The 4 whs of your study:
the where, why, who/what and the how

What are you going to learn?

- How to present the where of your study – study context
- How to outline the why of your study – the justification
- How to discuss what or who you studied
- How to outline the tools and procedures

The ‘WHERE?’ of your study

The ‘WHERE?’ of your study

- **What it is:** presentation of the necessary background information about where your study was conducted
  - **Example 1:** if your study focuses on post-cyclonic migration in the Southern coast of Bangladesh, you have to describe that area in detail in terms of its geography
  - **Example 2:** if your study investigates some aspect of English language teaching (ELT) in Poland, you might have to present how ELT developed there historically, who teaches it, where it is taught, students’ attitudes, etc.
- **Why we do it:** provide the reader with the necessary information about the specific setting of your study
- **When we do NOT do it:** when the context is irrelevant, e.g. your study was conducted in a lab

Action time

Use the Where, why, who and how worksheet to learn how to present the study context.

The where, the why, the who and the how

These 4 questions are the essence of your entire study. Follow the instructions below.

Instructions

1. **The where of your study:** decide if you need to include this section by answering the questions below:
   a. Was your study conducted at a specific location outside of a lab or a computer?
   b. Is the context where your study was conducted important to understand your research and its results?
   c. Do other researchers in your field typically present the research context?

   If the answer to at least two of the above is YES, then you will need to give background information on your study context.

2. If you have to include it, follow the instructions below. If not, skip to step 4.
   a. Look back at your research questions. What information about where your study was conducted is necessary for the reader to contextualise your aims and results?
   b. Tick the elements below which you think are necessary.
   c. Take notes on the necessary elements in the table below.

----------Page Break----------

The ‘WHY?’ of your study

The ‘WHY?’ of your study

- **What it is:** the justification for your study and the main aims
- **Why we do it:** to provide solid rationale for your research and remind the reader of the main aims before we present how the study was conducted
- **How we do it:** identify more than one type of research gap, provide with personal justification (if relevant), and link clearly to the aim

The research gap

Example research gaps

- Lack of or insufficient research:
  - On a particular topic,
  - In a specific geographical area,
  - On a segment of the population or a specific material
  - Using a certain methodology, theory, approach
- Problems with previous studies (e.g. small sample size)
- A controversy or a lack of understanding

Action time

Use the Where, why, who and how worksheet to learn how to present the rationale and main aims of your study.

The where, the why, the who and the how

These 4 questions are the essence of your entire study. Follow the instructions below.

Instructions

1. **The where of your study:** decide if you need to include this section by answering the questions below:
   a. Was your study conducted at a specific location outside of a lab or a computer?
   b. Is the context where your study was conducted important to understand your research and its results?
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----------Page Break----------

Identifying the gap: Lack of understanding

Little is known, however, about exactly how much time individuals successful at weight loss actually spend self-monitoring. Moreover, it is not clear whether individuals become more efficient with practice, thus becoming able to decrease the time they spend self-monitoring in order to get the same result.

[from Harvey, et al. (2019). Log Often, Lose More: Electronic Dietary Self-Monitoring for Weight Loss. *Obesity*, *27*(3), 380–384.]

Identifying the gap: Problems with past studies

Previous methods of dietary self-monitoring (i.e., paper and pencil diaries) did not lend themselves to an analysis of time spent engaged in the behavior. Moreover, it was not generally possible to evaluate the timing and frequency of recording during a single day without relying on self-report, which is notoriously unreliable.

[from Harvey, et al. (2019). Log Often, Lose More: Electronic Dietary Self-Monitoring for Weight Loss. *Obesity*, *27*(3), 380–384.]

Identifying the gap: Lack of research

1. Nevertheless, only four studies have investigated recruiters' attitudes towards hiring 'native' and 'non-native speaker' teachers (Clark & Paran, 2007; Kiczkowiak, 2019; Mahboob et al., 2004; Moussu, 2006). [from Kiczkowiak, M. (2020). Recruiters' Attitudes to Hiring "Native" and "Non-Native Speaker" Teachers: An International Survey. *TESL-EJ: Teaching English as a Second or Foreign Language*, *24*(1).]
2. To the best of our knowledge, processing intensity (i.e., time) has not yet been included as a variable in any of the available studies about starch digestion of cotyledon cells isolated from common beans. [from Pallares Pallares, A. et al. 2018. Process-induced cell wall permeability modulates the in vitro starch digestion kinetics of common bean cotyledon cells. Food Funct., 9, 6545]

Action time

Use the Language for rationale and main aims cheatsheet to familiarize yourself with the useful phrases.

