UNIVERSITY OF SZEGED
DOCTORAL SCHOOL OF EDUCATION

THE TRAINING AND RESEARCH CURRICULUM
AND THE ACADEMIC AND EXAM REGULATIONS
OF THE DOCTORAL SCHOOL OF EDUCATION

Seven training and research programmes are running in the Doctoral School. The programmes share a training core: PhD students choose from the same set of courses on offer. PhD students take foundation courses with a focus on research methodology based on their previous studies and qualifications and they take specialised courses based on their chosen research field, considering advice from their supervisors as well. The number of courses and the credit load per semester is regulated by the credit system. The training programmes are not isolated from each other as regards research, either. Staff members of the Doctoral School strive to launch joint projects that transcend programme boundaries and provide opportunities for cooperation. In these projects the PhD students of the Doctoral School can carry out separate sub-tasks. The cooperation can broaden the range of research methods applied, and it can be mutually inspiring to become familiar with theories and models of different areas. The first part presents these seven training and research programmes. Research activities are wholly individualised and are carried out under the guidance of the supervisor. The framework for individual work is defined by the academic regulations, which also include the credit system. These are summarised in the second part.

The Training and Research Curriculum
of the Doctoral School of Education

Learning and Instruction

Programme director: Csaba Csíkos, DSc

The overall framework of the training programme

The training programme acquaints PhD students with the wider framework and major themes of the research problems of school-based learning and instruction. The theoretical background provided primarily includes issues of cognitive development, research on abilities, the relationship of declarative and procedural knowledge, the application of knowledge, problem solving, transfer, and the processes of learning and instruction in the school.

Research topics are offered primarily in two areas, in the examination of the quality and organisation of knowledge acquired in school and in the development of the methods and efficiency of instruction. There emerged two main methodological frameworks for the examination of knowledge acquired in the school. On the one hand, it is possible to describe and explore the developmental processes of different skills and abilities by cross-sectional and longitudinal assessments on larger samples. On the other hand, it is possible to explore the connections among different variables by means of assessments including several variables and investigating the effectiveness of interventions on smaller samples. Regarding the improvement of the methods of learning and instruction processes in the school and of their efficiency, experiments of developmental intervention can be carried out, the methodological frameworks and techniques of which have also been established in the Doctoral School.

PhD students in the doctoral programme may engage with research groups operating alongside the Institute of Education at the University of Szeged. The members of these research groups contribute to the implementation of the training and research activities of the doctoral programme.

Main areas of research

1. The development of abilities

In the late 1990s, the assessment of several skills and abilities was carried out, mostly on nationally representative samples, using cross-sectional data collection. In all cases, the surveys of the abilities were preceded by the theoretical study of the given ability, by the description of its structure, and by the analysis of its role in learning from instruction and in the application of knowledge, then by pilot studies on smaller samples. The important skills and abilities assessed include, for example, combinative, systematising and logical abilities, the skill of solving word problems, converting units of measurement, and various foreign language skills. In the training programme similar skills and abilities can be defined, explored, and their developmental processes assessed.

a) The extension of previous studies: the examination of new domains, school subjects and age groups, in new contexts, with the analysis of a wider range of background variables.
b) The examination of the ability of complex problem solving in further realistic contexts, the relationship of knowledge acquired in the school and problem solving, the detailed analysis of transfer, the examination on of the role of contexts and structural factors.

c) The examination of reasoning related to chance, probability and uncertainty, the development of correlational and probabilistic reasoning, errors in reasoning, naïve generalisations and misconceptions in correlational reasoning, the comprehension of probabilistic processes, and the possibilities of their representation in school subjects of the Social and Natural Sciences.

d) Studies on the strategical (metacognitive) components of reasoning.

e) The role of inductive, deductive and analogical reasoning in the learning of given school subjects. Analogies and isomorphic problems, the role of analogies in comprehension.

f) The improvement or adaptation of previously developed instruments, the repetition of assessments with different age groups, and in different contexts (in a different language, in a different culture, in a different country), with different background variables, using new procedures of data analysis.

2. The organisation of knowledge acquired in the school, and the characterisation of its quality

In recent years, there have been several consecutive concentrated studies targeting the development of instruments for the assessment of knowledge acquired in school (the application of Science knowledge, Science misconceptions, mathematical comprehension, written composition, historical reasoning, critical thinking, probabilistic reasoning, complex problem solving, proving ability, and reasoning schemas), and then empirical analyses.

Topics to be elaborated in the PhD programme primarily include:

a) The characteristics of the organisation of content knowledge, the examination of conceptual development, conceptual understanding and conceptual change in a few select central areas of the Natural and the Social Sciences. The possibilities of semantic representation and multiple representations, and their role in improving comprehension.

b) The relationships of academic achievement and affective factors influencing it (for example, achievement motivation, mastery motivation, self-regulated learning, attributions, and self-concept).

3. Facilitating the development of abilities in the school

In previous research projects, the facilitation of the development of several components of operational reasoning and analogical reasoning has been completed. A theoretical framework and instructional methods for fostering thinking embedded in content have been presented. Experiments have been conducted in helping the development of abilities in a criterion-referenced approach. For PhD students in the doctoral programme, an ideal research topic would be the development of content-specific intervention programmes and investigating their effectiveness.

a) The use and investigation of the effectiveness of the criterion-referenced and content based developmental intervention model can be carried out in several domains, primarily in the first language (reading or writing), logical-mathematical operations, inductive reasoning, and analogical reasoning, or in school subjects (Mathematics, Chemistry, Physics, Biology, History, or foreign languages).

b) The development of the abilities of students with a developmental lag. The development, experimental validation, and effect size calculation of targeted, mostly individualised, complex intervention programs to improve the performance of learners from disadvantaged families or low-stimulus environments. The study of resilience, the identification and creation of school environments conducive to high performance against the learners disadvantaged situation.

c) The exploration of the development, and of the possibilities to help this development, of learners with special educational needs.
d) Investigation and development of pedagogical competencies underpinning thinking skills development.

4. Methods improving the quality of acquired knowledge and the attitude towards learning

Previous research has, on the one hand, identified problems in the quality of knowledge, on the other hand, integrated instruction in school subjects and helping the development of reasoning skills. Further research is needed to develop methods of school-based learning and instruction that, on the one hand, improve comprehension and the applicability of knowledge, and, on the other hand, improve motivation and affective factors in learning.

a) The school-based experiments targeting integrated instructional objectives can be enriched with new methods. Such endeavours include Problem-Based Learning, Content-Based … Learning, and Inquiry-Based … Education, where various subjects or domains can replace the dots. To assess changes in the quality of knowledge, instruments developed previously can be used.
b) Changing instructional methods to improve the quality of knowledge and the attitude towards learning. The use of mind maps, metacognitive support, individual and group projects, groupwork, cooperative learning, mastery learning, differentiation and personalisation as means to the abovementioned goal. Development of intervention programs, experimental validation.
c) The development and experimental validation of learning materials (textbooks or multimedia tools) informed by new concepts of knowledge, constructivist in nature, conducive to the improvement of general attitudes toward learning. The development and application of theoretical frameworks and techniques for such development and the analysis of learning materials.
d) Developing scaffolding skills through the analysis and enhancement of pedagogical content knowledge, conscious noticing and classroom error culture.

5. Helping development in the kindergarten, kindergarten to school transition, and the instructional issues of the first grades of primary school.

