

# Postgraduate Diploma

## Data Collection in Educational Research





## Postgraduate Diploma Data Collection in Educational Research

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/education/postgraduate-diploma/postgraduate-diploma-data-collection-educational-research](http://www.techtute.com/us/education/postgraduate-diploma/postgraduate-diploma-data-collection-educational-research)

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# 01

# Introduction

Successful educational research requires knowledge of the main techniques and instruments for data collection. This program offers quality training, with a program that is up to date with the latest developments in the field and that will help to achieve success in the profession. A 100% online program that you can balance with the rest of your obligations.

This program provides the necessary knowledge for the integration of professional skills in Educational Research. It delves into methodological reflection and practices, with emphasis on the latest developments in Educational Research.

This high-level program provides students with the knowledge and tools necessary for the analysis of education and its links between research and education.







“

*Do not miss the opportunity to take this Postgraduate Diploma with us and you will notice how you will become more capable every day to help your students”*

The main objectives of the Postgraduate Diploma in Data Collection in Educational Research are to promote and strengthen the skills and abilities of teachers, taking into account the most current tools for teaching. This is done in such a way that the teacher is able to inspire his students with the necessary motivation to continue their studies and to feel drawn to scientific research.

This Postgraduate Diploma provides teachers with an overview of the fundamental knowledge in the field of teaching and the best way to guide and orient students in their day-to-day work.

This training is distinguished by its order and distribution of theoretical material, guided practical examples in all its modules, and motivational and explanatory videos. This allows for a simple and clarifying study on educational research.

This way, the main methodologies in the field of educational research will be explained to the student, starting from the main and most reliable techniques for data collection. Additionally, the training continues with Item Response Theory (IRT) and, to conclude, it focuses on multivariate analysis.

A high-level program that will represent a process of improvement, not only professionally, but also personally. This challenge is one that TECH Technological University takes on as a social commitment: to help prepare highly qualified professionals and develop their personal, social and professional skills throughout the course of their studies.

Not only does it cover the theoretical knowledge offered, but it also shows another way of studying and learning, one which is more organic, simpler and more efficient. TECH works to keep you motivated and to create a passion for learning. And it will push you to think and develop critical thinking.

This **Postgraduate Diploma in Data Collection in Educational Research** contains the most complete and up-to-date educational program on the market. The most important features of the program include:

- ♦ Case studies presented by experts in educational research
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional development
- ♦ Latest development in Data Collection in Educational Research
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Special emphasis on innovative methodologies in Data Collection in Educational Research
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an internet connection



*Expand your knowledge through this Postgraduate Diploma in Data Collection in Educational Research It will allow you to improve your CV and the way you deliver your lessons"*

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*This Postgraduate Diploma is the best investment you can make when selecting a refresher program to update your knowledge in Data Collection in Educational Research"*

