**Erasmus+ Project**

**Developing Professional Qualifications and Training**

**for European Behaviour Analysts (EuroBA)**



http://euroba.org/

**Intellectual Output 6: EuroBA-Technician online course**

**2023**

EuroBA project partners.

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## Project summary

This project is the result of cooperation between international partners from the United Kingdom, Czech Republic, Netherlands, Ireland, Greece, Sweden, and Italy. The project benefitted from a Professional Advisory Group (PAG) that included a further 16 European countries to ensure that the standards and competences developed in the project are acceptable to as many European countries as possible.

The overall objectives of the project were to facilitate transparency and recognition of qualifications for behaviour analysts in Europe. The profession of behaviour analyst started in the early 1970s in North America (Carr, 2011; Hughes & Shook, 2007). However, it is not formally recognised in the European Union (EU). For behaviour analysts to be able to practice within the EU with the same expectations surrounding knowledge, skills, and autonomy and responsibilities, it is necessary to create a clear range of competences for the profession.

The project has 6 Intellectual Outputs (IO). IO1 covers professional standards referenced to European Qualifications Framework (EQF). IO2 outlines the development of the behaviour analyst qualification in the context of the six partner National Qualifications Frameworks (NQF). IO3 provides a detailed glossary of terms in partner languages. IO4 outlines a competency framework for entry-level EuroBA-Technicians (EuroBA-T). IO5 is a competency framework for Master's-level EuroBA (EuroBA-M). IO6 is an online entry-level multimedia course in six partner languages.

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# Background to EuroBA-T course development

This document presents the course outline for an entry level online course for EuroBA Technicians (EuroBA-T). Like all the other Intellectual Outputs, it is the result of the cooperation of the international project partners from the United Kingdom, Czech Republic, Netherlands, Ireland, Greece, Sweden, and Italy. Together they have created the outcomes of the Erasmus+ project entitled **Developing Professional Qualifications and Training for European Behaviour Analysts (2020-2023).**

The EuroBA-T is considered the 'entry' qualification for the profession of behaviour analysis. The entry-level competences that are targeted in the EuroBA-T course are outlined in Intellectual Output 4 (IO4). This entry qualification potentially forms the basis of further study to EuroBA-Master's Level (EuroBA-M); EuroBA-M competences are outlined in IO5. The combined IOs of this project aim to facilitate the professional recognition of behaviour analysts nationally (Kelly & Trifyllis, 2022) and across Europe (European Parliament, 2005), thus facilitating professional mobility across Europe and further afield (Heward et al., 2022).

The EuroBA-T course is available in the 6 partner languages (English, Czech, Dutch, Greek, Italian, and Swedish). The teaching materials used in this course are available in additional 6 languages (French, German, Icelandic, Norwegian, Portuguese, and Spanish). These resources were developed by international teams of behaviour analysts in collaboration with parents of children on the autism spectrum. This work was funded through various European Commission grants and other national funding streams (STAMPPP, 2013). All of the resources can be accessed online, and it is anticipated that further culturally and linguistically adapted courses may be developed that are not part of the Erasmus+ Project. For now, IO6 focusses on the EuroBA-T course in the 6 Erasmus+ Project partner languages.

The EuroBA-T course presented here includes approx. 40 hours of instruction and is delivered online via Programmed Instruction (PI; Root & Rehfeldt, 2021; Vargas & Vargas, 1991). PI is an individualised student-led approach developed by behaviour analysts (Holland & Skinner, 1961; Vargas & Vargas, 1996; Twyman, 2014) in which students work through sections of the course in their own time, one section at time. A brief assessment of learning (in the form of a quiz) is completed after each section and the next section becomes available only after the student achieves at least 80% correct in the assessment quiz. A student who scores lower than 80% is able to review the relevant sections of the learning resources and re-take the quiz as often as is necessary to achieve 80+%. The course content and resources are a mix of online multimedia videos and animations, text-based resources, and lectures. The resource section facilitates further expansion and individualisation, where new or updated materials can be uploaded by course developers.