Because learning difficulties are usually formed in the first grades of schooling, research on early childhood education, kindergarten to school transition, and the conditions of successful school entry receive growing attention.

a) The identification of the preconditions of successful school entry, the exploration of the preliminary skills for learning to read and learning Mathematics.
b) Helping children's development in the kindergarten, the identification of atypical development, and developmental methods appropriate to compensate in domains lagging behind.
c) The exploration of kindergarten to school transition, the possibilities of longitudinal studies beginning before school entry.

Social and Emotional Education

Programme director: Krisztián Józsa, DSc

The overall framework of the training programme

The programme focuses on the social and affective aspects of education. The broad category of affect includes emotional factors, attitudes, interest, motivation, and it also shows overlaps with certain components of social behaviour. Although this area has been in the focus of education research for a long time, only in recent decades have schools and kindergartens become the subject of direct inquiry in this regard. By the present day, such research has accumulated evidence of the crucial role affective factors play in academic performance. Some affective variables are stronger predictors of school success than intelligence. The research of emotions and motives is strongly linked to that of social relationships. Social relationships are founded on social skills and motives. The high developmental level of these is also essential in academic performance and social adjustment.

Research in recent decades has radically transformed our understanding of humans as social beings. In addition to Educational Science, important findings come from, for example, Human Ethology, Psychology, Sociology and Neurophysiology. This interdisciplinary approach is crucial for understanding childhood development. Education puts the primary focus on malleability and the possibilities for facilitating development, and as a helping profession, this discipline defines education as activity to help and to facilitate development. This modern interdisciplinary approach enables a broad foundation of issues in education in terms of both theory and empirical research. The research programme offers research topics primarily in the exploration of social and emotional competence, and of affective factors that influence the development of one's personality and play an important role in academic achievement, as well as in learning motivation. In addition, broader issues in education – such as in-service teachers as professional helpers; the connections of learning motivation and the social environment; moral development and its facilitation; or the comprehensive analysis of how schools convey values – are also covered within the framework of the programme.

The Social and Emotional Education training programme works in close research cooperation with the Institute of Education, the Institute of Psychology and the Institute of Behavioral Sciences of the University of Szeged, and it also has strong ties with other related research groups.

Main areas of research

1. Social behaviour development and its facilitation

Besides biological factors, the characteristics and the changes of social behaviour are influenced by, on the one hand, the psychic (cognitive, emotional, and social) characteristics of one's personality; and on the other hand, environmental factors, in conjunction and in interaction with each other. The scope of psychic characteristics is quite wide, while environmental factors include cultural, institutional, physical, and personal impacts. The system of psychic components that determine social behaviour is social competence, which comprises of numerous motives, skills, abilities, habits, models, and knowledge. The past 10 years have seen an impressive growth in the number of studies that focus not only on the age- and gender-related characteristics of social

competence, but also on the exploration of the relationships between various variables and the changes of associations over time. The results of these complex studies provide a sound basis for kindergarten and school programmes that aim to facilitate the development of various psychic characteristics. Concurrently, a growing number of studies target the similarities and differences of social competence due to cultural impact, however, most of these studies undertake to examine the role of family background and that of educational actors (e.g., peers, teachers) – which are not completely separable from cultural influences –, using cross-sectional or longitudinal designs. The following research areas are offered within the framework of the training programme:

d) The developmental process and level of the cognitive components of social competence (e.g., decision-making, or control) in children of kindergarten, primary and secondary school age. Exploring the relationship of the construct under investigation with another component of social competence, or an environmental factor.

e) The developmental process and level of the emotional components of social competence (e.g., exhibiting and understanding emotions) in children of kindergarten, primary and secondary school age. Exploring the relationship of the construct under investigation with another component of social competence, or an environmental factor.

f) The developmental process and level of the social components of social competence (e.g., communication, or assertiveness) in children of kindergarten, primary and secondary school age. Exploring the relationship of the construct under investigation with another component of social competence, or an environmental factor.

g) Developing a programme to facilitate the development of given components of social competence, determining the effects of such programmes among children of kindergarten, primary and secondary school age.

2. Emotional development and its educational connections

The number of studies that highlight the role of emotions in personality development has been rapidly growing in recent decades. Since emotions are present in all aspects of our lives, recognising, understanding, regulating, and managing our emotions are crucial skills because they influence our cognition, goal-oriented actions, and our behaviour as a whole. Within the training programme, it is possible to:

a) examine the early manifestation, recognition, understanding and management of emotions in different age groups;

b) study the verbal and non-verbal aspects of emotions;

c) explore research methods in the field of emotions;

d) examine the influencing factors of emotional awareness;

e) analyse the relationship of emotions with other affective and cognitive components; and to

f) explore possibilities to facilitate emotional awareness.

3. Self-regulation and factors influencing it

Self-regulation plays a fundamental role in successful problem solving both in school and in our everyday lives. Self-regulation realises the consciously control and monitoring of our thoughts, emotions, and behaviour. The development of self-

regulation is influenced by both genetic and environmental factors. Its research has ties to temperament research, Neuropsychology, and the socio-cognitive approach to research. Studies so far have mainly focused on effort control, the executive functions, and the field of self-regulated learning. Within the training programme, it is possible to:

a) explore the basic components, skills, and processes of self-regulation;
b) examine its pace of development;
c) explore what early life experiences, family and additional environmental factors have a strong impact on its development;
d) explore its adaptive and maladaptive functioning;
e) analyse its relationships with affective and cognitive areas; and
f) explore possibilities to facilitate its development.

4. Learning motivation

One of the indispensable components of lifelong learning – an expectation in knowledge societies – is a positive attitude to learning. Therefore, motivation to learn should not only be treated as a tool that supports instruction, but rather as one of the primary goals of education. Learning motives and the various skills and abilities enhance each other to ensure the high functioning of competencies, high academic achievement, and social adjustment. In recent years, a number of new trends and theoretical models have emerged in learning motivation research. Findings have confirmed the decisive role of mastery motivation in one's personality development and in academic achievement. Special attention has been paid to content-specific motives, i.e. motives activated in specific situations and contexts. A current comprehensive theoretical model is self-determination theory. Learning motivation is influenced by both individual and environmental factors. Exploring the relationship between learning motivation and the environmental factors is a priority area from the perspective of formal education. Main research areas of the training programme include:

a) examining various components of learning motivation, developing instruments, testing theoretical models;
b) analysing the changes in learning motivation with age;
c) exploring the relationships of learning motivation and various skills, abilities, and achievement indicators;
d) examining the relationship of learning motivation with family characteristics and with schooling;
e) learning motivation from a cross-cultural or cross national perspective;
f) developing and testing programmes to facilitate and strengthen various components of learning motivation.

5. System-level support for equity in education

Equity in education means providing learning opportunities to all students, for example, regardless of their socio-economic status, gender identity or immigrant status, so that they can all be successful in school with respect to cognitive achievement, social-emotional development, and well-being. Ensuring equity in education is not only a moral responsibility, but a shared social interest; we can consider it wise investment in education that will pay off. Within the training programme, it is possible to explore the system-level barriers to equity in education and examine possible solutions to these.

Educational Assessment

Programme director: Tibor Vidákovich, Dr. habil.

The overall framework of the training programme

The Institute of Education at the University of Szeged (formerly JATE) has been playing a decisive role for decades in Hungarian research and development related to educational assessment, and to the assessment of knowledge and abilities. At the end of the 1960s, the development and publication of standardized achievement and ability tests, item banks, and the regular study of the related assessment methodological problems started here. From the 1980s onwards, the development of ability tests and the studies on knowledge structures, as well as the development of diagnostic assessment forms and instrument systems that support educational innovation also started here.

