 11: 22 nd March	Hand drawing data visualisation Reflective end-of-block blog post	Blog posts and comments	Sharing and peer feedback blog commentary	Data visualisation Reflective blog post

Assignment 1 submission + Assignment 2 preparation

	activity	medium	mode	assessment
week 12: 29 th March	final assignment: developing and submitting the digital essay	To be negotiated with tutor	seeking peer feedback on ideas individual hangout tutorials offered	digital artefact/essay

Assessment

The course is assessed in two ways:

1. The 'data visualisation blog (50%)
2. The digital essay (50%)

1. The data visualisation blog (50%)

The first part of the assessment involves a series of data visualisations, which you will hand draw and upload to your blog during each week of the thematic block sections (weeks 3-11). You will therefore produce nine data visualisations in total, each accompanied by some explanatory text. During the first two weeks of the course you will be supported to setup your blog, gain an underlying understanding of the 'nature' of data, and experiment with data visualisation, all of which will prepare you for this assessed task. It is important to stress that you are not required to be a 'data viz' expert from the outset of the course. Rather, the point of this task is to encourage you to experiment, be creative in your approach, and importantly, to develop your ideas over the duration of the nine weeks of the activity. Indeed, note that the assessment criteria specify development, so we'll be looking at how your ideas progress, rather than whether any individual visualisation is 'correct' – see more on this below. At the end of each of the thematic blocks, you will write a short blog post summarising how your data visualisation work has helped you to think about the course themes of 'learning' (end of block 1), 'teaching' (end of block 2), and 'governing' (end of block 3) data. Towards the end of the course, you will synthesise these end-of-block posts into a final 1000-word commentary on the task, and submit this with your nine data visualisations as part of your blog. Practically, you will make your submission simply by pasting the URL of your personal course blog into the relevant Moodle submission box on or before the assignment deadline (end of week 12).

While the data visualisation task is designed to demonstrate your broad engagement with the course, hopefully at times outside of the 'usual' ways of tracking digital activity (there are some examples below), **you are not expected to include very personal data**. The line between what is 'personal' and what is 'public' is not easily defined, and is very much part of the critical discussions that we'll be having on the course, however do remember that the course, and your blog, will be openly accessible on the web.

What is a hand-drawn visualisation?

By 'hand-drawn data-visualisation' we mean a drawing, made on paper or some other kind of material (or a touch screen if you'd really prefer!), using stationery of your choice, that depicts some kind of representation of your behaviour or activity related to the course. Posavec and Lupi's work 'Dear Data' perfectly illustrates the kind of data visualisation we are suggesting here, and indeed is the inspiration for this task. Their book is one of our core readings for the course, and we'll also be looking at one or two videos about their work, which will give you plenty of examples and stimulus for creating your own hand-drawn data visualisations for this course.

It is important to emphasise here that we are not assuming any kind of 'correct' form of data visualisation, and nor is this task about straightforwardly training you 'how' to produce such an outcome. Rather, this task is primarily about encouraging you to think carefully about what data 'are', how we might represent them, and what kind of uses we might derive for them in education. It is this **critical thinking**, demonstrated through your drawings and your

accompanying written reflections, that is the underlying rationale for this task, and ultimately what is assessed, rather than the data visualisations themselves.

Despite 'hand drawing' your visualisations, you will ultimately 'digitise' them by uploading to your personal blog. This will allow you to build up your series of nine visualisations across the thematic blocks of the course, and accompany your work with important written reflection. You will be supported to set up your blog in the introductory section of the course.

Why are we doing this?

There are several reasons why we are asking you to hand-draw visualisations, rather than work with existing data visualisation software:

