

**CHILDREN'S UNIVERSITIES: SHARING BEST PRACTICES AND
DEVELOPMENT OF COMMON GUIDELINES FOR OUTREACH ACTIVITIES
FOR PRIMARY AND SECONDARY SCHOOLS**



**Action Line 2. 'Widening access,
inclusion and diversity'**

TF 2.2. 'Children's universities'

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INTRODUCTION

The **ARQUS European University Alliance** brings together the universities of Bergen, Granada, Graz, Leipzig, Lyon, Padua and Vilnius. The main ambition of the ARQUS Alliance is to act jointly as a laboratory for institutional learning, serving as a steppingstone in moving forward with the design, testing and implementation of an innovative model for deep inter-university cooperation.

The ARQUS Alliance aims to focus its efforts on **enabling people**: enabling a widely diverse student body and enhancing its learning experience; enabling a diverse staff community and promoting individual and collective professional development; enabling the society at large.

The Alliance also aims at promoting the widening access for a diverse student and staff population, facilitating inclusive admission and recruitment policies and attracting talent from less represented groups.

In addition, the Alliance strives to develop **common policies for inclusion and diversity for all members of the university community**. Among the core values of the ARQUS Alliance lay the commitment to ensuring and promoting equity and inclusion and the commitment to eliminating barriers hindering access to higher education, knowledge and opportunities.

Although these values and objectives are cross-cutting and engage all members of the Alliance, one of the seven action lines specifically focuses on inclusion — **Action Line 2. 'Widening access, inclusion and diversity'** — chaired by the University of Padua.

Action Line 2 includes 13 activities:

1. Preventive early career education
2. **Children's universities**
3. Women to STEM
4. Support networks for inclusion
5. Recognition of prior learning
6. Enabling refugees
7. Rethinking college
8. Seniors' universities
9. Inclusive peer tutoring
10. Staff development for the diverse and inclusive classroom
11. Fast tracks for gifted students
12. Job market transition for inclusive universities
13. Common charters for gender equality, inclusion and sustainable development goals (SDGs)

Altogether, the above-mentioned activities have the objective of creating a more inclusive Alliance and of paving the way for future advancement in this direction.

Children's universities have been set up to introduce children to science and art at a young age, allowing them to be curious and develop skills and problem solving, educating them to pursue new and original information (instead of mere repetition) and helping them grasp and understand science and its related disciplines. One of the crucial goals of children's universities is ensuring inclusion and equal opportunities from an early age.

The activities of the TF 2.2 'Children's universities' have been aimed at sharing best practices and resources for outreach activities, linking them to the TF 2.1. 'Preventive early career education' and TF 2.3. 'Women to STEM'.

1. CHILDREN'S UNIVERSITIES AND EDUCATIONAL MISSION

The well-being of all children is among the core values of humanity. This is clearly stated in international charters, policies and statements of international human rights organisations (e.g., United Nations Convention on the Rights of the Child, United Nations SDGs, UNICEF, etc.). The European Commission (EC) has also declared the importance of promoting children's well-being and addressed the significance of breaking the cycle of disadvantage, use of poverty and social exclusion (EC Recommendation 'Investing in Children: Breaking the Cycle of Disadvantage', 2013).

Children's right to participate is one of the main factors influencing their well-being and is defined as creating possibilities for the participation of all children in play, recreation, sport, and cultural activities. By the same token, one has to acknowledge the influence children have on their own well-being and their resilience in overcoming adverse situations, in particular, by providing opportunities to participate in informal learning activities that take place outside the home and after regular school hours. This is why it is important to encourage schools, community actors and local authorities to create better after-school activities and facilities for all children, irrespective of inequalities.

In carrying out their educational mission, universities not only fit well into the ranks of organisations working in the field but also have the opportunity to provide a unique range of activities for children focused on their education.

Children's universities invite girls and women to STEM disciplines and science-based activities (Action Line 2 activity 2.3. 'Women to STEM'). This activity is vital as at present social and cultural barriers still prevent talented girls and young women from pursuing STEM studies and careers, and numerous girls and women still consider STEM to be a domain for men. Deconstructing

stereotypes transmitted through language and imagery can make these areas more attractive for women. As the gender gap is best addressed from an early age and throughout higher and professional education, it is essential to present STEM disciplines inclusively early on, as this deconstructs gender stereotypes and builds confidence in young girls (Women and Girls in STEM Forum, Policy Brief, 2021). We believe that children's universities can strongly contribute to providing insights and solving issues the gender gap creates by connecting female researchers, innovators and educators with young students during their formative years — before the society and cultural stereotypes begin to interfere with their choices.