From the beginning of the nineties, the role of educational assessment and testing increased significantly. The strengthening of the output regulation and the continuous development of the Hungarian national assessment and examination system require the work of more and more specialists with a high level competence of assessment and testing methodology. It shows the needs and interests that the national lists of experts include a large number of experts undertaking educational assessment tasks. In order to satisfy the needs for assessment experts, the in-service training of educational assessment experts was launched, with approximately 50 graduates obtaining this qualification per year. This type of training was significantly renewed and expanded in 2010. The in-service training programmes preparing the participants for educational assessment and teacher researcher tasks were specialized in four different areas.

However, in addition to the expert and the developer level, there is also a need for training at the researcher level in the field. The Educational Assessment program of the Doctoral School of Education aims to meet this need. Within the framework of the program, PhD students can get acquainted with the most important theoretical and practical knowledge on educational assessment (measurement and testing), learn the basics of research methodology, of the statistical tools and of computer software for data analysis. After the foundation studies, PhD students can specialize in different areas of achievement and ability testing and in different applications of test theories.

In order to satisfy the needs detailed above, the existing educational assessment and test theory courses at the Institute of Education have been expanded and new courses have been introduced, the curricula and topics of which rely significantly on the knowledge and results accumulated in about three decades of research at the Institute. In addition to theoretical and practical training, involvement in research projects provides an opportunity for doctoral students to study the methods of empirical research in practice and to conduct independent empirical research.

There has been a long-standing collaboration between the University of Szeged and assessment and examination centres in the Netherlands and in the USA on research topics related to educational assessment and testing. As a result of the cooperation, the methods already developed elsewhere and, in some cases, the computer software packages supporting data analyses, can be used in the planning of national examination reforms or system-level assessment programs, and in the analysis of measurement data.

Within the framework of the Center for Research on Learning and Instruction, a program for the development of an online diagnostic assessment system was launched in 2009, which also offers PhD students a wide range of research opportunities in the field of educational assessment.

Main areas of research

1. Classical and modern test theories and their educational applications

Attempts to apply modern test theory models appeared since the 1980s, first in psychological research in Hungary. At a few university and R+D institutes, including the Institute of Education at the University of Szeged and the former Árpád Kiss OKSZI Assessment and Measurement Center, the educational application of modern test theory procedures also began. The related research aims to explore new methods of assessment and testing which have not been used in Hungary so far, or present to a lesser extent, and to explore their applicability in educational research, primarily in achievement and ability testing. By applying the new methods of analysis methodology, we can obtain better applicable models for achievement testing, for analysing the structure of knowledge, and for studying the development and structure of abilities (for example, thinking, mother tongue, mathematical abilities).

2. Issues in the development and application of task and test systems

One of the most demanding practical applications in the field of educational assessment and testing is the development of item (task) and test banks, the theoretical and methodological foundations of which have been known for a long time, but their further development is needed for educational applications. As a research area, the equivalence problems of tests and test versions are of interest, which include the validity studies of test versions, and, within this framework, the issues of the stability of knowledge and the ability structures they cover. In addition to the traditional development method of task and test systems that is based on the norm-referenced testing model, the issues arising during the development of criterion-referenced and structure-referenced systems – such as the interpretation of equivalence and the development of equivalent task and test versions – are an interesting and important area of research.

3. Diagnostic educational assessment and the innovation in education

Diagnostic methods of educational assessment and testing can play a key role in the continuous development and renewal of the education system and instruction. Diagnostic assessment can effectively help the work of decision-makers and teachers in the regulation and planning of both classroom teaching and learning, and ability development. The model and general methods of diagnostic assessment can be considered as established as a result of the research carried out at the Institute of Education, however, significant adaptation work, including new research, must be carried out for practical applications. These include studies on models and methods for exploring knowledge and ability systems, item writing and test construction methods that enable diagnostic analysis, and studies on statistical tools and procedures of diagnostic analysis.

4. The concepts of added value and options for determining it in education

Issues of the effectiveness of education have again become the focus of professional interest in recent years. Within this, one of the most interesting issues is the examination of changes, the educational added value attributable to the work of a school or a teacher.

Although there is a long-standing need for achievement studies to take into account not only the performance of the learners leaving, but also the personal and environmental conditions of those entering the school, as well as the personal and material conditions of educational activities, the appropriate methods have not been widely known, and the practical tools of implementation still cannot be considered properly developed. Due to this, a number of research tasks are waiting to be solved in the field, such as the international and national trends and alternatives regarding the interpretation of added value, the background factors to be taken into account during its determination, the methods of their assessment, and the options of computing added value.

5. The theory and practice of exams and examination procedures

The development of the Hungarian examination system (the elaboration of a new secondary school final exam, or the reform of secondary school admission procedures) raises a number of issues in assessment and testing methodology. Key questions include the issue of the reliability, the validity, and the equivalence of exam tests. Research based upon the results of assessments that have been carried out regularly for years can help to establish the appropriate level of reliability and the study of the validity of examination procedures. Research can also prepare the development of new approaches to the development of exam tools, and the development of new models for assessment. New test development and test analysis methods can be developed, for example, in the fields of mother tongue and foreign language, Mathematics, and Science. The evaluation of oral and practical products (such as visual culture exam projects) through jurying can also be an important research topic.

6. System-level educational studies: International and national assessments and the development of the education

Numerous results from decades of international comparative studies (assessments conducted by the IEA and the OECD) provide opportunities to analyse the problems of education in Hungary. The results of the PISA surveys conducted every three years can be important sources for decisions on the reform of the education system, but the analysis of the data and the interpretation of the results require special expertise. National assessments and research projects conducted in parallel with international programs also provided a body of important data for determining the developmental directions for the Hungarian education system. Further research in this area may include the methodological issues of comparative studies, assessment and testing methods that allow comparisons of data from different socio-cultural backgrounds, different age groups, and at different times, as well as the issues of feedback based on the results of the studies to the actors of the education system and to the decision-makers.

Digital Technologies in Education

Programme director: Gyöngyvér Molnár, DSc

The overall framework for the training programme

IT is a general subject area in public education which is tied to multimedia applications. Educational research in the field in the 1960s and 1970s dealt with learning computer programming and only targeted a narrow expert audience. With the emergence of digital technologies in mass education in the early 1980s, large-scale studies began to examine the educational use of computer devices, various digital technologies and the Internet. In recent years, research has also focused on the pedagogical applications of artificial intelligence. Assessing these findings and capitalizing on this technology, the training programme prepares PhD students for innovative developmental work aimed at optimising the educational application of digital technologies. Additionally, it enables them to exploit the potential of these tools and new analytical repertoires (e.g., pattern-recognition algorithms) to address previously unanswered research questions concerning the quality of knowledge.

The training programme encompasses five major problem areas linked to teaching digital technologies: (1) the development of digital literacy and opportunities for its enhancement; (2) the effective integration of digital technologies into education; (3) the development of students with special educational needs (SEN) through digital tools; (4) personalised education (smart education); and (5) technology-based competence assessment, with research examining the possibilities for logfile analysis and computer game-based development.

The theoretical preparation involves discussion of the new demands set by the knowledge-based society and their solutions as well as issues in Sociology and the philosophy of science. It provides an introduction to methodologies used in the fields of technology, Educational Psychology and Aesthetics to study multimedia devices. It also presents the nodes in the nearly three-decade history of educational IT and technology-based assessment and development that are of interest from the perspective of Educational Science. Furthermore, it offers an international overview of digital technology-assisted teaching and learning, as well as the educational applications of the Internet and artificial intelligence.