This document provides an outline of the course structure of the online EuroBA-T course that was developed as part of the Erasmus+ funded EuroBA project (2020-2023). In the present project, the course which was adapted to all 6 partner country contexts, is presented on a

responsive platform to ensure it is available on multiple devices. The course may offer inspiration, ideas, and/or a guideline for others who plan to deliver EuroBA-T level training in their cultural and linguistic contexts along the hierarchy of learning outcomes proposed by Bloom's taxonomy (Figure 1; cf. Krathwohl, 2002; Shabatura, 2022; Wellington, 2020).
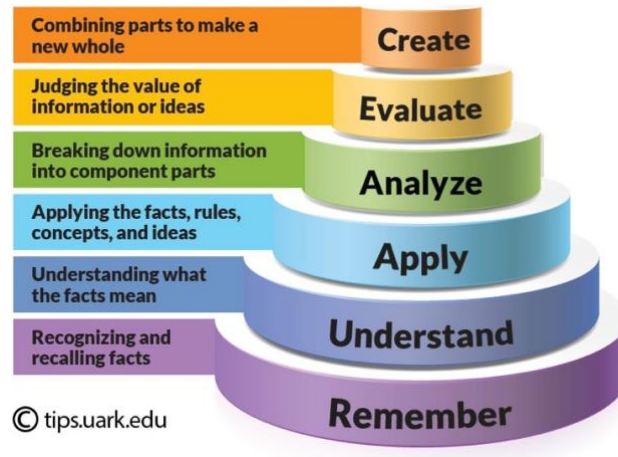


**Figure 1:** *Graphic depicting Bloom's Taxonomy (reprinted with permission from Jessica Shabatura at https://tips.uark.edu/using-blooms-taxonomy/)*

IO6 also offers a bespoke competency tracker that can be used for inclusion in the European Skills, Competences, Qualifications and Occupations (ESCO) classification. "ESCO is a European multilingual classification of Skills, Competences and Occupations. It works as a **dictionary,** describing, identifying and classifying professional occupations and skills relevant for the EU labour market and education and training." (ESCO, 2020, What is ESCO Section). The competence tracker also is important to anyone interested in developing their Curriculum Vitae to facility mobility or professional development across Europe (i.e., EuroPass, 2023).

# Programmed Instruction[1]

Programmed Instruction (PI) is a student-led personalised system of instruction that has a long theoretical and practical history (Holland & Skinner, 1961; Skinner, 1999; Vargas, 2014; Vargas & Vargas, 1996). Theoretically, the instructional design of PI is based on knowledge accumulated by the science of behaviour analysis that arose in the late nineteenth century, around the same time as psychology separated from philosophy and physiology (Wright & Buchanan, 2020). Edward Lee Thorndike (1874–1949) is widely recognised as one of the earliest researchers in the history of behaviour analysis (Thorndike, 1903/2012). Thorndike discovered various principles that govern non-human and human learning (Olson, 2021), including what he termed the "Law of Effect" (Wright & Buchanan, 2020). The Law

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[1] This section was co-authored by Dr Maria T. Martinho and Dr Nichola Booth, QUB, and is based on work completed in part-fulfilment of Maria's PhD under Nichola's supervision (see https://pure.qub.ac.uk/en/studentTheses/an-evaluation-of-an-intercontinental-telehealth-training-package-).

of Effect states that responses that result in "satisfaction" gain in strength, while those that result in "discomfort" weaken in strength (Thorndike, 2012). Thorndike's Law of Effect is widely considered the foundation of subsequent behaviour analytic research, particularly with regards to the philosophical/ conceptual basis of radical behaviourism (Chiesa, 1994) and discoveries regarding the effects of contingencies of reinforcement on the behaviour of organisms (Jones & Skinner, 1939; Roberts, 1942; Morris et al., 2005). The shift in understanding of the causes of behaviour from a mechanistic/methodological to a relational/functional account was a pivotal moment in the history of behaviour analysis (Chiesa, 1992).