Language for rationale and main aims

Identifying lack of research

There is a **general/complete/notable lack of** research on

There is a **relative/general/surprising paucity of** research

No/limited/insufficient data exists on

Few/no/only two studies have been conducted

Little/insufficient/scant attention has been **paid to**

… **has not been** tested/examined/studied

Although/even though/while some research has…, **no** studies have

There are still few/no studies focusing on/conducted in

This topic has **received little/limited/scant attention** in literature/from researchers

Research concerning … **is still/somewhat/currently lacking**.

There has been **little/insufficient analysis of**

Identifying a lack of understanding

… is **poorly** understood

… is **not yet fully/well** understood

Mechanism/function/role **remains unclear/unknown/uncertain**

relatively/very/comparatively little is known about

There is a **strong/clear need to** understand/identify

The ‘WHO?’ (or the ‘WHAT?’) of your study

The ‘WHO?’ (or the ‘WHAT?’) of your study

- **What it is:** presentation of the studied sample (people, animals, material, etc.) and how you obtained it (the sampling techniques)
- **Why we do it:** before we talk about the procedures, we need to explain first what it is that we studied
- **How we do it:** present in detail who or what exactly you studied, show how you obtained that sample, and justify why this was appropriate

Action time

Use the Where, why, who and how worksheet to learn how to present the sample and sampling.

The·where,·the·why,·the·who·and·the·how·¶

These·4·questions·are·the·essence·of·your·entire·study.·Follow·the·instructions·below.¶

Instructions¶

1.→**The·where·of·your·study:**·decide·if·you·need·to·include·this·section·by·answering·the·questions·below:¶
   a.→Was·your·study·conducted·at·a·specific·location·outside·of·a·lab·or·a·computer?¶
   b.→Is·the·context·where·your·study·was·conducted·important·to·understand·your·research·and·its·results?¶
   c.→Do·other·researchers·in·your·field·typically·present·the·research·context?¶

If·the·answer·to·at·least·two·of·the·above·is·YES,·then·you·will·need·to·give·background·information·on·your·study·context.¶

2.→If·you·have·to·include·it,·follow·the·instructions·below.·If·not,·skip·to·step·4.¶
   a.→Look·back·at·your·research·questions.·What·information·about·where·your·study·was·conducted·is·necessary·for·the·reader·to·contextualise·your·aims·and·results?¶
   b.→Tick·the·elements·below·which·you·think·are·necessary.¶
   c.→Take·notes·on·the·necessary·elements·in·the·table·below.¶

----------Page Break----------¶

Sample and sampling: Non-human participants

EW [ca. 90% protein on dry matter (dm) basis] was isolated from commercial eggs as commonly done. Dithiothreitol and sodium azide were from Acros Organic (Geel, Belgium). Sodium dodecyl sulfate, sodium dihydrogen phosphate dihydrate, sodium chloride, and urea were from VWR International (Leuven, Belgium). Bovine serum albumin standard (23209) was from ThermoFisher Scientific (Waltham, MA, U.S.A.). OVA (albumin chicken egg grade III, ca. 94% protein on dm basis), proteinase K (Tritirachium album, P4850), trypsin (porcine pancreas, T0303), and all chemicals (of at least analytical grade), unless specified otherwise, were from Sigma- Aldrich (Bornem, Belgium). Enzyme units (EU) were as specified by the supplier. The highly amylogenic peptide (residues: 103–111) derived from sup35 yeast was produced in-house.