A key part of the practical side of the training programme involves familiarisation with and analysis of state-of-the-art instructional and assessment systems (e.g. the eDia online assessment system) and development systems (e.g. the eLea online development platform), as well as new hardware and digital technology environments. In their practical work with IT devices, PhD students receive an overview of theoretical and practical issues in designing software for educational assessment and development in parallel with fuller practical experience. They also survey innovative item and test development options and analytical possibilities for collected data (responses and log data).

Given the characteristic features of the field, PhD students benefit from the participation of international guest lecturers and experts in the training and from the opportunity to collaborate with their international peers. In addition, the courses offer PhD students the chance to gain experience with the educational application of e- learning technologies in their own training.

Main areas of research

Research currently conducted in the field can be grouped into five major topic areas:

1. The development of digital literacy and opportunities for its enhancement

We offer our PhD students research topics in competence testing and educational theory alike. In the area of competence testing, we study the constituents of IT competence, the development of the skills and competences necessary in digital technology-assisted educational and real-life environments, personality traits that help or hinder computer-assisted learning, competence development through devices (e.g. developing spatial cognition, visual memory and psychomotor coordination) and artificial intelligence literacy.

Among questions of educational theory, we develop a theoretical framework for pedagogic models of digital technology-assisted teaching and learning. Specifically, we examine digital technologies characteristic of particular cultures and subcultures, pedagogic procedures and their links to traditional teaching methods, and features of cultural environments. We thus focus on the effect of gender, age and cultural milieu on learning performance in a digital technological environment, including domestic and international IT competence testing and school case studies. Whenever possible, we involve our PhD students in domestic and international competence testing, thus providing an opportunity to conduct comparative analyses between various cultures. They are familiarised with the problems of compiling international tests and exercises and the role of digital procedures in data processing and analysis, and they participate in data collection.

2. Integrating digital technologies into education (assessment, development, efficacy, materials development, competence development, development of skills and competences, distance learning, etc.)

This topic area includes the design of digital development programs to improve the quality of school knowledge and impact studies as well as the design of second- and third-generation tests and development programs, analyses of curricula and teaching materials, and the study of the general use of IT culture and its educational consequences. Researchers in this area are currently concentrating on the interdisciplinary, integrative role of digital technologies, specifically studying digital technology-assisted teaching methods and instruments that can be used to evaluate instruction in different subject areas, to simultaneously make it more effective and to develop IT competence. Designing e-learning applications, developing educational methods and instruments particularly effective in electronic environments and studying electronic forms of distance study also fall within this topic area.

Didactic problems that research tackles in this topic area include the study of effective technology-supported methods and the monitoring of effective integration of digital technologies into education through school experiments and assessments within the areas of competence development, learning, teaching and assessment. Within this topic area, we wish to provide an opportunity to use action research to develop IT teaching tools and teaching environments in communities of disadvantaged learners and

in forms of teaching in which digital technology may serve as an adequate means of development. We also provide space within this topic area for researching feedback mechanisms, as well as effective forms of visualisation and response.

3. Special educational needs (SEN) students and applications of digital technology

This includes studies on the technology use habits, attitudes and competence development patterns specific to different age groups and biological sexes. These studies also analyse development programs and digital teaching materials designed for different groups, as well as the selection of IT entertainment available commercially and on the Internet. A key topic area in the field is the design and testing of special education applications, with the potential applications of rapidly developing and individually tailored adaptive IT as therapeutic tools being virtually endless. SEN students include socio-economically disadvantaged young people who fall behind in school, a situation which experience shows can be compensated for with technology-supported methods and development programmes.

4. Exploring research questions related to the impact and implementation of personalised online adaptive testing

This topic area includes the transformation of previous, traditional and computer-based linear testing and development systems into online adaptive ones and impact studies of their operation. It also encompasses adapting and improving existing examples of online assessment and testing environments and designing competence tests and development systems based on new teaching models and technical solutions. In close cooperation with other training programmes, new opportunities are made possible for the design, measurement and parameterisation of adaptive testing and development systems that make wide use of technological options. This involves research questions tied to the introduction of adaptive testing, e.g. the impact of position and comparing the functioning of adaptive systems of various structures (number of adaptive steps, applied algorithm, optimising initial and final testing criteria, studying item-based and subtest-based adaptive testing, and conditions for the dissemination of online adaptive testing in Hungary).

Our doctoral programme provides researchers who have a degree in sociology, education, psychology or IT and an interest in the field with opportunities to cooperate in this topic area, in the hope that they will engage in IT research and development in specialised areas of teaching that represent a gap in Hungary. We see facilitating the development of IT applications that provide equal opportunity for socio-economically disadvantaged students and of related teaching methods as well as studying instructional processes aided by digital devices aimed at improving dysfunctions as key areas of need.

5. Technology-based assessment and computer game-based development of competences; the adaptation and application of new options and methods for logfile analyses

The cognitive revolution in psychology and the development of new understandings of knowledge in a rapidly changing knowledge society in the 21st century which thus requires constant learning – including real-world options to assess and develop areas also measured with traditional instruments, the measurability of new constructs, and the transferability of more motivating tests matched to the individual's competence level – have made it possible to determine what is worth assessing and developing in particular stages of development and how. The shift from traditional testing techniques to technology-based testing, however, has not only created opportunities for researchers; it has also posed problems and challenges. This has resulted in the development of new-

generation educational assessment technologies, which may even produce significant changes in educational assessment in the short term. This topic area involves the implementation of these technologies in a range of competence areas.

In cooperation with other training programmes, this topic area includes research on assessing competences that cannot be measured with traditional data collection techniques (e.g. collaborative problem-solving and interactive dynamic problem-solving), as well as on designing training programmes to develop relevant competences based on online computer games and on conducting impact studies. It also involves studies on new options in technology-based testing (e.g. logfile analyses with new-generation statistical methods, learning analytics, educational data mining and big data, as well as exploring and evaluating the opportunities provided by artificial intelligence).

Health Education

Programme director: Bettina Pikó, DSc

The overall framework of the training programme

The training programme introduces PhD students to the history of health culture, the evolution of health as a value over the ages, from health education to modern health promotion theory. Emphasis is put on exploring the educational, social (family and environmental), cultural, religious, etc. factors that influence the health behaviour of a given population. The theoretical foundations introduce the philosophical, sociological, anthropological, psychological, pedagogical and ethical aspects of health education and health promotion, as well as current development models that will enable PhD students to conduct effective research using complex approaches.

Research so far has shown that many factors play a role in the development of health-conscious behaviour. In addition to knowledge about physical functioning and health, attitudes, beliefs, lasting and culturally determined patterns of behaviour and specific environmental conditions play an important role. An important prerequisite for the adaptation of internationally applied and confirmed effective health promotion methods is a detailed knowledge of the determinants of health-conscious behaviour in the population, and in particular in young people of school age (from primary school to graduate training). Our research themes are largely concerned with exploring these specific factors. We also explore lifestyle techniques that are effective in counteracting the negative impact of the natural and social environment on health. We plan to examine these factors in a historical context. On the other hand, we intend to carry out scientific work on the methodology of designing, operating and assessing the effectiveness of health education and health promotion programmes.

The training programme is in close cooperation with the Youth Research Group of the Institute of Behavioural Sciences of the University of Szeged, thus the cooperation with the Doctoral School allows for the extension of the research methods and tools of the research group, and the joint implementation of larger-scale surveys and research programmes. The Youth Research Unit has four priority areas where research collaboration with the Institute of Education is possible:

- Problem behaviours in adolescence (addictions; harmful addictions such as smoking, alcohol and drug use; behavioural addictions such as problematic smartphone and internet use; adolescent mental health problems such as depression, aggression, or anxiety) and their impact on the daily life of the school-age population.
- Identification and analysis of risk and protective factors (sport, spirituality, peer support, resilience and other positive psychological factors that promote well-being in young people).
- The impact of the school environment on health, including mental health protection for teachers, with a focus on prevention.
- The planning and implementation of health education programmes in schools, with particular emphasis on catch-up programmes for learners from disadvantaged backgrounds, through which complex health education experiments can be carried out.