In practical terms, the history of Programmed Instruction started in 1920, when Sidney L. Pressey (Petrina, 2004) was the first to emphasise the significance of immediate feedback in education, proposing a system in which each learner works at their own pace while allowing the learner to actively take part in the learning process (Skinner, 1958). The design emphasises the validation and improvement of instructional resources, placing the onus of success on the teaching method rather than the learner (Burton et al., 2004). Flexibility, feedback, and ongoing monitoring of learners' behaviour are the main characteristics (Burton et al., 2004). In order to facilitate this process, Pressey invented the first self-teaching devices (Petrina, 2004). Initially these machines were similar to a typewriter with a window that displayed a question with four possible answers (Smithsonian Institution, 2022).

Skinner utilised the concept of self-testing and self-instruction in his "teaching machine" (Figure 3) in which the reinforcement contingencies were controlled to allow the learner to move through the curriculum at his/her own pace along individualised levels of gradually increasing difficulty (Skinner, 1954). The concept of student-led learning, on which these teaching machines were based, became very popular with software engineers (Molenda, 2008; Twyman, 2014) and in Higher Education Institutions (Roll-Pettersson et al., 2010, 2020).

In the 1950s, the instructional system of the teaching machines, called "Programmed instruction" (PI), became popular (Vargas & Vargas, 1991). In PI, correct responses are reinforced at regular intervals. As such, PI offers an empirical, data-based approach to teaching and learning. Initially, PI used hardware (American History, 2022), however, now it is mainly software based and used widely in online education (Root & Rehfeldt, 2021).

The primary goal of instructional design is to promote learning (Burton et al., 2004). The learning principles of contiguity, repetition, and reinforcement are a keystone of PI (Gagne, Briggs, & Wager, 1988). This ensures that the instruction targets are defined, instructional outcomes are measurable and meet criteria for validity and reliability, and learners' behaviour changes are measured (Briggs, 1991).

# EuroBA-T course outline

The multimedia online EuroBA-T course developed in the EuroBA project uses PI and is structured in 10 sections, each section taking approximately 4 hours to complete. There is a baseline quiz to be completed prior to Section 1, followed by a brief quiz after each of the sections. These quizzes must be 'passed' by 80+% in order to access the next section. Students who do not achieve 80+% in a quiz can review the material of the relevant section and re-take the test until they achieve the pass mark. At the end of Section 10 there is a final quiz. Once this is 'passed' (with at least 80% correct answers), students will be provided with a personalised certificate of completion.

Each of the 10 sections has 4 parts: **Learn, practice, test/quiz,** and **feedback**.

- **Learn:** This is the section that contains all teaching materials, including videos, animations, and written materials. Students work through the materials available in each session in their own time. They need to make sure that they understand all the content and, if necessary, watch/read them again until they are sure they are competent in the content of each section.

- **Practice**: Each section requires students to engage in a practical exercise. These exercises have been thoroughly tested and used successfully with many classes at various universities and professional and parent training courses. To get the full benefit of Learn materials training, it is important that students do not just read these exercises and imagine what it would feel like, but that they engage in these exercises with their supervisor, partner, or colleague. Learning is best achieved by DOING! The students' practice supervisor should be able to advise on these exercises.

- **QUIZ:** Each section requires students to complete a quiz. The quiz comprises 10 randomly selected questions (at least 20 questions are contained in the question bank for each section; more questions can be added by course developers). Students are given 30 minutes to complete the quiz.

- **Feedback:** Once students have completed the quiz, there will be a display of the percentage of correct answers they gave. If their quiz result is below 80%, they will be guided back to the beginning of the section. Students then should work through the section again and hopefully improve their quiz results. Students will be able to continue only after receiving a score of at least 80% in the quiz.