Within the Action Line 2. 'Widening access, inclusion and diversity', the TF 2.1. 'Preventive early career education' also recognises the essential role played by early guidance and counselling in helping schoolchildren make informed decisions about participating in higher education and choosing a career and in the reduction and eradication of gender and other bias.

Early career education aims at increasing primary school pupils' knowledge of professional activities and role models, their self-determination, autonomous capacities to make a choice and soft-skills from early stages. It is crucial to help students at primary and secondary schools develop the resources to prepare them for future careers and to cope with any difficulties they may face. In addition to basic and advanced technical skills, children and youth must be equipped with social, emotional and resiliency skills, resources and attitudes necessary to successfully cope with the ever-changing, technology-rich job market. Although childhood and adolescence are crucial formative periods in the process of career development and it is important to start promoting positive career development trajectories during this developmental age, it is not urgent for children and youth to make imminent career decisions.

All this seems even more relevant for children and youth with disabilities and vulnerabilities (e.g., migrants, people of low socio-economic status), who are at higher risk in the current job market, especially because they often exhibit inadequate and irrational occupational beliefs regarding the job market, have weaker soft skills, greater difficulty in setting future goals, less information regarding occupational options, greater barriers and difficulties in the educational and school system.

Benefits of informal extracurricular activities (ECAs). Children's universities might be seen as an element in the wider context of activities organised outside the regular school day, otherwise known as ECAs, which are seen by many as a way to enable children to become active citizens in their community and to develop soft skills, such as self-esteem and resilience (Parveva et al., 2018).

Education-based activities can be seen as part of the wide-ranging ECAs (such as sports clubs, youth clubs, music clubs, etc.) that are offered in addition to the mandated curriculum at schools (Benefits of ECAs for Children, 2021). They can be offered by a range of different providers, including schools, local councils and voluntary groups. In addition, they can be based in both

schools and other settings (e.g., youth centres, leisure centres, parks and libraries). In terms of this aspect, universities have a unique opportunity to present academia in the broadest and most unique way. For instance, participating in face-to-face meetings with professors, researchers and students through open lectures, summer camps, online webinars, as well as other platforms, exploring university campuses, tasting delicacies at student canteens and fulfilling tasks in laboratories and auditoriums create authentic learning experiences.

Inclusive ECAs. ECAs can be beneficial for children in many different ways, including social inclusion outcomes (e.g., school involvement, socialisation, a sense of belonging to a community, teamwork and social responsibility). Overall, research shows that there are some positive associations between ECAs and social inclusion: vulnerable children may benefit more from participation than privileged children, as the link between ECAs and academic, psychological, social and behavioural outcomes has been shown to be stronger for disadvantaged children compared with their more privileged peers (EC Recommendation 'Investing in Children: Breaking the Cycle of Disadvantage', 2013).

Yet, this relationship lacks extensive research, which may be due to the difficulty in defining social inclusion. This, in turn, leads to barriers in measuring and understanding how to improve pupils' social inclusion in terms of school, community and friends (EC Recommendation 'Investing in Children: Breaking the Cycle of Disadvantage', 2013). Although interest in the benefits of ECAs for disadvantaged pupils has grown, it is difficult to tackle the challenge of the variety of factors used to determine whether or not a child comes from a disadvantaged background or from a vulnerable social group. Some of these factors include socio-economic status, health (disability), ethnicity, immigrant status, religion, living in an urban area, gender and having a family member who receives some form of social welfare (Benefits of ECAs for Children, 2021).

Although universities' strategic documents or action plans may not always set out specific measures for the inclusive activities of children's universities, as with all other university activities, the aim is to ensure that current and future members of the university community have equal opportunities regardless of gender, race, nationality, citizenship, language, origin, social status, religion, belief or opinion, age, sexual orientation, disability, ethnicity, religion or other discriminatory grounds.

The common models, recommendations and resources for children's universities are presented to introduce various services provided to children by ARQUS universities. Significant organisational aspects are addressed as well. We hope that the accumulated knowledge and experience will be useful not only for the planning of inclusive activities of children's universities in the contexts of ARQUS universities but also for other research and study institutions engaged in these activities.

2. GOALS OF CHILDREN'S UNIVERSITIES

Children's universities are a widespread practice at universities with lectures and practical classes for children of different ages. Their goal is to awaken young people to the joy of knowing science, culture, arts and the world around them. Moreover, children's universities help schoolchildren make informed decisions about participation in higher education and career choices, as well as reduce and eliminate gender and other bias. ARQUS universities hope that all children, regardless of the school they attend or their social status or disability, benefit from quality education offered by universities. It is an ethical obligation for universities to focus on children and facilitate the realisation of their full potential.