Collaboration with researchers of Education and Psychology from the Doctoral School of Education can be primarily useful in exploring how family and socialisation mechanisms influence the development of health-conscious behaviour and health-risk behaviour.

Main areas of research

1. Culture, health and health literacy

In order to develop effective health education programmes, we need to understand individual perceptions of health and the traditions that still exist today and influence people's views of, and reactions to, health and illness.

The PhD programme offers a range of research topics in this area:

a) Exploring the cultural roots of health beliefs through studies of students of different ages.
b) Analysis of the specificities of health and media literacy. Analysis of typical misconceptions about health, illness, and health determinants among students of different ages.
c) Exploring family, educational, and societal influences on health and healthy lifestyles.
d) Identifying groups with significant deficits and special needs and their specific problems.

2. Behavioural-epidemiological studies

Analysis of problem behaviour and health behaviour in youth, exploring the prevalence and background of the problem. A number of different research topics can be carried out in this area in the context of the PhD programme:

a) Research on chemical addictions (smoking, alcohol, and drug use)
b) Research on behavioural addictions (problematic smartphone and internet use)
c) Assessment of adolescent depression, aggression, and anxiety
d) Complex lifestyle survey of school-age children (nutrition, sport, and leisure)

3. Analysis of risk and protective factors

Effective health education is based on an understanding of risk and protective factors, so identifying these is a priority. The PhD programme offers a range of research topics in this area:

a) Exploring risk factors (social inequalities, individual and environmental influences)
b) Sport as a protective factor
c) Spirituality and religion as protective factors
d) Family as a protective factor
e) Social relationships, peer support as protective factors
f) The role of positive psychology in health protection (coherence, resilience, or coping)

4. The school as a site for health education and promotion

Schooling undertakes to treat health as a value and to shape appropriate health behaviour. Developing tools for effective intervention, assessing the effectiveness of

different tools and methods. A variety of research topics can be carried out in this field as part of the PhD training:

a) The role of curricula, the direct health education effects reflected in curricular objectives and health-related knowledge embedded in different subjects (e.g. biology). Health maintenance as a way of integrating knowledge (problem-based learning).

b) Analysing the role of the school environment and school life in promoting health (physical, psychosocial, and residential social environment). The indirect behaviour-shaping effects of school.

c) School health policy. Complex, learner-centred programme development, integration of health promotion aspects into school curricula.

d) Developing health awareness in school instruction. Programme development, development of learning materials, pilot testing, evaluation of effectiveness.

5. Assessing the effectiveness of health education and health promotion

Assessing the effectiveness of health education and health promotion and building on the results are the key to ensuring that the population's health culture approaches the desired level. For this reason, in addition to the implementation of international effectiveness measures, and in conjunction with them, there is a need to develop methods for assessing effectiveness that take into account national specificities and social, political, and economic impacts. Within the framework of PhD training, several research topics can be carried out in this field:

a) Assessment of the effectiveness of health education; development of reliable indicators; adoption, adaptation and testing of international experiences.

b) Assessments at school, maintainer and regional levels, integrating health education aspects into monitor studies.

Psychological Questions of Development and Education

Programme director: Tamás Martos, PhD, Dr. habil.

The overall framework of the training programme

The training programme aims to provide research-oriented knowledge on the Psychology and Cognitive Neuroscience of child and adolescent development. The history of Educational Science and Psychology share an origin. To this day, there is a strong relationship between the two disciplines, as both focus on examining human behavior. Moreover, the most important area of shared interest involves the research of possibilities and mechanisms of forming behavior. In the past decades, new theoretical frameworks and research paradigms (e.g., the approaches of Cognitive Neuroscience, Evolutionary Psychology, dynamic systems theory, and ecological systems theory) have emerged to explore and understand human behavior. The fundamental training function of the programme is to provide the doctoral students with a broad perspective of psychological and neuroscientific understanding to address pedagogical issues, including the formulation of theoretical, methodological, and research questions. Cognitive neuroscientific approaches are getting more influential within international educational research. With the advancement of neuroscientific examination methods, it is now possible to find new interpretations and explanations to several pedagogical phenomena. Research concerning the educational application of Cognitive Neuroscience (i.e., *Educational Cognitive Neuroscience*) has been initiated worldwide. PhD students of our Doctoral School have the opportunity to take part in establishing this line of research in Hungary.

Apart from the Institute of Education, the training programme is in close collaboration with two other institutes of the University of Szeged, namely, the Institute of Psychology and the Institute of Physiology. The history of our collaboration with the Institute of Psychology dates back to several decades. The two institutes formed a joint unit by the name of Institute of Education and Psychology until September 2007. As a result of the strengthening and organizational development of the fields, Education and Psychology now form two separate institutes with close and fruitful collaboration to this day.

The Institute of Physiology conventionally focuses on the physiology of the central nervous system, and more specifically, sensory functions. Within the neurophysiology of sensory functions, vision from the retinal level to the level of cognitive processing (along with perception and categorization) are being investigated. The collaboration with the researchers of the Institute of Education allows for the combination of various research methods, and hence the exploration of further links. The data collected regarding the central nervous system can supplement the examination of factors determining the development of cognitive skills and academic performance. Cognitive neuroscientific methods offer new perspectives to explain the considerably high interindividual variability in the pace and level of development of skills. This paves the way to identify biological/maturational and social/cultural differences more accurately and to distinguish their role in academic performance. An interesting collaborative approach could be the further development of educational diagnostic methods through methods used in Cognitive Neuroscience, for instance, analyzing the validity of diagnostic tools in such a way.

Main areas of research

1. The psychology of adolescence

a) Coping with stress in adolescence. One major challenge of adolescence is to cope with problems and challenging situations. On the one hand, our research aims to explore the coping mechanisms of adolescents in problematic situations with a new questionnaire that has not been used previously. On the other hand, we also wish to explore stress management methods used in social relationships that are relevant to adolescents. This research provides an opportunity to explore the coping mechanisms of young people of different ages and identify the various coping skills in social relationships.

b) Planning and decision making in adolescence. Adolescence is the period of preparing for tasks in adult life and determining the means of formulating and realising plans. In our research, we explore the long-term personal goals, motivation of career choice, and decision-making processes of young people of various socio-cultural backgrounds. This research provides an opportunity to explore the planning processes, identify the difficulties in decision-making, and help specify the future plans of young people who are about to decide on their careers. This study also aims to explore the background factors of family and school socialization.

c) Self-image and self-esteem in adolescence. The examination of shaping and change of self-image in adolescence is a popular field of research within the field of Developmental Psychology. However, only a few representative studies have been conducted in Hungary. The research aims to explore the changes of self-image and self- esteem spanning through the entire length of adolescence. Another important aspect is to examine the relationship of self-esteem and self-image with parental aspirations and self-image.

2. Socialisation and learning in the family, and in-school and out-of-school contexts

a) The process of family socialisation has a fundamental role in primary socialisation. Research on this topic is particularly warranted by the diversification of family forms (e.g., single-parent families, children raised by non-biological parents, etc.) which also calls for the re-evaluation, reanalysis, and novel research of the family socialisation process.

b) Environmental psychological research of home and school. Home and school can be interpreted and investigated with an environmental psychological approach as environments of socialisation. The interactions between socialisation, learning processes, and environmental characteristics in these settings are yet to be explored.

c) Situated learning and apprentice learning. In the past decades, significant attention has been drawn to learning processes in everyday and natural situations. The most influential theoretical bases of the field include the affordance theory of Gibson and the social learning theory of Vygotsky, and the work of Schoenfeld, Lave, and Rogoff had a great impact on the field of research. The research programme also aims to examine situated and apprentice learning in other settings.