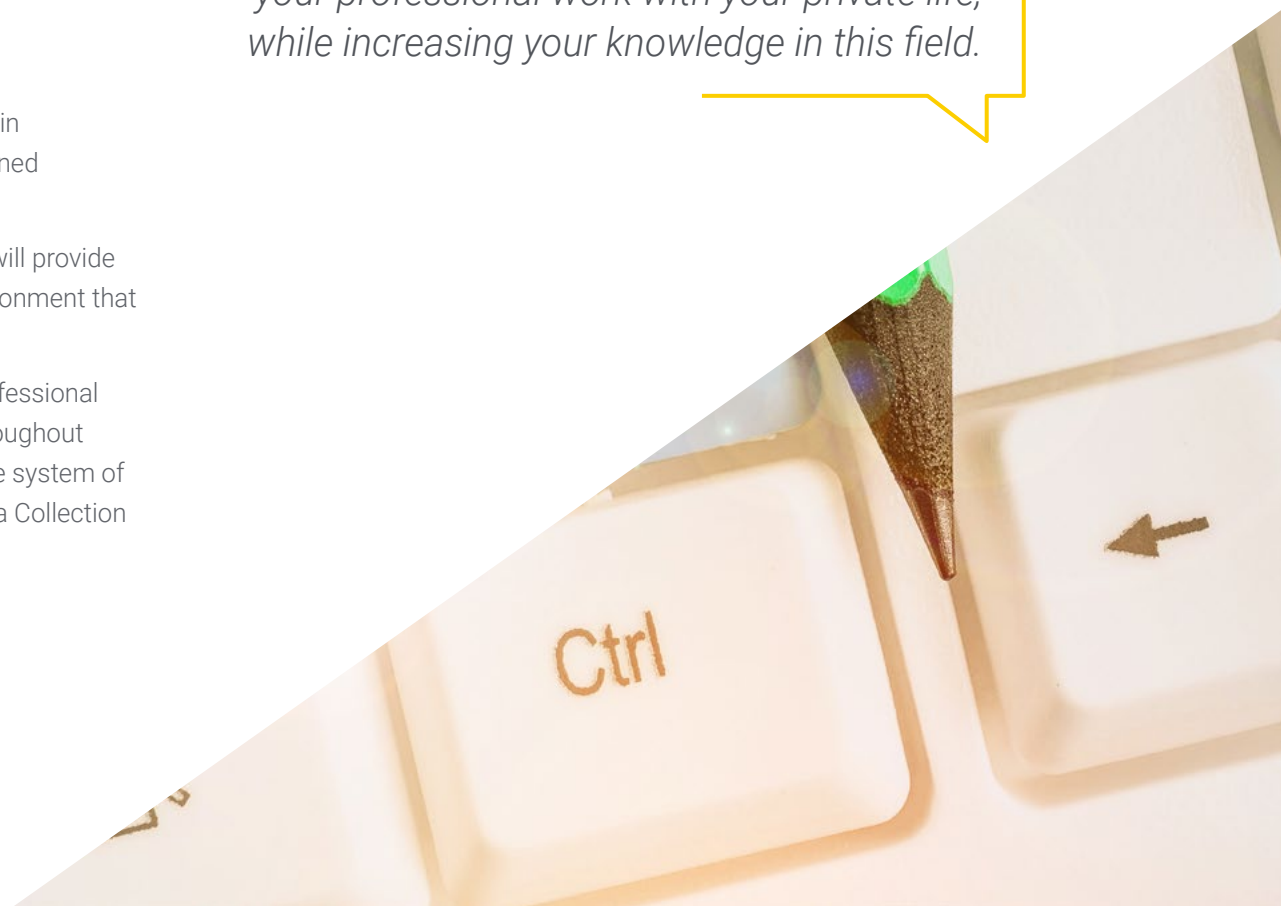
Its teaching staff includes professionals belonging to the field of innovation in education, who bring their work experience to this training, as well as renowned specialists from reference societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the teacher will have the help of an innovative system of interactive videos made by recognized experts, with great experience in Data Collection in Educational Research.

*If you want to train with the best teaching methodology and multimedia, this is your best option.*

*This Postgraduate Postgraduate Diploma is 100% online, which will allow you to combine your professional work with your private life, while increasing your knowledge in this field.*



# 02

# Objectives

The objective is to train highly qualified professionals for work experience. An objective that is complemented, moreover, in a global manner, by promoting human development that lays the foundations for a better society. This objective is focused on helping professionals reach a much higher level of expertise and control.







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*Our goal is to achieve excellence  
and help you achieve it too"*



## General Objectives

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- ♦ Qualify professionals for the exercise of Research in Education
- ♦ Learn how to carry out specific programs to improve school performance
- ♦ Access to the forms and processes of Educational Research in the school environment
- ♦ Analyze and integrate the knowledge necessary to foster student's school and social development



*Our objective is very simple: to offer you quality training, with the best teaching system available today, so that you can achieve excellence in your profession"*





## Specific objectives

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### Module 1. Data Collection Techniques and Instruments and Measurement

- ♦ Learn basic psychometric concepts
- ♦ Know the research process
- ♦ Acquire skills for the collection of information using quantitative techniques.
- ♦ Acquire knowledge for the process of elaboration of instruments.
- ♦ Learn to analyze the reliability and validity of an instrument
- ♦ Handle and interpret psychometric test scores