Vilnius University photo

The mission of children's universities is to disseminate knowledge of nature, technology, art and culture, healthy lifestyle, citizenship, careers, languages and life skills to children in a simple, inspiring yet comprehensive way. Universities open their doors and invite children to listen to the nature around them, touch upon foreign languages and culture, take a creative look at technology, learn more about living in harmony with the environment and its protection. At children's universities, in addition to learning a plethora of new and exciting things that boost children's

interest in different areas and their information searching skills, youngsters also get a realistic impression of how a university works. This leads to knowledge gain, as well as to forming attitudes towards education and an incentive to pursue it in top education institutions.

The ultimate goals of the activities at children's universities are: to awaken children to the joy of learning about the world; to form their values and broaden their horizons; to reveal talents and develop critical thinking; to show children the possibilities from which they can choose their future path; to make children and adolescents enthusiastic about science and scientific research; to promote curiosity and creativity; to enable contact with scientific researchers at their places of work; to overcome obstacles and focus on those young people who normally do not have the opportunity to come to a university.

ARQUS universities have been working individually and in coordination with other institutions and local units to ensure that young people choose their future education based on adequate information and experience. Children's universities shape youngsters' attitudes toward universities from an early age. Of course, it is hard to say how many children involved in the projects might later enter the same higher education institution, but the *emotional connection* created during various activities and experiences might influence their choices later in their lives. Therefore, universities have a chance to foster children from kindergarten to university. From this point of view, an early academic experience and university atmosphere might educate children on leadership and increase their motivation to choose a higher education institution based on their positive personal experiences.

3. CHILDREN'S UNIVERSITY MODELS AND BEST PRACTICES

This section presents the children's university models and best practices implemented by ARQUS partners in more detail. The extensive variety of activities, organisational models and creative solutions in every children's university is set out.

Model 1. Children's Universities Online — Leipzig University

Today's challenging context encourages universities to move some activities online. Universities are helping develop interesting material for teachers to enable them to prepare interesting lessons to involve students in the educational process. However, universities are developing online educational bases (e.g., the University of Bergen and the University of Graz), which provide online resources for children and their teachers in school classrooms and for children and their parents (families) at home during the holidays.

In terms of widening access and inclusion, the 'Leipzig Children's University' has created valuable experiences and contributions within the digital context during the first activity phase of the ARQUS Alliance. Due to the pandemic, digital events for children were a necessity. The potential of widening the audience through digital events has been observed. A wider audience — including children from rural areas and other cities in Saxony — attended online lectures. As participation

is normally focused on the city and the surroundings of Leipzig, the events had a much wider outreach compared with the events requiring physical presence.

Furthermore, in terms of social diversity, the anonymity of digital formats has allowed a wider variety of educational backgrounds, which is a subjective observation that cannot be statistically verified at the moment. It must be noted that the total number of participants stayed roughly comparable (150-400 children per event), but it was much more spread out spatially. It can be argued the events drew attention all over Germany. We can speak of a form of weak inclusion through a generally expanded accessibility and availability of digital formats, not to forget their subsequent use as permanent online content. Easy and automated subtitles on streaming platforms also have the potential to provide access to a wider audience and to an audience with special needs. Editing and inclusive production from the start could further augment the inclusive potential of digital formats.

The second form of digital inclusion at 'Leipzig Children's University' during the pandemic was a privileged cooperation between Leipzig University and regional public television channel MDR Wissen, under the hashtag '#gemeinelernen'. More information on the activity can be found on [YouTube](#) and [Instagram](#).

As a form of 'emergency home-schooling', together with 'Leipzig Children's University' and other partners, the public television channel produced online lectures during the school lockdown in early 2021 — 12 lectures from Leipzig University alone. These lectures were live events with a chat communication option streamed via YouTube. The format was an impromptu reaction to the needs of the public. Therefore, the formats were digitised from analogue origins, and it has become clear that genuine digital productions are necessary for the future. However, the lecture series could benefit from a truly inclusive approach, as the television provided live sign language interpretation.