3. The development of visual skills in children

a) The development of shape and form perception at the ages of 5 and 14. It was commonly believed that visual functions become fully mature by the age of two. However, a growing body of evidence suggests that visual functions (e.g., the recognition of an image based on its fractions) shows constant improvement until the

end of puberty.

b) The development of contrast sensitivity in children. Visual contrast sensitivity has been investigated for about twenty years. The introduction of automated computerised methods of contrast sensitivity has remarkably changed previous views of contrast sensitivity, particularly with regard to its development. We wish to investigate the contrast sensitivity of school-aged children in order to gather information regarding the development of the parvocellular and magnocellular pathways. Another promising line of investigation is to analyse the connection of contrast sensitivity with pedagogical measures of children.

c) The electrophysiological background (EEG, ERG, visual evoked potentials, and event-related potentials) of skill development in children. The technical background of our workgroup makes it possible to carry out complex electrophysiological measurements. Several studies have investigated the relationship between EEG and mental skills. From the current viewpoint, there is no link between these two factors in healthy children. By examining further electrophysiological phenomena, we can hopefully give estimates of mental (learning) skills.

d) Analysis of the development of parvocellular and magnocellular visual pathways in children between the ages of 2 and 14. There has been a rather heated debate regarding which of the two pathways develops first. We believe that the main obstacle in resolving this debate is the inadequacy of the currently used examination methods. We wish to address this issue by using both conventional and novel psychophysiological techniques.

4. The psychophysiological and electrophysiological analysis of learning and attention in children

These investigations are conducted in collaboration with schools and educators. Doctoral research may be based on the following research questions:

a) The development of event-related potentials in childhood. Event-related potentials may objectively inform us of the cognitive components of brain function. The parameters of evoked potentials can be compared to each other, and this way, they can inform us on the development of cognitive skills.

b) The development of gamma band activity in childhood. The examination of gamma band activity is a new branch of EEG analysis. These fast components of EEG are currently considered an accompanying electrical activity of conscious functions and attention. The methods we have access to make it possible to measure and follow these components.

c) Psychophysiological research regarding the development of learning and attention in children. We wish to follow up the development of children aged 5 or 14 with the psychophysiological techniques that are available to us.

Content Pedagogy

Programme Director: Erzsébet Korom, PhD, Dr. habil.

The overall framework of the training programme

The improvement of teachers' pedagogical skills and professional knowledge is a crucial element in the development of education. This means the training of teachers who are able to identify problems arising in their everyday teaching practice; familiar with the research findings available to solve these problems; striving to induce change by applying these findings to learners; and able to track and monitor the outcomes of such interventions. In order to attain these goals, not only up-to-date knowledge of Education and Psychology but also of research methodology is required. The new curriculum of one-cycle teacher training puts emphasis on the research-based approach. Shaped by the same principle, the Content Pedagogy programme of the Doctoral School offers an opportunity for recent graduates as well as for practicing teachers and those who teach subject methodology to become researchers and teacher researchers.

Content pedagogy (also known as subject didactics or subject methodology) is a multidisciplinary field related to teaching the individual school subjects, and to exploring the issues of instruction and socialisation. It is closely tied to the disciplines related to the school subjects as well as to Education and Psychology. However, the strength and nature of this relationship vary in its different historical trends (e.g., German, or Anglo-Saxon). In Hungary, subject didactics i.e., the theory of instruction in the individual subjects, prevailed for a long time. This area has also been increasingly affected by the social and economic changes of recent decades, by the challenges education is facing, by the need for socially relevant, applicable knowledge, and by the development of 21st-century skills. Regarding the instruction of scientific content, a deeper understanding of learners and the learning process, the exploration of general as well as domain-specific features of knowledge acquisition and thinking, and the facilitation of learning have come to the limelight. Internationally, significant research results have accumulated in the field of content pedagogy concerning the teaching of Mathematics, Natural Sciences, reading, writing, foreign languages, Social Sciences, and Art Education; and these results inspire research and development in Hungary as well. The Content Pedagogy Research Program of the Hungarian Academy of Sciences launched in 2016, which led to the establishment of 19 research groups, helped to bolster Hungarian research in content pedagogy, and to catch up with the international forerunners. If content pedagogy is included in the programs of the various doctoral schools (i.e., doctoral schools of Education and various other disciplines), it helps to increase the role and the prestige of content pedagogy.

The Doctoral School of Education at the University of Szeged has a long tradition of research in learning and instruction, ability development and its facilitation, and educational assessment. This knowledge base can be utilised successfully in the content pedagogy program: in answering subject-specific theoretical questions of learning and instruction, facilitating developmental programmes embedded in content, and investigating the effectiveness of such intervention. PhD students have the opportunity to gain wide-ranging professional knowledge and to learn from renowned national and international experts. PhD students can also participate in the work of research groups closely associated with the Institute of Education, University of Szeged.

Main areas of research

- Cognitive and affective characteristics of learners regarding specific subjects;

- Acquisition of knowledge and development of skills in specific subjects;

- Tools for planning and instruction (curricula, learning materials, and instructional methods);

- Learning sites: in-school and out-of-school learning;

- Knowledge, views, and attitudes of teachers.

The Academic and Exam Regulations
of the Doctoral School of Education

General principles

The Doctoral School of Education is subject to the general regulations of the University of Szeged. The key principles are as follows:

1. "The PhD/DLA student shall prove his/her independent scientific work through published articles in journals and books approved by the particular academic field and/or through patents that have been submitted and approved. Academic standards regarding the journals, the length and number of the articles shall be determined by the Doctoral School Council […]."

2. "If the publications mentioned in the previous Section have co-authors, […] the thesis shall have a section where, as regards the specific research topic and the publications, the co-authors (or the lead author, if that is not the PhD/DLA student) shall declare in writing which specific scientific conclusions are the ones – from the co-authored scientific achievements – that were reached through the candidate's absolutely vital work[…]. Co-authors shall also declare that the abovementioned conclusions have not been used by them for the awarding of an academic degree and that they shall not make any attempt to obtain a degree relying on these conclusions in the future. The declaration shall be signed by the co-authors (or the lead author). The procedure to be followed in the case of foreign or deceased co-authors shall be stipulated in the regulations of the Doctoral School Councils."

3. "The thesis is a comprehensive piece of work that demonstrates the candidate's goals, his/her new academic achievements, his/her insights into the scientific literature and his/her research methodology."

4. "Generally, the thesis shall be written in Hungarian or in English, but following the decision of the relevant Doctoral School Council and being granted their exclusive permission, the thesis may be written in a language other than Hungarian should this be scientifically reasonable. Foreign national candidates whose native language is not Hungarian may write their thesis in a language that is predetermined by the Doctoral School Council."

5. "A detailed summary shall be appended to the thesis in the language of the thesis in printed and electronic format. In the case of a summary not written in Hungarian, the thesis and the summary booklet shall contain a Hungarian-language abstract of no more than 2000 characters; in the case of a summary written in Hungarian, the thesis and the summary booklet shall contain an abstract of the same length in English."