[from Monge Morera M. et al. (2020). Processing Induced Changes in Food Proteins: Amyloid Formation during Boiling of Hen Egg White. *Biomacromolecules*. https://dx.doi.org/10.1021/acs.biomac.0c00186]

Sampling techniques: Non-human participants

BN has been identified as a promising target material, due to its two reaction channels with high cross sections for 11C production (11B(p,n)11C and 14N(p,)11C) [15]. Both cross sections reach their maximum around E = 6–8 MeV, which are low-energy and will result in high energy deposition in the target material. Low-energy beams have a higher stopping power and therefore lose more energy in comparison to high-energy beams. To optimize the isotope production versus energy deposition, the proton beam energy and target thickness are chosen so that the beam energy is in the interval E [5, 15] MeV. Such proton beams can be provided by compact cyclotrons, routinely used in hospitals for PET-isotope production.

[from Stegemann, S. et al. 2020. Production of intense mass separated 11C beams for PET-aided hadron therapy. *Nuclear Inst. and Methods in Physics Research B* 463, pp. 403–407]

Research sample: Human participants

As far as the qualitative strand is concerned, seventy-six (51%) recruiters expressed their interest in participating in the interview at the end of the survey and provided their contact details. Nevertheless, only twenty-one (14%) responded to follow-up emails and eventually took part. They were also informed about the purpose of the study and signed a consent form. At the time they were working in eight different countries (Spain, the UK, France, Italy, Malaysia, Burma, Chile, and Brazil). No further background data were collected on these participants.

from Kiczkowiak, M. (2020). Recruiters' Attitudes to Hiring "Native" and "Non-Native Speaker" Teachers: An International Survey. *TESL-EJ: Teaching English as a Second or Foreign Language*, *24*(1).]

Sampling techniques: Human participants

First, sequential sampling refers to a situation when one sample precedes another; and when the first sample influences what the researcher does with the following sample (Cohen et al., 2011). In this study, random stratified sampling was used to select participants for qualitative focus group interviews. This means that participants from different strata (in this case students, teachers and recruiters) are selected randomly.

[from Kiczkowiak, M. (2018). *Native Speakerism in ELT: Voices From Poland.* [PhD]. University of York.]

Action time

Use the Language for sample and sampling cheatsheet to familiarize yourself with the useful phrases.

Language for sample and sampling techniques

Presenting research sample: Human participants

Participants were **selected/recruited** using…

35 interviewees **took part/participated** in the study

…respondents **completed** the survey

Participants **were randomly selected** from…

Table 5 shows **background information** about the participants.

No **background information was collected** since…

Participants **were then/randomly divided into** three groups

Presenting research sample: Non-human participants

The enzymes **were extracted from**…

The beans **were harvested during**…

…was used to **create/generate**…

The **animals were reared** under the same conditions

The **tissue was collected** from…

…were **manufactured** by/using…

…was **isolated from**… using…

…were **obtained from** [name of supplier]

Indicating exclusion and inclusion criteria

Participants who …. **were excluded from** the study

The exclusion/inclusion criteria were as following:

Action time

Use the Passive voice in the methodology cheatsheet to familiarize yourself with the grammar.

Academic English Now
Online courses

Passive voice in the methodology section

Passive voice is incredibly common in the methodology section. While you do not need to completely abandon active voice, do use the passive voice frequently. Note how and when researchers in your field use it in the methodology.