This instance has shown that online events with remote and simultaneous sign language interpretation are easily attainable from a technical point of view if adequate infrastructure is present (sign language interpreters were not physically present at the events, but the interpretation was projected from the television studio with a slight delay). The high production involvement (expertise, preparation, personnel and infrastructure) makes this approach a truly inclusive presentation of the digital events of 'Leipzig Children's University' — a hopeful case study that for financial reasons cannot easily carry on to standard and future formats. Nevertheless, the collaboration has sparked interest in pursuing a virtual classroom with media cooperation, and the lessons learned will inspire future digital projects of the children's university initiative.

The third form of digital inclusion is through internationalisation. The event titled 'Climate Solidarities' — an online climate conference and series of digital workshops for young people — was a pilot project that has twice offered five online workshops on climate issues over the course of one or two days. This has shown the potential of digital formats to overcome spatial, political

and economic boundaries. As an expression of climate justice, this format has a high potential to be inclusive in a sense of global fairness and sharing privileged scientific resources with a global youth audience (having internet access is a prerequisite). With registrations from the Philippines, Libya, Argentina, various European countries and the United States, this potential could be demonstrated; however, the generally low attendance and language barriers made it obvious that without strong international cooperation and partnerships this format cannot realise its potential.

The hope remains that projects like the ARQUS Alliance can lay the foundations for new international networks that can share, benefit and cooperate in such a way that this kind of inclusion becomes a standard means of science communication. More information on the event can be accessed [here](#).

Model 2: Diverse Activities — Vilnius University

Since 2009, Vilnius University has been hosting a ‘Children’s University, which aims at promoting science and its practical benefits and to broaden children’s horizons through a variety of interactive activities. At Vilnius University, programmes for children and schoolchildren are being developed on a wide scale. The historically decentralised model of organising activities focused on various fields of study — where activities are coordinated and carried out by university departments — offers many opportunities: wide fields of science and studies are covered, and students have access to researchers and lecturers working in specific fields. This decentralised model is presented through the following examples, highlighting the different lines of action: interdisciplinary activities for children and youth; a STEAM centre and an educational programme for children in the region; volunteer activities for socially vulnerable children.

Interdisciplinary activities for children and youth. Vilnius University teachers, researchers and students have been organising lectures and practical activities for children with the aim of awakening the joy of learning about science and the world around us. The activities were very popular with children aged 8–14. In 2016–2019, as many as 2,212 schoolchildren took part in 88 sessions. ‘Children’s University’ activities were also held in other Lithuanian regional towns. During the pandemic period, children’s exposure to science was concentrated in a few faculties. For example, lectures for schoolchildren offered on YouTube by Vilnius University Faculty of Law, the ‘Prepare for the Exam’ (Lithuanian: *‘Pasiruošk egzaminui’*) initiative of the Faculty of Chemistry and Geosciences (in the form of [lectures on chemistry and geography](#)), the ‘Atomic Lectures’ series and many others were of great interest to pupils.

The faculties also run annual [educational programmes](#) for schoolchildren:

- The ‘School of Young Historians’, organised by the Faculty of History, attracted 226 pupils in the period of 2016–2021.
- The [‘Entrepreneurship Academy’](#), organised by Vilnius University Business School, attracted 146 students.

- The 'International Masterclass in Particle Physics', organised by the Faculty of Physics, is attended by 150-200 students each year. From 2021 onwards, the Faculty of Physics has been hosting the 'School of Young Physicists — Photon' (Lithuanian: '*Fotonas*').
- The '[Lithuanian School of Young Mathematicians](#)', organised by the Faculty of Mathematics and Informatics, attracts an average of 250 pupils each year, with a total of 1,469 pupils in attendance in the period analysed. The traditional activities and initiatives organised by the faculty for schoolchildren, namely, the 'Extracurricular School for Young Chemists — Exploration' (Lithuanian: '*Pažinimas*'), laboratory activities and lectures, as well as the 'Young Chemist's Laboratory', are already a tradition and attract a high level of interest among schoolchildren every year (4,706 participants during the period of study).
- The Faculty of Philology organises an annual classical philology competition, seminars 'Vilnius University Academia RU' and 'Baltic Academy'.
- The '[School of Psychology](#)', organised by the Faculty of Philosophy, attracted 171 participants in the period analysed. The faculty also holds the 'Academy of Sociology' (183 participants in the period 2017-2019) and the '[School of Creativity](#)'.
- The Faculty of Communication hosts a series of seminars for 9-12-year-olds titled 'Know Yourself'.