Requirements regarding publications the Doctoral School of Education (cf. Clause1 above)

The quality of the Doctoral School is primarily reflected in the standard of its students' scientific publications. The publication requirements can be fulfilled in seven different ways, as detailed below. (In this context, 'publication' refers to works classified as scientific publications in the MTMT database and categorized as I-IV.) For a study-based dissertation, the candidate must have at least three publications before the defence (as per

option 'a' below: three Q1/Q2 publications). For a monograph-based dissertation, the candidate must have at least: either 3 publications (according to points 'a–c'), or 4 publications (according to point 'd'), or 5 publications (according to points 'e–g') classified in the MTMT database in categories I-IV, each containing original scientific findings. International recognition is becoming an increasingly important factor in defining quality expectations.

a) 3 Q1/Q2 publications.
b) 1 D1 publication (with the candidate as first author) and 2 additional publications.
c) 1 Q1 publication (with the candidate as first author), plus 1 English-language publication and 1 additional publication.
d) 2 Q2 publications (with the candidate as first author) and 2 additional publications.
e) 1 Q2 publication, plus 2 English-language publications and 2 additional publications.
f) 1 Q3 publication, plus 3 English-language publications and 1 additional publication.
g) 5 publications, at least one of which must be published in English in a peer-reviewed journal or by an international/national publisher.

The candidate may choose which doctoral pathway (study-based or monograph-based) to follow. A publication may only be used in a single defence process. At least half of the considered publications must list the candidate as the first author. The eligible publications must be relevant to the topic of the dissertation. In addition to the above, publications must also meet the prevailing university and disciplinary requirements.

Language Requirements of the Doctoral School of Education

In accordance with the University Regulations Governing the Doctoral Training Programmes and the Awarding of the Doctoral Degree, in order to be admitted to the programme, the candidate must have at least one intermediate level (B2 in CEFR, oral and written) proof of proficiency issued by an exam board recognized by the Hungarian state. A further requirement of the Doctoral School of Education that the candidates must have a command of English appropriate for reading the literature and understanding conference presentations *when they begin their studies*. In the case of self-financing PhD students, if their proficiency exam considered in the admission procedure is in a language other than English, the DS can give a one year extension to pass the English language exam, but the PhD student can only begin their second year of studies if they have passed the intermediate level oral and written exam. In the case of applicants for Hungarian state scholarship, only ones with the English proficiency exam can be admitted.

As regards the requirement of the second foreign language, any proficiency exam of a second foreign language is acceptable, or the knowledge of any foreign language is acceptable if the PhD student has studied it for at least one year (two semesters) in formal schooling and provides official proof of this.

<center>**The credit system of the Doctoral School**</center>

University regulations

The Doctoral School is subject to the general rules of the University (Regulations Governing the Doctoral Training Programmes and the Awarding of the Doctoral Degree, Appendix 4.)

"MANAGING CREDIT POINTS IN THE DOCTORAL TRAINING PROGRAMME

1. During the doctoral training all learning outcomes shall be measured in credits (study credit points). Credits shall be granted for only those study activities that are graded on a 3-level or 5- level grading scale system. During the 48-month-long training period – divided into 8 examination periods – a total of 240 credit points shall be earned to be eligible for a completion of studies certificate.
2. At least 20 and at most 45 credit points shall be collected during each examination period.
3. If a PhD student participates in a partial study at a foreign or other Hungarian university, the relevant Doctoral School Council may grant exemption from the above- mentioned requirements. The credit point value of the courses that had been completed at a foreign or other Hungarian university shall be judged by the relevant Doctoral School Council.
4. With research work such as bibliography, library and archives research, follow- up on journal articles, conference participation – where the PhD student presents a poster or holds a lecture – and publishing articles in journals a total of at least 130 credit points shall be achieved.
5. The credit point value of the theoretical course with two lessons per week (14 weeks/semester) shall be 3-6 points. The credit point value shall change in proportion with the change in the total number of lessons i.e. taking an intensive course with an external lecturer.
6. For the pre-degree certificate that states that all courses have been covered at least 15 credits points shall be achieved from the theoretical courses.
7. The credit point value of the weekly one lesson per week (for 14 weeks) practical session (seminar) shall be 1-2 credit points. With teaching activities 48 credit points shall be achieved at the most; 8 credit points per semester at the most. No credit points shall be granted for lessons that the PhD/DLA student is paid for.
8. Should the school set it as a requirement that, at certain intervals, during departmental or research group seminars, the PhD/DLA student shall give an account of his research activities then one such report may worth 3-5 credit points. It is recommended to require at least one such report (in the sixth examination period, for example). The Doctoral School Council shall determine the number of reports to be recognised with credit points.
9. PhD/DLA students may be granted credit points for journal articles and active conference participation with lectures and posters if they are published in the conference publications. The credit point value of the above-mentioned activities shall depend on the students' level of contribution to the achieved outcomes. With the consent of the relevant Disciplinary Doctoral Council and Doctoral Council of the relevant Branch of Science, such credits shall be determined by the relevant Doctoral School Council.
10. With the consent of the relevant DDC, recognition of credit points – in pursuant of

the Government Decree – shall be decided by the Doctoral School Council. Such recognition shall only be possible with PhD/DLA students in the organised training programme.

11. The credit points recognised on the basis of the previous section shall be confirmed by the head of the Doctoral School, and the acquisition of the training credit points shall be confirmed by the lecturer of the theoretical course. The Doctoral School Council shall determine the credit points to be confirmed by the head of the training/research programme. The supervisor shall be responsible for the confirmation of the remainder of the credit points.

12. The completion of each study period shall be certified by the Dean of the Faculty within which the Doctoral School is operating."

Credits in the Doctoral School of Education

The different training and research activities enable PhD students to earn the following credits (min.-max.).

1. By completing courses, 50–90 credits can be earned (10–18 courses). Each course is uniformly worth five credits.

2. By teaching, altogether 0–40 credits can be earned, and at most eight credits per semester.

3. By publications, 60–100 credits can be earned.
      Publications in the mother tongue are worth 5-10 credits. International publications are worth 10-20 credits. A publication referred in *Web of Science* is worth 25 credits. When publishing with co-authors, the share of the authors is presumed equal. The credit value for the PhD student author is established by dividing the credit value of the publication by the number of authors. Decimals are rounded up. Exceptions are papers published in SCI/SSCI referred journals and papers published with one's supervisor. If a multiauthor paper is published in a journal with an impact factor, the credits due to the PhD student author are calculated according to this author's place in the order of the authors. The share of the credits given for the publication equals the total number of credits divided by the number of the place the PhD student occupies in the order of authors. The supervisor does not count as a co-author when calculating the credit value for the publication. Participation at a peer-reviewed conference can be converted to publication credits if at least the abstract of the paper has been published in the conference book or on the homepage of the conference. Publication credits can be given only for material already published, or officially documented to have been accepted for publication. The credit value of individual publications is defined by the Doctoral School Council, based on the status of the journal or publisher.

4. Altogether 30 to 40 credits can be earned by presenting reports on current research outcomes in the Research Seminar. One report is worth 5 credits, and one report can be given by semester. The topics of the reports in the first two semesters are defined by the Doctoral School. In the first semester, a detailed research plan must be written, and in the second semester a literature review. These reports can become parts of the dissertation after the necessary revisions and additions. These reports are evaluated and accepted by the supervisor in collaboration with the research seminar leader(s). The reports must be presented at the seminar of the Doctoral School, where the reports are discussed.

5. Altogether 60-80 credits can be accumulated in Research Work. Activities counted towards these credits include those listed in Appendix 4, section 5 of the USZ regulation of PhD studies, with the exception of publications. Furthermore, eligible activities include the development of instruments, field work for research (data collection, etc.), and similar activities. In one semester, 10 research credits can be earned.