The 10 sections cover the following topics matched to the EuroBA-T competences (see IO4):

## Section 1: Background

Section 1 provides a general background to Applied Behaviour Analysis (ABA) in Europe, the development of standards of training in behaviour analysis in Europe, an outline of the European Qualification Framework (EQF) and how behaviour analysis fits in. It also ensures that students are aware of the entry level competency list provided in IO4, that identifies learning aims they are expected to achieve in this course. The competences were developed by the EuroBA partner team and agreed with the Professional Advisory Group, a total of 22

countries in Europe (Keenan et al., 2022). The competences are matched with international standards (BACB, 2018) and provide a good fit to National Occupational Standards (Kelly & Trifyllis, 2022). This section also provides a useful glossary of terms (IO3).

The practice exercise for Section 1 ensures that students can "put themselves into the shoes" of someone on the autism spectrum. They role-play a scenario where they have a conversation about a news item without using eye contact (i.e., they do not look at each other while talking), they use no body language, and they use a "monotone voice" (i.e., they do not emphasise words or phrases). Then they are asked to write a reflection in their course journal about what they learned in these exercises and discuss this with their supervisor. When students have gone through all the readings and viewed the Step 1 learning material, they take the Section 1 quiz. They must score 80% or over in the quiz to progress to Section 2. They can retake the test as many times as they need.

Section 2: Real Stories and Ethics

Section 2 covers ethics for EuroBA-T and emphasises the real life experiences with autism and how ABA has changed the lives of parents and professionals. The practice exercise ensures that students gain experience in what it is like to receive an assessment and diagnosis. Students are then asked to explore in their course journal the kinds of questions that an interdisciplinary team may ask. Following Section 2 quiz (providing students have passed this by 80+%), students can then continue to Section 3.

Section 3: Autism & Applied Behaviour Analysis

Section 3 focusses on autism and Applied Behaviour Analysis. ABA experts introduce students to the science of ABA and talk about coming to terms with a diagnosis of autism, including assessment and diagnosis. Section 3 practice exercise makes sure that students understand what ABA is and the processes involved in training Behaviour Analysts. Following successful completion of the Section 3 quiz, students get access to Section 4.

Section 4: Understanding Behaviour

Section 4 Learn materials concentrate on understanding behaviour, with a focus on effectively using ABA as a basis for the development of behaviour change procedures. This section introduces functional assessment and analysis and some of the basic principles of ABA. The practice exercise asks students to wite a clear definition for several summary labels, such as cheeky, bold, and empathetic. After successful completion of Section 4 quiz, students get access to Section 5.

Section 5: Measuring Behaviour

Section 5 concentrates on measuring behaviour and it looks at various techniques that will help in the implementation of an effective program with a child. Section 5 practice exercise asks students to describe everyday life examples, where measurement of behaviour was important and/or necessary. Following successful completion of Section 5 quiz, Section 6 becomes available.

## Section 6: Increasing Behaviour & Teaching New Skills

This section teaches students how to increase appropriate behaviour in the learner as well as how to teach new skills. The practice exercise focusses on the application of this new knowledge. Following the successful completion of Section 6 quiz, students get access to Section 7.

## Section 7: Dealing with Challenging Behaviour

Section 7 centres on the use of differential reinforcement and teaching new skills. The practice exercise allows students to acquire some practical experience on how to work with challenging behaviour. Following successful completion of the Section 7 quiz, Section 8 becomes available.

## Section 8: Extinction, Chaining and Task Analysis

Section 8 centres on a number of behaviour change procedures. The practice exercise spotlights issues related to decreasing challenging behaviour. Following the successful completion of Section 8 quiz, students progress to Section 9.

## Section 9: Policies and Practice

In Section 9, students learn about policies and practices related to using ABA to support children with autism. In the practice exercise, students work on examples of how to implement a program. The successful completion of Section 9 quiz is followed by Section 10.

## Section 10: Revision and Final Test

In Section 10, students will review the learning materials from Sections 1-9. The final quiz is constructed from a random sample of 10 questions selected from question banks in Sections 1-9. Once students have achieved 80+% in the final test, a Certificate of Completion becomes available to students. This certificate is not to be confused with a qualification. Its sole function is to provide evidence of having met key competences for entry level training in behaviour analysis. Depending on national regulations, further criteria may need to be met (e.g., supervision, practice, or exams).