### Module 2. Item Response Theory (IRT)

- ♦ Familiarize with IRT for the development and study of the data collection instrument
- ♦ Introduce the student to the basic concepts of IRT
- ♦ Understand the different models for item analysis
- ♦ Know how to apply the different models for item analysis
- ♦ Analyze the quality of measurement instruments through the IRT premises
- ♦ Apply this theory to other measurement processes in education

### Module 3. Multivariate Analysis

- ♦ Become familiar with multivariate analysis
- ♦ Know the models of techniques and procedures that study the interrelationships between variables
- ♦ Be able to describe the pattern of behavior of the observed variables.
- ♦ Study the differences between groups
- ♦ Know how to apply the techniques that comprise multivariate interdependence models
- ♦ Interpret contingency tables
- ♦ Know how to apply the techniques that comprise multivariate interdependence models

03

# Structure and Content

The structure of the contents has been designed by the best professionals in the field of Educational Research, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed and studied, and with extensive knowledge of new technologies applied to teaching.





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*We have the most complete and up-to-date programme on the market. We offer you the best, at the best price"*



## Module 1. Data Collection Techniques and Instruments and Measurement

- 1.1. Measurement in Research
  - 1.1.1. Introduction
  - 1.1.2. What do we Want to Measure?
  - 1.1.3. Subject Measurement Process
  - 1.1.4. Psychometry
- 1.2. Collection of Information using Quantitative Techniques: Observation and Surveys
  - 1.2.1. Introduction
  - 1.2.2. Observation
    - 1.2.2.1. Theoretical Framework and Categories of Observation
  - 1.2.3. The Survey
    - 1.2.3.1. Material for Conducting a Survey
    - 1.2.3.2. Survey Research Design
- 1.3. Collection of Information with Quantitative Techniques: the tests
  - 1.3.1. Introduction
  - 1.3.2. Test Concept
  - 1.3.3. Item Generation Process
  - 1.3.4. Testing by Area: Performance; Intelligence and Aptitude; Personality, Attitudes and Interests.
- 1.4. Collection of Information with Quantitative Techniques: Scaling Methods
  - 1.4.1. Introduction
  - 1.4.2. Concept of Attitude Scales
  - 1.4.3. Thurstone Method
    - 1.4.3.1. Method of Paired Comparisons
  - 1.4.4. Likert Scale
  - 1.4.5. Guttman Scale
- 1.5. Test Construction Process
  - 1.5.1. Introduction
  - 1.5.2. Item Scaling Process
    - 1.5.2.1. Item Generation Process
    - 1.5.2.2. Information Gathering Process
    - 1.5.2.3. Scaling Process in the Strict Sense
  - 1.5.3. Scale Evaluation Process
    - 1.5.3.1. Item Analysis
    - 1.5.3.2. Scale Dimension
    - 1.5.3.3. Scale Reliability
    - 1.5.3.4. Scale Validity
  - 1.5.4. Subjects' Scores on the Scale
- 1.6. Analysis of Test Items
  - 1.6.1. Introduction
  - 1.6.2. Classical Test Theory (Spearman, 1904)
  - 1.6.3. Test Reliability
  - 1.6.4. The Concept of Validity
  - 1.6.5. Evidence of Validity
- 1.7. Reliability of the Instrument
  - 1.7.1. Introduction
  - 1.7.2. Definition of Reliability
  - 1.7.3. Reliability by Test-Retest or Repeatability Method
  - 1.7.4. Reliability by the Alternate or Parallel Shape Method
  - 1.7.5. Reliability Through Internal Consistency Coefficients
    - 1.7.5.1. Kuder-Richardson Coefficient
    - 1.7.5.2. Cronbach's Alpha Coefficient