The Life Science Centre (LSC), together with international business company ThermoFisher Scientific, runs the '[Mobile BioClassroom](#)' (Lithuanian: '*Mobilioji bioklasė*') project, during which LSC students and the company's young employees organise field trips to Lithuanian schools, and schoolchildren have the opportunity to carry out real molecular biology research in the mobile scientific laboratories and evaluate the results of their research. The project also introduces pupils and their teachers to the latest advances in biosciences, broadens pupils' horizons and encourages them to learn and study life sciences. The 'Mobile BioClassroom' has already visited more than 250 schools in Lithuania.

Guidance for soon-to-be university students. Children who are on the brink of choosing their future path receive assistance at multiple levels. If youngsters find themselves in a situation where they cannot choose from two study programmes, they are offered to take advantage of university resources. Career counsellors are professionals who could be the first stop for advice. Counsellors help pave the way for the best decision regarding which study programme to choose. A counselling session usually begins with a discussion of self-knowledge tests and values. After this, youngsters participate in various initiatives: becoming a student for one day in a number of faculties, intensive consultations with mentors from different business sectors, personal interviews with current students who can share their experiences.

At the same time, Vilnius University strives to amass as much flexibility as possible each year to combine several study programmes at the same time. Once children decide on their study path, a substantial package of academic assistance is readily available: for instance, tips on choosing which state maturity exams could be worth taking or help in filling out a university admission application.

STEAM education activities for children in the region. In Lithuania, STEAM education is a rather new subject. International research (PISA, TIMSS) shows that the achievements of Lithuanian pupils in the field of STEAM are lower than the general average of all European countries. It also demonstrates that students find STEAM subjects boring and far removed from real life. Pupils need innovative smart technology professionals who do not lack universal knowledge and apply interdisciplinary teaching methodologies. Thus, Lithuanian scientists actualise the need to enhance the interdisciplinary integration and to develop pupils' competences in STEAM education, as well as to foster young people's career in STEAM subjects. With the help of the Ministry of Education, Science and Sport and EU funds, the STEAM project, which originated in the US, has been established. STEAM open-access centres have been officially launched in Lithuania. They are expected to increase the accessibility of high-quality equipment to children in the regions, where pupils can carry out research with highly qualified specialists and teachers. Moreover, the regional STEAM open-access centre is planned to be provided with assistance of a methodological STEAM open-access centre.

In 2021, the first regional STEAM open-access centre in Lithuania — Vilnius University Šiauliai STEAM Centre — was launched in Vilnius University Šiauliai Academy. In 2022-2023, a methodological STEAM open-access centre will open its doors in Vilnius. The latter will consist of eight laboratories for pupils. Both centres will involve teachers, who collaborate with scientists, foster professional development and use scientific infrastructure in the educational process. Vilnius University Šiauliai STEAM Centre provides services to seven municipalities. The skills and knowledge of pupils visiting the STEAM Centre vary. The employees of the Centre have to carry out research work both with pupils who have never seen or touched any laboratory equipment in their schools and with pupils preparing for national or international competitions. Therefore, in order to contribute to pupils' expertise and research-based learning experience, the Centre adapts the activities not only to the general education curriculum but also to local partners' needs. It closely collaborates with regional politicians, business representatives, NGOs and other representatives of the education policy.

Vilnius University Šiauliai STEAM Centre has four laboratories: Biology and Chemistry Laboratory, Physics and Engineering Laboratory, Robotics and IT Laboratory, while the fourth laboratory — Health Technologies and Quality of Life Laboratory — is specialised, meaning that pupils can carry out research related to the specifics and priorities of the region. According to the Ministry of Education, Science and Sport, non-formal education of children is a supplement to the formal education system in Lithuania. Therefore, the priority activities held at the Šiauliai STEAM Centre supplement formal education for children in forms 7-12 (13-18 years of age), and the laboratory works include 2-3 hours that are in line with the general education curriculum.



Vilnius University photo

In addition, Šiauliai pupils can choose 10-hour research programmes which are partly funded by the Šiauliai Municipality. Furthermore, the STEAM Centre runs non-formal activities for pupils in the region attending forms 1-12 (6-18 years of age) and for children aged 5-6 years. The activities last an academic hour. Moreover, pupils are able to prepare for science competitions, meet with researchers, entrepreneurs and people of various professions. By the same token, they can be volunteers at the centre. In addition to giving pupils the opportunity to deepen their knowledge, the Centre enables teachers to improve their qualifications and skills by giving them consultations on STEAM education, equipment usage, modern technologies, and other matters, as well as by organising seminars to improve teachers' qualifications.