Course Evaluation

After completion of the course students are asked to fill in a course evaluation form. The responses allow course developers to ensure that the course meets student expectations as well as professional competence requirements.

# EuroBA-T competence tracker

The course is matched to the EuroBA-T competences outlined in IO4. The **competence tracker** matches the sections of the course to the relevant competences and can be used for ESCO classification. It also allows students to track their competences to facilitate EuroPASS.

| EuroBA-T Competence (see IO4) | EuroBA-T Course section | Competence tracker (√) |
|---|---|---|
| **KNOWLEDGE** | | |
| Knowledge is described as theoretical and/or factual. Knowledge means being able to talk about an issue competently. | | |
| *General background knowledge* | | |
| Relevant data protection and storage legislation, policy, and procedures. | Section 1: Background  Section 10: Revision and Final Test | |
| Understanding of the impact of mentalism and explanatory fictions. | Section 2: Real Stories and Ethics | |
| Differences between science, pseudoscience, and anti-science. | Section 3: Autism & Applied Behaviour Analysis | |
| Data-based decision making, i.e., evidence-based and non-evidence-based interventions. | Section 3: Autism & Applied Behaviour Analysis | |
| The role of advocacy and inclusion of clients and key stakeholders in decision making (e.g., PPI; Patient and Public Involvement). | Section 1: Background  Section 10: Revision and Final Test | |
| Person-centered planning and the role of the behaviour technician. | Section 1: Background  Section 2: Real Stories and Ethics | |
| How cultural differences impact decisions regarding assessment and intervention (i.e., cultural competence). | Section 2: Real Stories and Ethics  Section 10: Revision and Final Test | |
| Relevant crisis and emergency procedures. | Section 1: Background | |
| Scope of practice and scope of competence (i.e., ethical practice | Section 2: Real Stories and Ethics | |

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| within the boundaries of competence). | | |
| **General knowledge about Behaviour Analysis** | | |
| The seven dimensions of behaviour analysis. | Section 4: Understanding Behaviour | |
| Principles of behaviour. | Section 4: Understanding Behaviour | |
| Functions of behaviour. | Section 4: Understanding Behaviour | |
| Differences between operant and respondent behaviour and procedures. | Section 4: Understanding Behaviour | |
| Basic verbal operants and their functions. | Section 6: Increasing Behaviour & Teaching New Skills | |
| All aspects of social validity, including ensuring importance of goals, appropriateness, procedures, and significance of outcomes. | Section 3: Autism & Applied Behaviour Analysis | |
| **General knowledge about Behaviour Analytic procedures** | | |
| Essentials of a behaviour acquisition plan. | Section 6: Increasing Behaviour & Teaching New Skills  Section 8: Extinction, Chaining and Task Analysis | |
| Essentials of a behaviour reduction plan. | Section 7: Dealing with Challenging Behaviour  Section 8: Extinction, Chaining and Task Analysis | |
| How to read single-system research graphs. | Section 5: Measuring Behaviour | |
| Issues regarding prompting and prompt dependency. | Section 6: Increasing Behaviour & Teaching New Skills | |
| **SKILLS** | | |
| Skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use | | |