- 1.8. Validity of the Instrument
  - 1.8.1. Introduction
  - 1.8.2. Definition of Validity
  - 1.8.3. Validity of the Instruments
    - 1.8.3.1. Immediate Validity
    - 1.8.3.2. Content Validity
    - 1.8.3.3. Construct Validity
    - 1.8.3.4. Contrast Validity
  - 1.8.4. Validity Strategies
- 1.9. Item Analysis
  - 1.9.1. Introduction
  - 1.9.2. Item Analysis
  - 1.9.3. Difficulty and Validity Indexes
  - 1.9.4. Correction of Random Effects
- 1.10. Interpretation of Test Scores
  - 1.10.1. Introduction
  - 1.10.2. Interpretation of Scores
  - 1.10.3. Normative Test Scales
  - 1.10.4. Typical Derived Scales
  - 1.10.5. Interpretations Referring to the Criterion

## Module 2. Item Response Theory (IRT)

- 2.1. Item Response Theory (IRT)
  - 2.1.1. Introduction
  - 2.1.2. Measurement Models
  - 2.1.3. Fundamental Concepts of IRT
  - 2.1.4. Basic Postulates of IRT
- 2.2. Generalizability Theory (GT)
  - 2.2.1. Introduction
  - 2.2.2. Generalizability Theory (GT)
  - 2.2.3. Facets of Generalizability Theory
  - 2.2.4. Interpretation of Results in a Study

- 2.3. Characteristics of IRT (I)
  - 2.3.1. Introduction
  - 2.3.2. Historical Introduction of TRI
  - 2.3.3. IRT Assumptions
  - 2.3.4. IRT models
- 2.4. Characteristics of IRT (II)
  - 2.4.1. Introduction
  - 2.4.2. TRI Results
    - 2.4.2.1. Parameters.
    - 2.4.2.2. Item Characteristic Curve
    - 2.4.2.3. True Score
    - 2.4.2.4. Test Characteristic Curve
    - 2.4.2.5. Level of Information
  - 2.4.3. Response Models: the Item Characteristic Curve
  - 2.4.4. Question Selection Methods
- 2.5. Response Models for Dichotomous Items: the Rasch Contribution
  - 2.5.1. Introduction
  - 2.5.2. The Rasch Model
  - 2.5.3. Characteristics of the Rasch Model
  - 2.5.4. Example (Rasch Model)
- 2.6. Response Models for Dichotomous Items: the Rasch Contribution
  - 2.6.1. Introduction
  - 2.6.2. Birnbaum's Logistic Model (1968)
  - 2.6.3. Model Parameters
    - 2.6.3.1. 2-parameter Logistic Model
    - 2.6.3.2. 3-parameter Logistic Model
    - 2.6.3.3. 4-parameter Logistic Model
- 2.7. Response Models for Polytomous Items: Nominal Item Models (Block, 1972)
  - 2.7.1. Introduction
  - 2.7.2. Polytomous Items
  - 2.7.3. Nominal Response Models (Block, 1972)
  - 2.7.4. Political Item Parameters
- 2.8. Response Models for Polytomous Items: Ordinal Item Models
  - 2.8.1. Introduction
  - 2.8.2. Ordinal Item Models
  - 2.8.3. Ordinal Cumulative Model
    - 2.8.3.1. Samejima's Graded Response Model (GRM) (1969)
    - 2.8.3.2. Modified Graded Response Model (M-GRM) of Muraki (1990)
  - 2.8.4. Continuous Ordinal Models
    - 2.8.4.1. Sequential Model (Tutz, 1990)
  - 2.8.5. Adjacent Ordinal Models
    - 2.8.5.1. Partial Credit Model (Masters, 1982)
- 2.9. Response Models for Polytomous Items: Samejima's Graded Response Model (1969)
  - 2.9.1. Introduction
  - 2.9.2. Normal Graded Response Model
  - 2.9.3. Graded Response Logistic Model
  - 2.9.4. Example (Graded Response Model)
- 2.10. Differential Item Functioning (DIF)
  - 2.10.1. Introduction
  - 2.10.2. Item Differential Concept (DIF)
  - 2.10.3. Types of DIF
  - 2.10.4. DIF screening methods
  - 2.10.5. Purification methods