- Hand-recording and visualising our activity forces us to be involved in every stage of the process, and hopefully to think carefully about how and why we might make particular choices. It forces us to ask fundamental questions - what behaviour or activity should I record, and why? How can that behaviour be represented in discrete data points? Using pre-programmed tracking or visualisation software would take many of these decisions out of our hands.
- Not relying on existing software will also hopefully entice you to think beyond the 'typical' ways that we collect and visualise data in education. Learning analytics applications often work using fairly straightforward interactions with platform software, for example time spent with particular resources, frequency of posts and replies in a discussion forum, or the outcomes of multiple-choice quizzes. By taking a step back from these 'established' ideas about analytics, and indeed taking a step back from the confines of digital platforms, we hope you start to consider how all the other ('online' AND 'offline') activities you may be undertaking during this course might be meaningful for thinking about learning.
- Not relying on existing visualisation software (although there will be opportunities to try some examples during the course) will also encourage you to think creatively about how you might graphically illustrate a particular collection of data. Familiar forms of visualisation, such as line graphs, scatter plots, and social network diagrams, can provide us with useful conventions for presenting data, but at the same time these standards limit how creative we might be. You are welcome to draw on these useful examples, but we also encourage you to let loose your creativity! An additionally important point to emphasise here is that these conventional forms of data visualisation are often used with the assumption that visual representation itself is inherently unambiguous, and able to straightforwardly communicate knowledge without the need for interpretation. By taking charge of your own visualisation, we hope to encourage you to adopt a much more critical position that recognises the integral ways in which visual design choices fundamentally shape meaning.

Some ideas for the kind of data you might collect for a course like this...

The following offers some initial ideas for the kinds of data you might record during the course; however, do bear in mind that we'll also discuss a range of options during the introductory fortnight. The more obvious kinds of data that you could identify during the course relate directly to the digital spaces we'll be using. Some very rudimentary examples here would be:

The course site: access times; length of time spent with particular pages or resources; the kind of device you use to access the course site; etc.

Your blog: when and how often you post; the number of comments you receive; the times at which you comment on other blog posts; etc.

Twitter: the times at which you or others post; numbers of retweets and likes; the frequency of particular terms within your tweets; etc.

While we encourage you to think some more about the kinds of activities you undertake within these online spaces, and therefore the kinds of data you could document, we also want you to consider your course activity in much broader terms, particularly in relation to things that you undertake away from digital platforms and gadgets. For example:

Work/study spaces: how do you move around your home/work office/desk space? What other physical objects do you interact with? How might these activities, if recorded, provide some insight into your patterns of course activity?

Non-work spaces: how might non-work spaces – your kitchen, the car, your local park – be involved in your learning activity? Where do you think about course themes? Where are you reminded of something in the readings? What could this kind of data reveal about your learning process?

Interacting with others: who do you share thoughts about the course with? When and where do you share what you are learning with others? What might this data say about your learning journey?

What is expected

- You will produce one hand-drawn data visualisation for each week of the three thematic blocks, so nine in total. You will need to record your data throughout each week, and produce your visualisation at the end of each week, uploading it to your blog as a post.
- Each data visualisation should be accompanied by a short explanation (roughly 200 words), describing what kind of data is being depicted and how it might be useful as a representation of your learning activity.
- At the end of each thematic block, you will also submit an end-of-block summary blog post, of no more than 500 words. This should outline your key reflections from each block.
- Upon submission of your data visualisation blog, you will also submit a final 1000-word post that synthesises your end-of-block summaries, and provides overall reflection and evaluation of your data visualisation work.

Being public

Remember that your blog is public, and therefore all of your visualisations and reflection writing will be in the public domain. You are therefore not required to include any very personal information in any of this assessed work.

Assessment criteria

The following criteria apply and are consistent with our Postgraduate Common Marking Scheme as far as is possible.

Activity

Is the data visualisation blog well-maintained? Does it demonstrate regular activity across the three thematic blocks of the course? Do the visualisations represent active engagement with the requirements of the task?

Reflection

Is each data visualisation accompanied by some explanation and reflection on its potential use? Do the end-of-block summaries contain appropriate reflection on relevant themes? Does the final 1000-word post demonstrate an appropriate level of insight into the process and content of the data visualisation blog and the course?

Knowledge and use of the literature

Have relevant key references to the course literature been used in the reflective writing? Have other relevant sources been drawn on and coherently integrated into the writing?

Knowledge and understanding

Is the data visualisation blog indicative of a good level of engagement with the course themes and curriculum? Are the visualisations and accompanying writing of high quality in terms of analysis and creativity?

For example, a data visualisation blog graded at 70% or above (an A), would meet the criteria in the following way:

Activity

Data visualisations are added regularly, during every week of the thematic blocks, and the blog is generally well-maintained. The data visualisations are consistently appropriate to the course content, and demonstrate a high level of engagement with the task.