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| of methods, materials, tools and instruments).<br><br>Skills are public and private behaviour that are conceptually coherent with behaviour analysis in relation to the selection, application, and accomplishment of relevant tasks. | | |
| *Skills related to data collection* | | |
| Select (under supervision) appropriate dimensions of behaviour and prepare for data collection and storage according to local data protection legislation. | Section 5: Measuring Behaviour | |
| Select (under supervision) and apply measurement procedures (e.g., continuous, discontinuous, permanent-product, Antecedent-Behaviour-Consequences (ABC)-charts). | Section 5: Measuring Behaviour | |
| Complete data entry and display data on appropriate graphs. | Section 5: Measuring Behaviour | |
| *Skills related to assessment* | | |
| Select (under supervision) and apply functional assessment procedures. | Section 4: Understanding Behaviour | |
| Apply preference and reinforcer assessments. | Section 4: Understanding Behaviour | |
| Skills in data collection, graphing, ensuring stable environmental conditions, and identifying stable baselines. | Section 5: Measuring Behaviour | |
| Accomplish reliable interobserver agreement. | Section 5: Measuring Behaviour | |
| *Skills related to intervention* | | |
| Select (under supervision) and apply appropriate contingencies of reinforcement (e.g., various reinforcement schedules, conditioned reinforcers) within the context of culturally competent practice. | Section 6: Increasing Behaviour & Teaching New Skills<br><br>Section 9: Policies and Practice | |

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| Apply a range of skill acquisition procedures (e.g., verbal behaviour approach, Discrete Trial Teaching (DTT), incidental teaching, chaining, simple and conditional discrimination training, stimulus control transfer procedures, prompting and fading procedures, shaping, generalisation and maintenance, token economy, establishment of rule following, imitative, navigational, mnemonic, problem-solving and self-control repertoires). | Section 6: Increasing Behaviour & Teaching New Skills<br><br>Section 8: Extinction, Chaining and Task Analysis<br><br>Section 9: Policies and Practice | |
| Select (under supervision) and apply a range of autonomic arousal regulation procedures (e.g., the establishment and reduction of the conditional eliciting power of stimulus events and the generation of arousal monitoring and self-regulation). | Section 6: Increasing Behaviour & Teaching New Skills<br><br>Section 7: Dealing with Challenging Behaviour<br><br>Section 9: Policies and Practice | |
| *General skills* | | |
| Accomplish compliance with relevant guidelines regarding critical incident reporting. | Section 1: Background<br><br>Section 10: Revision and Final Test | |
| Accomplish empathetic rapport with clients (i.e., good "bedside manners") and ensure that contextual issues are taken into account (e.g., family bereavement, living circumstances etc). | Section 2: Real Stories and Ethics<br><br>Section 10: Revision and Final Test | |
| Select (under supervision) and apply actions that ensure client involvement and client dignity. | Section 2: Real Stories and Ethics<br><br>Section 3: Autism & Applied Behaviour Analysis | |
| Accomplish collaboration with other professionals (e.g., for running programs across academic, communication, adaptive behaviour, | Section 2: Real Stories and Ethics | |

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| social competence, leisure, and vocational skills domains.) | | |
| Accomplish support for training of stakeholders (e.g., caregivers, next of kin, other professionals) under close supervision. | Section 2: Real Stories and Ethics | |
| **RESPONSIBILITY & AUTONOMY** | | |
| Responsibility and autonomy are abilities of the learner to apply knowledge and skills autonomously and with responsibility (under supervision). | | |
| Adapt own behaviour according to service user and supervisor feedback. | Section 9: Policies and Practice | |
| Take responsibility (under supervision) for assisting with individualised assessments and functional assessments, and for conducting preference and reinforcer assessments. | Section 4: Understanding Behaviour | |
| Follow verbal and/or written programme directions from supervisor and independently complete preparation for intervention sessions. | Section 6: Increasing Behaviour & Teaching New Skills<br><br>Section 7: Dealing with Challenging Behaviour<br><br>Section 8: Extinction, Chaining and Task Analysis<br><br>Section 9: Policies and Practice | |
| Independently take an objective written record of each session and seek additional clinical direction from supervisor, where necessary. | Section 5: Measuring Behaviour<br><br>Section 9: Policies and Practice | |
| Take responsibility for communicating with stakeholders as directed by a supervisor and ensure that professional boundaries are respected (regarding dual | Section 2: Real Stories and Ethics | |

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| relationships, conflict of interest, social media). | | |
| Adapt own behaviour based on client progress, data, and/or feedback, under the guidance of a supervisor. | Section 5: Measuring Behaviour<br><br>Section 9: Policies and Practice | |

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