**Module 3. Multivariate Analysis**

- 3.1. Multivariate Analysis
  - 3.1.1. Introduction
  - 3.1.2. What is Multivariate Analysis?
  - 3.1.3. The Objectives of Multivariate Analysis
  - 3.1.4. Classification of Multivariate Techniques
- 3.2. Multiple Linear Regression
  - 3.2.1. Introduction
  - 3.2.2. Concept of Multiple Linear Regression
  - 3.2.3. Conditions for Multiple Linear Regression
  - 3.2.4. Predictors to Generate the Best Model
- 3.3. Binary Logistic Regression
  - 3.3.1. Introduction
  - 3.3.2. Binary Logistic Regression Concept
  - 3.3.3. Model adjustment
    - 3.3.3.1. Model fitting in R
  - 3.3.4. Stages of the R
  - 3.3.5. Example (Binary Logistic Regression)
- 3.4. Nominal and Ordinal Logistic Regression
  - 3.4.1. Introduction
  - 3.4.2. General Review of Nominal Logistic Regression
  - 3.4.3. Example (Nominal Logistic Regression)
  - 3.4.4. General Review of Ordinal Logistic Regression
  - 3.4.5. Example (Ordinal Logistic Regression)
- 3.5. Poisson Regression
  - 3.5.1. Introduction
  - 3.5.2. Poisson Concept
  - 3.5.3. Distribution Functions
  - 3.5.4. Poisson Regression with Counts
- 3.6. Log-Linear Models
  - 3.6.1. Introduction
  - 3.6.2. Log-Linear Models for Contingency Tables
  - 3.6.3. Log-Linear Models for Contingency Tables
  - 3.6.4. Example (Log-Linear Models for Contingency Tables)
- 3.7. Discriminant Analysis
  - 3.7.1. Introduction
  - 3.7.2. Concept of Discriminant Analysis
  - 3.7.3. Classification with Two Groups
    - 3.7.3.1. Fisher Discriminant Function
  - 3.7.4. Example (Discriminant Analysis)
- 3.8. Cluster Analysis
  - 3.8.1. Introduction
  - 3.8.2. Concept of K-means Clusters
  - 3.8.3. Hierarchical Cluster Analysis Concept
  - 3.8.4. Example (Hierarchical Cluster Analysis)
- 3.9. Multidimensional scaling
  - 3.9.1. Introduction
  - 3.9.2. Multidimensional Scaling: Basic Concepts
  - 3.9.3. The Similarity Matrix
  - 3.9.4. Classification of Scaling Techniques
- 3.10. Factor Analysis
  - 3.10.1. Introduction
  - 3.10.2. When is Factor Analysis Used?
  - 3.10.3. Factor Analysis Methodology
  - 3.10.4. Applications of Factor Analysis



*This will provide key training  
to advance your career"*

04

# Methodology

This training program offers a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.







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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

### At TECH Education School we use the Case Method

In a given situation, what should a professional do? Throughout the program students will be presented with multiple simulated cases based on real situations, where they will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method.

*With TECH, educators can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



*It is a technique that develops critical skills and prepares educators to make decisions, defend their arguments, and contrast opinions.*

“

*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

Our University is the first in the world to combine case studies with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



*Educators will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.





This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialist educators who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Educational Techniques and Procedures on Video

TECH introduces students to the latest techniques, with the latest educational advances, and to the forefront of Education. All this, first-hand, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