Reflection

Each data visualisation is accompanied by an explanation, and some reflection on its potential use and value in education. The three end-of-block summaries and final 1000-word post are in place, each of which are well-written, appropriately reflective, and help build a genuine sense of engagement with the data visualisation blog and the course process.

Knowledge and use of the literature

The written content of the data visualisation blog includes a range of relevant references to the core and secondary readings from the course, used in a way that demonstrates understanding of key ideas and their relation to the visualisation task. Additional sources beyond the course reading list are referenced.

Knowledge and understanding

All data visualisation blog content is demonstrative of a very high level of engagement with the course themes. The visualisations and accompanying written reflections are scholarly and creatively presented, and consistent with a high level of critical engagement with the course curriculum.

2. The digital essay (50%)

You are required to submit a 2000-word digital essay on an aspect of the course content, defined by yourself. We are calling this a 'digital essay' because we want you to embrace some of the possibilities that technology provides to augment your writing. Similar to the

opportunities for assignment submission for IDEL, this might be a written essay that incorporates different kinds of media, such as images, videos, or animations. In other words, we are looking for assignments that primarily demonstrate your ability to produce academic writing, but also show your creative abilities with digital formats. Note that technical prowess is not formally assessed – we are rather looking for imaginative and rigorous ways of presenting your academic work digitally.

In terms defining the scope of the essay yourself, we encourage you to choose one particular aspect or theme that you have encountered during the course, and use the essay as an opportunity to develop the idea as a more formal academic discussion. For example, you might choose a specific idea from one of the course readings, a particular perspective that has arisen from one developing one of your visualisations, or an issue discussed with your peers during one of the tutorials or in the blog comments.

In the final week of the course you'll have an opportunity to discuss and agree the topic and form for your essay with your course tutor before embarking on it.

Assessment criteria

The following criteria apply and are consistent with our Postgraduate Common Marking Scheme as far as is possible.

Knowledge and understanding of concepts

Does the digital essay show a critical engagement with the content of the course? Does it demonstrate breadth of understanding of the concepts and theories covered?

Knowledge and use of the literature

Have the relevant key references been used? Have other relevant sources been drawn on and coherently integrated into the analysis?

Constructing academic discourse

Is the digital essay produced with careful attention to the exposition of ideas through the chosen representational form of the work? Does it use digital media in an effective and appropriate way? Is it scholarly in its approach to topic and form?

Submission deadlines

The data visualisation blog: midnight (UK time) on **Friday the 2nd of April 2021**

The digital essay: midnight (UK time) on **Monday the 19th of April 2021**

Technologies: what you need to know

Introduction

Critical Data and Education works differently from other courses on the MSc in Digital Education. The reason for this is that we are committed on this course to maintaining a public, open presence on the web. All course materials (with the exception of e-reserve materials, for copyright reasons) are publicly available on the course web site at:

<http://cde21.education.ed.ac.uk>

This is the main course space. It is built on the Wordpress blogging platform, and contains:

- all course materials, assessment information, tutor allocations, announcements, and links to readings
- a link to a WordPress blog for each course participant which will become your personal data visualisation blog; the content of this will account for 50% of the final mark for the course.

At the very start of the course, you'll receive an email with details of your course WordPress blog account. When you log in, you'll have access to your WordPress blog – instructions for getting started are below.

Other core environments we will use on the course include:

- Twitter, for general discussion, using the **#mscde** hashtag
- Teams, for group tutorials

Although this course provides its own WordPress installation (rather than the University service you used on IDEL), the interface should be familiar to you. The Technologies Handbook (<https://www.wiki.ed.ac.uk/display/mscdetech/The+blog>) will provide a refresher on how to add posts and format them – key here will be embedding the images of your data visualisations within posts.

Please also note that you will need a method of transferring your hand drawn data visualisations onto your blog. We suggest that the simplest way of achieving this would be to use a smart phone or digital camera to take a picture of your hand drawn visualisation, and upload the resulting digital file to your blog – see the section on 'adding media' in the technologies handbook about this. If you have any concerns about your ability to transfer your visualisations onto your blog, please get in touch with the course tutors.

Course tutor contact information

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Good luck with your studies, and we look forward to seeing you online!