Municipalities partly ensure the financing of the activities of the STEAM Centre. They also take care of the transportation issues for pupils. In 2021, 5,895 pupils visited the Šiauliai STEAM Centre, and 453 contact hours were appointed for the STEAM education activities. However, the numbers are relatively small because of the pandemic situation. The Šiauliai STEAM Centre is

open the whole school/academic year, and hopefully the availability of face-to-face activities will increase in the year 2022.

During the pandemic, pupils were offered a series of online STEAM seminars, videos helping prepare for examinations for the school-leaving certificate and videos with STEAM experiments for younger pupils (more than 45,000 views) available on YouTube. The researchers of Šiauliai Academy, together with the staff of the STEAM Centre, prepared methodological tools for primary school teachers and pupils and their parents — books titled ‘Little STEAM Discoveries’ (Lithuanian: ‘*STEAMuko atradimai*’) — thus bringing STEAM education closer to pupils both in the classroom and at home. Click the links for more information (in Lithuanian) on: [Vilnius University Šiauliai Academy STEAM Centre](#), ‘[Little STEAM Experiments](#)’ and STEAM methodological books ‘[Little STEAM Discoveries](#)’.

Activities for children from socially sensitive environments. Vilnius University has extensive experience in working with people with different needs arising from disabilities or health conditions. Notably, a tiny number of students with disabilities study in higher education institutions, and special schools for children with disabilities still exist in Lithuania. Working on public attitudes is vital, so the university seeks to increase the accessibility of the environment and information to members of the community with individual educational needs, to provide training on the needs arising from different disabilities, thus changing the attitudes related to the abilities of vulnerable people.

These activities are also related to the activities of Vilnius University Volunteer Centre. In response to the mission of the university as a socially responsible community, Vilnius University has been running a volunteering project titled ‘Guiding Star’ (Lithuanian: ‘*Kelrodė žvaigždė*’) since 2018. The project directly focuses on the inclusion of children experiencing social exclusion. This project aims to create long-term friendships between children and students. Students and pupils do homework together, spend meaningful and safe time together visiting theatres, museums, libraries, cinemas, parks or campuses, participate in excursions or educational activities, gather for evenings of board games or film screenings and spend time at events organised by the university.

At the beginning of each academic year, students are invited to take part in volunteering training, where they meet other volunteers and their accompanying volunteer tutors (students with at least one year of volunteering experience). In schools with which Vilnius University signs a cooperation agreement, social workers or school psychologists invite children in need of an older friend to the project. After the volunteer training, each student is introduced to a child with whom he/she has the opportunity to become friends for one school year. During the year, informal meetings of small groups of volunteers are organised, giving volunteers the opportunity to reflect on their experience in the project, while looking for ways to solve problems. Meetings with psychologists are held every two months to provide professional assistance to the volunteers.

Considering reflections and evaluation reports from teachers and social workers from partnering schools, the project focuses directly on the inclusion of children experiencing social exclusion. Some children with particularly individual needs find it more difficult to integrate into community life. They experience a strong sense of loneliness, behavioural challenges and social exclusion due to difficult situations in their families. The example of older friends is especially crucial for children facing such challenges. Meanwhile, volunteering students report that by committing to a one-year friendship, students develop the competence of responsibility, learn to communicate, listen and understand the needs of another person, as well as learn to solve problems. Communication with children opens the opportunity for students to get to know the problems of socially vulnerable groups and to become active participants in solving social problems.

Model 3: Research is Fun — University of Graz

In 2021, the 'KidsUniGraz' (German: '*KinderUniGraz*') was able to partially resume its proven and popular programme in place since 2004, in particular, 'SummerKidsUni' (German: '*SommerKinderUni*') taking place during the holidays. It also continued the online activities introduced during the COVID-19 period with great success (especially, workshops for school classrooms and families).

'Research is fun!' was the feedback received from of almost 300 children and young people at the end of the ['SummerKidsUni' Graz 2021](#). Up to 75 young people between the ages of 8-14 stormed the eight universities and colleges of the Styrian capital every day during the first four weeks of the summer vacations.

'Green chemistry for the blue planet' was the motto of one of the 25 five-day science workshops. 12 young students were allowed to experiment in a real-life large-scale laboratory of inorganic chemistry at the University of Graz. They worked with gasses, liquids and various solids and were able to observe exciting things.



University of Graz photo '[SummerKidsUni](#)'

Under the professional expertise and guidance of two chemical scientists, the young researchers found interesting answers a number of questions, such as: 'what is produced during combustion? What is photosynthesis? How do sorted waste separation and recycling work? How do you clean up dirty water? How do you use chemical energy?' The 12 young chemists formed one of the many supervised small groups that took part in the 'SummerKidsUni' Graz 2021 for a whole week. The core activities, such as science workshops and excursions, of this all-inclusive programme were running from 12 July to 6 August, weekdays from 8 a.m. to 5 p.m. In the afternoons, a number of indoor and outdoor sports activities at the university's sports centre finished off the day.