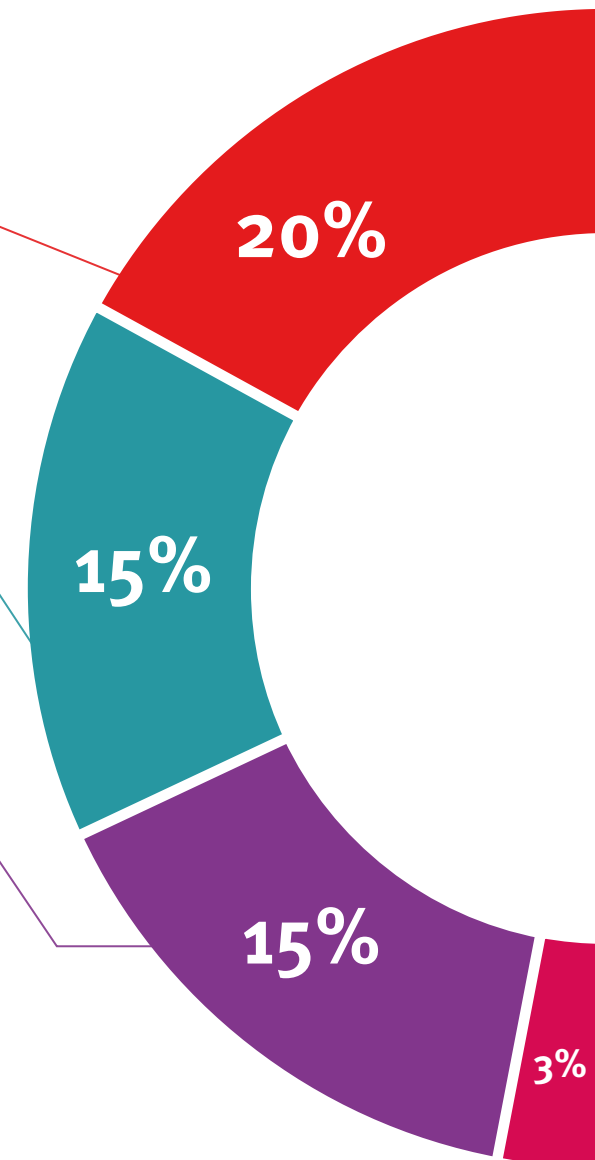
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

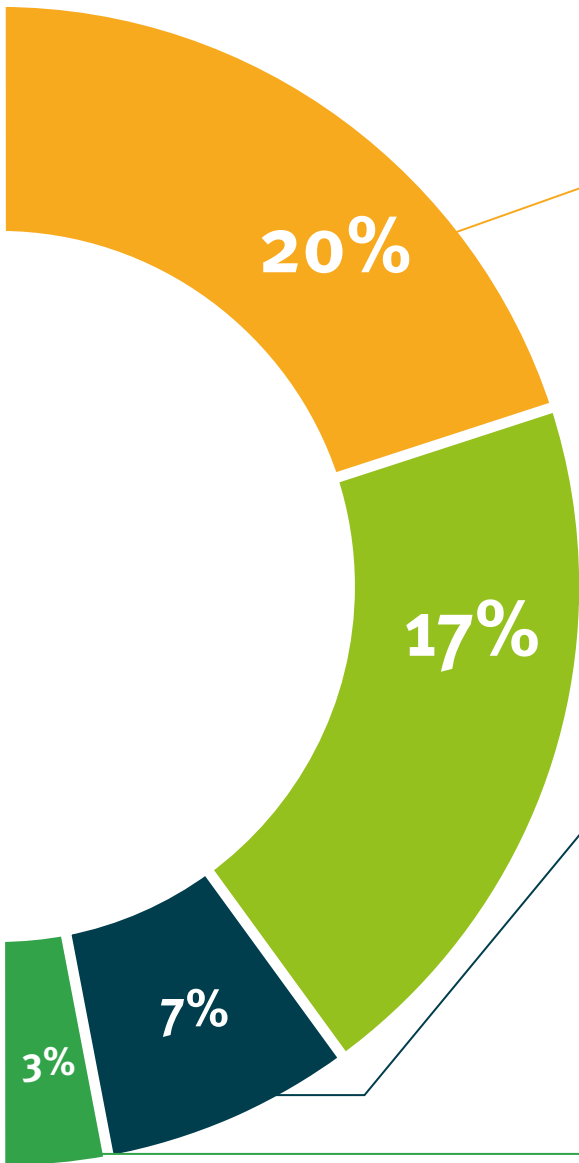
This exclusive multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



05

# Certificate

The Postgraduate Diploma in Data Collection in Educational Research guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*



This **Postgraduate Diploma in Data Collection in Educational Research** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Data Collection in Educational Research**

Official N° of Hours: **450 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development language  
virtual classroom



**Postgraduate Diploma**  
**Data Collection**  
**in Educational Research**

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

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## Data Collection in Educational Research