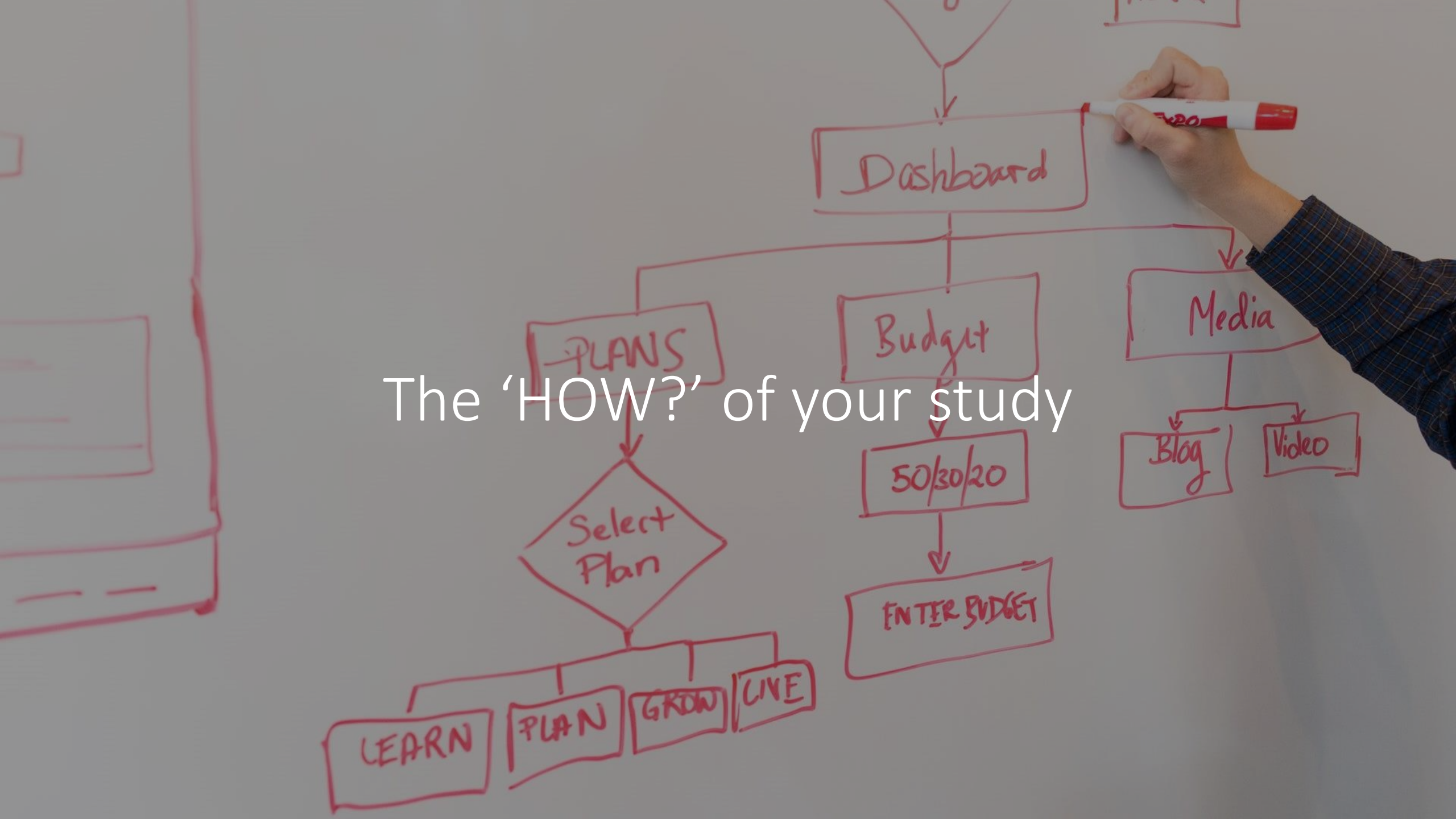
To use the passive voice in the methodology follow this formula:

was/were + 3rd form (past participle).

Note that most academic verbs, in particular in the methodology section, are regular. Hence, you only need to add **-ed** to the end of the verb. For a list of irregular academic verbs, go here.

Active voice	Passive voice
We instructed participants to record dietary intake daily over the 24-week intervention	Participants **were instructed** to record dietary intake daily over the 24-week intervention.
We compared statistically the estimated model parameters of different samples were by use of their 95% confidence intervals.	The estimated model parameters of different samples **were** statistically **compared** by use of their 95% confidence intervals.
I made the calculations using the output files from the Microwin2000.	Calculations **were made** using the output files from the Microwin2000.
To study the extent of BN dissociation at high temperatures and low pressures, **I performed** a heat test using an experimental setup.	To study the extent of BN dissociation at high temperatures and low pressures, a heat test **was performed** using an experimental setup.
We collected the scattering intensities at different angle.	The scattering intensities at different angles **were collected**.

The ‘HOW?’ of your study



The ‘HOW?’ of your study

- **What it is:** detailed presentation of the instruments you used and the exact steps you followed to obtain your data
- **Why we do it:** to help other researchers understand how your study was conducted if they wish to replicate it
- **How we do it:** present each research tool/instrument separately, justify your choice, outline the steps taken with the tool; move to the next tool and repeat

Action time

Use the Where, why, who and how worksheet to learn how to present the sample and sampling.