Dedicated pedagogical support, a full board with lunch in the university canteen and accident insurance are included every year for a relatively small contribution from the parents. For low-income families, a special subsidy is in place from the state of Styria within the framework of financial support, as the 'SummerKidsUni' is recognised as a non-profit provider. The 'KidsUniGraz' is financed as a cooperative project by the Federal Ministry of Education, Science and Research, by the City of Graz and by the eight universities and colleges of the Styrian capital.

The workshops at the 'SummerKidsUni' Graz 2021 were organised on numerous topics, which ranged from 'Microbiome Research in a Playful Way', 'BBC micro:bit & FabLab', 'IT Boot Camp' and 'Cyberkids', to 'Exploring Nature — Experiencing Wildemess', 'Medieval Knowledge Rediscovered' and others. Interesting excursions took the inquisitive children and youngsters to a historical open-air village in the region, to a hydroelectric power plant and to various museums.

After a one-year break, the ‘SummerKidsUni’, which has been popular since 2008, was thus able to get off to a full start again — thanks to the appropriate safety concept. After all, the children were already used to supervised COVID-19 antigen self-tests at school. But otherwise, the teaching at a children’s university is very different from teaching in regular lessons: instead of marks, pressure to perform or even compulsion, there is play, fun and excitement under the motto of the ‘KidsUniGraz’ — ‘Inspiring young people for science, research, and art’.

In addition, ‘KidsUniGraz’ 2021 promoted its extensive online programme on its own website, Facebook, newsletter and other social media channels. The series of online workshops for school classes and families turned out to be very beneficial during the COVID-19 pandemic (when many offers fell through, and events had to be cancelled). The university brought the courses to pupils and their families at school and at home in the form of free online workshops. For example, school classes and families from Austria, South Tyrol and Germany took part in online workshops on oceanography, physics, chess, IT and programming. The online coding club was particularly popular, with a group of enthusiasts meeting once a week for an entire semester (e.g., Scratch, Pocket Code, Construct 3 and Python). More information about the online workshops can be found here: [online workshops for school classes](#) and [online holiday/leisure activities](#).

‘REQUESTED!!! Children Ask — Scientists Answer’. During this campaign everyone is encouraged to ask any type of question — no question is off limits. Therefore, if a pupil has a question, he/she can email it to campaign organisers. The answer to the question will be sent to the pupil in the form of a video clip, and it will be published on our homepage. In this way, all children can benefit from it. To illustrate, here are some examples of the exciting questions that the young students wanted to get answers to: ‘why do plants have flowers? How do snails build their houses? Why do whales feed on the smallest creatures in the water if then they have to eat all the time? Why can cheetahs run so fast? Why can you see heaven but not hell?’ Click [here](#) for video clips on the initiative. Videos on ‘PRESENTED!!! Scientists Present Their Field of Expertise’ (research fields of foreign languages, history, music and environment) are available [here](#) (five videos online).

Children’s university radio reporters on the road in the world of science. This project provides an opportunity to experience a journey back in time to the Middle Ages, a trip for the ears to the outer space and an aerial leap to the pioneers of flight — children make adventures audible! Girls and boys slip into the role of radio reporters and explore exciting areas of scientific research in conversation with experts. They are supported and accompanied by a radio journalist and a media educator. The topics range from the rainforest, the biobank at the Medical University, to weather research at the Technical University, composing at the Music University, as well as medieval cuisine, aviation pioneers and outer space at the University of Graz. Click [here](#) for the interviews. 21 radio podcasts are already online, six more dates had to be postponed to March-April 2022 due to new lockdowns starting in Austria in November 2021.

The ‘KidsUniGraz’ organises outreach activities for primary and secondary schools since its foundation, with the exception of the pandemic-related restrictions in 2020-2022, totalling to about

100 workshops per year in its lecture halls, laboratories or libraries for school classes (forms 3-6, 8-14-year-old pupils). However, these are only funded by the Austrian Federal Ministry of Education, Science and Research if they are extracurricular and voluntary. The workshops must not take place in schools, the material must not follow the curriculum or be relevant to exams, and teachers must not be involved, but scientists must lead the workshops. Therefore, it is not a full-fledged children's university. However, 'Inspiring children and young people for science, research, and art' is the motto of the ['KidsUniGraz'](#).