      The transfer of work completed in a different Doctoral School, as well as the credit value of such work, is decided on by the Doctoral School Council.

The comprehensive examination

The regulations University of Szeged are the following (http://www.u-szeged.hu/doctoral/regulations):

"4. The comprehensive exam consists of two main parts: in the first part, the theoretical competence of the candidate is assessed ('theoretical part'); in the second part, candidates shall demonstrate their scientific/arts progress ('dissertational part'). In the theoretical part of the comprehensive examination, candidates shall take exams in at least two subjects / areas, with the list of subjects / areas included in the training scheme of the doctoral school. The theoretical exam may also involve a written part. In the second part of the comprehensive examination, candidates demonstrate their insight into the scholarly literature in a presentation, provide an account of their research results, and present their research plan for the second phase of the doctoral training and for the scheduling of the preparation of the doctoral thesis and of the publication of results.

5. The supervisor provides a written assessment of the examinee beforehand and / or assesses the examinee's performance at the exam. When the examinee prepares for the exam independently, the board of the given doctoral school may call upon the assigned supervisor or one of the school's teachers to prepare a preliminary assessment."

Comprehensive Examination at the Doctoral School of Education

The general rules of the complex examination are given in the Regulations governing the Doctoral Training Programmes and the Awarding of the Doctoral Degree of the University of Szeged. The Doctoral School of Education amends Chapter V, sections 4 and 5 as follows:

1. Theoretical part

Each training programme of the DS defines the topics they consider the most relevant for that programme (at least seven topics per programme). In agreement with their supervisor, each PhD student selects two topics from the full list of the DS that they hold most important for their own work. At the examination, the PhD student demonstrates the knowledge they have acquired in these two (selected) areas. The format is an oral presentation, without notes and illustrated with slides. The examination board may ask questions related to the presentation. The board evaluates the PhD student's domain specific knowledge and their ability for synthesising knowledge. In addition, the board also evaluates the how problem-centred the presentation is, and the extent to which it features the most recent literature.

2. Dissertational part

The examinee demonstrates their research outcomes. The format is an oral presentation, without notes and illustrated with slides. The structure follows that of the prospective dissertation. The examinee outlines the findings of their literature review, presents the methods of the research conducted (or to be conducted), including the participants/samples, the instruments developed/adapted, also the data collected, the prepared/published studies, and a research plan for the next two years with a timeline. Before the exam, the PhD student summarises this information in writing for their supervisor to evaluate. The supervisor evaluates the research endeavours and the knowledge of the PhD student, and also states their opinion whether the dissertation can be completed by the deadline. The supervisor communicates their opinion to the board. The board evaluates the research done by the PhD student as well as the work proposed, and adjudges whether, based on the available information, it is probable that the dissertation will be completed by the deadline.

The examination can be taken in Hungarian or in English. The PhD student chooses the language of the examination.

The permission to submit the dissertation and the procedure of the internal defence

The Internal Defence of the PhD Dissertation

The function of the internal defence of the doctoral dissertation

Prior to the official public defence, the Doctoral School of Education (hereafter DS) organizes an internal defence as a final measure of quality control. The main purpose of the internal defence is to lower the probability of unsatisfactory outcomes at the public defence. Furthermore, it helps candidates to improve their work and to formulate the final version of their dissertation. Feedback is also given regarding the oral presentation of the results and findings.

The initiation of the internal defence

An internal defence should be initiated by the PhD candidate, by e-mail to the Secretary of the DS. The intention to have an internal defence has to be indicated at least three months before its planned date, so the Secretary can plan the program of the DS accordingly. The secretary of the Doctoral School, in consultation with the candidate, sets the date of the internal defence, which, whenever possible, falls within the time slot of the joint Tuesday sessions. At least three weeks before the internal defence, the candidate must submit three copies of the dissertation—complete in content but not yet permanently bound—as well as an electronic version to the Secretary of the DS. Each copy must be accompanied by the candidate's publication list, professional CV, the theses in both Hungarian and English, and the completed *Supervisor's Checklist*. The candidate must also upload the submitted version of the dissertation (which includes the Statement on the use of generative AI and AI-based technologies, as well as the Co-author's waiver statement) in .pdf format to the Doctoral School's Forum, allowing interested parties to review it before the internal debate.

In line with the principles of peer review, the Secretary of the DS appoints two internal reviewers. Ideally, these reviewers are former doctoral candidates of the DS who have successfully defended their dissertations and are familiar with the formal requirements and established academic standards. This procedure serves a dual purpose: on the one hand, it provides additional support to the candidate in improving their dissertation; on the other hand, it offers former graduates the opportunity to contribute to maintaining the quality and prestige of the degree awarded by the DS.

The review

The reviewers must have a minimum of two weeks to formulate their opinions about the dissertation. In addition to reviewing the dissertation, they shall evaluate whether the candidate possesses the academic prerequisites of a doctoral defence or not. (The two doctoral pathways and the related options for fulfilling the publication requirements are detailed in an earlier section of this regulation.)

The reviewers assess whether the dissertation meets the content and formal requirements. Their work is supported by a detailed checklist. They formulate a summary opinion in one to two pages, recommending either a thorough revision of the dissertation, the correction of minor errors, or its submission in its current form. They also take a position on whether the academic quality of the dissertation meets the standards established within the doctoral institution.

The progression of the internal defence

The reviewers deliver their assessment and the checklist to the candidate, their supervisor, as well as to the Secretary of the DS at least three days prior to the internal defence.

The defence is chaired by a faculty member of the Doctoral School, at the request by the Head of the DS. Staff and students of the DS and those invited by the Head of the DS attend the internal defence.

The Candidate summarizes the main goals and findings of the dissertation in a 20-minute PowerPoint presentation. Then the two Reviewers present their evaluation of the dissertation. The Candidate responds to their questions and comments. After this exchange, the internal defence continues with a debate in which all audience members may participate.

Steps following the internal defence

1. Based on the feedback from the reviewers and the debate at the internal defence, the candidate revises the dissertation. The revisions should be summarized by listing (a) what has been changed in the dissertation, and (b) justification for rejecting issues raised in the reviews, if there is any. The candidate sends the final version of the dissertation, the thesis, the summary and the revision list electronically to the Secretary of the DS.

2. The supervisor prepares a one-page summary of the candidate's dissertation. In this summary, they (a) evaluate the candidate's work, highlighting the main findings of the dissertation, (b) review the extent to which the candidate has revised the dissertation based on the internal debate, and (c) state whether they recommend the submission of the dissertation. The supervisor submits their opinion to the Secretary of the DS.

3. Both internal reviewers study the final version of the dissertation, the supervisor's summary and the revision summary. They then make a statement whether they support the formal submission of the final version of the dissertation or not. Their statement comprises of a 'yes' or a 'no', and a short justification of their stance (a few sentences). They send their statement to the Secretary of the DS.

4. Based on the above, the DS decides whether the formal submission of the dissertation is supported. The decision is communicated to the candidate by the Secretary. Only following a positive decision can the candidate submit the dissertation for public defence.

Plagiarism check

Using the plagiarism check system of the Klebelsberg Library, all dissertations submitted for internal defence are subjected to a plagiarism check procedure. Based on its results, the candidate prepares a list of the sources of each flagged section surpassing 200 words, which may be from their own previous publications (there is no action to be taken regarding these), and from other publications. In the latter case the candidate explains how they addressed the problem. Before the public defence, on request from the supervisor, a repeated plagiarism check can be run. The results of the plagiarism check are forwarded to the candidate, the supervisor, the director of the programme and the Head of the DS.