The·where,·the·why,·the·who·and·the·how·¶

These·4·questions·are·the·essence·of·your·entire·study.·Follow·the·instructions·below.¶

Instructions¶

1.→**The·where·of·your·study:**·decide·if·you·need·to·include·this·section·by·answering·the·questions·below:¶
   a.→Was·your·study·conducted·at·a·specific·location·outside·of·a·lab·or·a·computer?¶
   b.→Is·the·context·where·your·study·was·conducted·important·to·understand·your·research·and·its·results?¶
   c.→Do·other·researchers·in·your·field·typically·present·the·research·context?¶

If·the·answer·to·at·least·two·of·the·above·is·YES,·then·you·will·need·to·give·background·information·on·your·study·context.¶

2.→If·you·have·to·include·it,·follow·the·instructions·below.·If·not,·skip·to·step·4.¶
   a.→Look·back·at·your·research·questions.·What·information·about·where·your·study·was·conducted·is·necessary·for·the·reader·to·contextualise·your·aims·and·results?¶
   b.→Tick·the·elements·below·which·you·think·are·necessary.¶
   c.→Take·notes·on·the·necessary·elements·in·the·table·below.¶

----------Page Break----------¶

Presenting the purpose of a procedure

1. These steps were carried out in order to align moisture contents and guarantee full exposure of starch granules to enzymatic hydrolysis during the procedure. [adapted from Pallares Pallares, A. et al. 2018. Process-induced cell wall permeability modulates the in vitro starch digestion kinetics of common bean cotyledon cells. Food Funct., 9, 6545]
2. qPCR was used to determine the tissue distribution of the Schgr-CRF-DHR transcript, in immature and mature adult locusts. [from Lismont et al. 2020. Can BRET-based biosensors be used to characterize G-protein mediated signaling pathways of an insect GPCR, the Schistocerca gregaria CRF-related diuretic hormone receptor? *Insect Biochemistry and Molecular Biology*, 122]
3. However, in an attempt to show the complexity of native-speakerist ideology, we decided to conduct the study using a duoethnography, which as far as we know has not yet been employed in applied linguistics, ELT or native-speakerism research. [from Lowe, R. J., & Kiczkowiak, M. (2016). Native-speakerism and the complexity of personal experience: A duoethnographic study. *Cogent Education*, *3*(1), 1–16.]

Indicating sequence of procedure steps

a) (1) Once the required processing time was completed, (2) the thermal process was stopped by rapidly decreasing the temperature using an iced water bath. [from Pallares Pallares, A. et al. 2018. Process-induced cell wall permeability modulates the in vitro starch digestion kinetics of common bean cotyledon cells. Food Funct., 9, 6545]

b) (1) The cell medium was replaced half an hour (2) prior to transfection with 10 mL fresh culture medium. [from Lismont et al. 2020. Can BRET-based biosensors be used to characterize G-protein mediated signaling pathways of an insect GPCR, the Schistocerca gregaria CRF-related diuretic hormone receptor? *Insect Biochemistry and Molecular Biology*, 122]

c) (1) After the first two weeks of discussion online, (2) we examined the data and used thematic analysis to identify emerging themes.[from Lowe, R. J., & Kiczkowiak, M. (2016). Native-speakerism and the complexity of personal experience: A duoethnographic study. *Cogent Education*, *3*(1), 1–16.]

Action time

Use the Language for research tools and procedures cheatsheet to familiarize yourself with the useful phrases.

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Language for research tools and procedures

Describing how and what was used

... **was used/utilised/employed** to gather data on

A number of **steps were followed** to...

Several **tests were run** to...

The questionnaire **was designed** following...

The interviews **were conducted/carried out** in...

The questionnaire **was delivered** online due to...

...**consisted/was comprised of**...

Describing the purpose of a procedure

To determine/assess/test/investigate whether ..., follow-up interviews were conducted.

In order to determine/assess/test/establish whether ..., placebo treatment was administered.

In an attempt to reduce/determine/assess/identify the risk factors, we used on-line questionnaires.

Follow-up interviews were conducted, **(in order/an attempt) to determine/ascertain/assess/test whether** ...,

To **determine the cause/amount/number of** ...,

In order to **assess the risk/impact/effectiveness of** ...,

To **test the hypothesis/theory/effectiveness of** ...,