Model 4: Science, Art, Culture — University of Padua

Science communication and sharing the university's cultural and artistic heritage are becoming increasingly significant elements of the University of Padua's mission, with a wide range of activities planned for children and their families each year. Departments from all subject areas play a vital role in this, alongside such entities as the Botanical Garden and the [university museums](#).



'Venetonight 2021'. Location map for the ground floor of the Bo Palace, with the stands used for researchers' workshops and demonstrations depicted as grey dots and the conference area highlighted in blue.

The most important and successful science communication initiative organised by the University of Padua to date is 'Venetonight' (a researchers' night at the university), which was held on the last Friday of September for over ten years until 2021. The event saw academics and researchers meet the public, talk about the research topics they were working on and teach science through small-scale experiments and live demonstrations. 'Venetonight' enjoyed growing success, reaching a peak in 2019 with 10,000 people attending and several hundred researchers taking

part in it. Held online in 2020 due to the COVID-19 pandemic, the event made a comeback in a face-to-face format in 2021.

Hundreds of activities were held across four main sites to avoid crowding, with advance booking required for all the sessions. Over 4,000 people participated in person. To give an idea of the scale of preparations required, maps of the stands used by researchers for workshops and demonstrations in two locations (the ground floor of the Bo Palace and the Beato Pellegrino Complex) are provided below. More information is available [here](#) (note: the website is no longer updated).

While 'Venetonight' was aimed at the general public, the university's main science communication initiative for schools and families was 'Kids University', another annual event which ran from 2017 to 2021.



[University of Padua photos](#)

After a pause due to the COVID-19 pandemic, the last edition took place in 22-29 May 2021. This initiative was aimed exclusively at families, as schools were still unable to participate due to COVID-19 restrictions. The event enabled children aged 6-13 to meet the people who teach, conduct research and work in the university's laboratories and museums every day. The programme included 71 activities held on different university sites and was planned with COVID-19 safety measures in mind as a priority. All activities on the two main sites (the Botanical Garden and the Beato Pellegrino Complex) were held outdoors. More information is available [here](#) (note: the website is no longer updated).

'Science4all'. In 2022, activities for schoolchildren will return as part of 'Science4all', a new science communications format that merges 'Kids University' and 'Venetonight' into a single

programme of workshops, performances and presentations. The event will be held from 26 September to 2 October 2022. During the event, laboratories, museums and other sites across the university will open their doors to children aged 8-13 from local primary and middle schools, as well as to families and the wider public.

The *programme for schoolchildren* will include morning workshops during the school week. There will be 64 activities split into two sessions, each for a group of 20-30 pupils and lasting about 90 minutes. Each session will typically be intended for a single class. The university is expecting to host around 4,000 children and their teachers in its laboratories and lecture halls. The wide-ranging programme of workshops will be centred on the theme of freedom, which is also the golden thread of the celebrations for the 800th anniversary of the university, as reflected in the tagline 'Free Your Future' (Italian: 'Libera il tuo futuro'). The same theme will inspire the programme of *activities held at the weekend for children and their families* as well as the wider public. From 30 September until 2 October, the university will host hundreds of science demonstrations, experiments, games, guided tours, art installations and experiences. Over 175 activities will be held at three main locations (the Bo Palace, the Beato Pellegrino Complex and the Botanical Garden) as well as within the university's museums, for a total of over 440 sessions, with events continuing until late at night. More information on 'Science4all' will be provided on the event website, which is currently under development.

Freedom is only realised through free access to knowledge for all, starting early on. This is why 'Science4all' has been designed with *accessibility and inclusion* at its heart. Aiming to improve access for students with disabilities, from 2022 onwards, the university has decided to gather and share specific information on accessibility for each activity. Due to this, teachers can choose the most suitable sessions for their classes based on the specific needs of pupils. The 'Science4all' website will publish a detailed description of each workshop, highlighting any accessibility issues. For example, a workshop involving the use of microscopes may not be suitable for visually impaired pupils, while pupils with mobility issues or hearing impairments may be able to participate with adaptations made to the activities where necessary. To help the university prepare for facilitating classes that include students with disabilities, we will ask teachers to specify how many pupils with disabilities are to participate and point out the types of disability involved. Academics or researchers who need assistance with adapting their activities for people with disabilities will be put in touch with colleagues with relevant expertise. Finally, the university will provide translation into the Italian Sign Language (LIS) upon request, and dedicated staff will be available to support pupils with attention or learning difficulties.

Besides these annual initiatives, a range of educational activities for children take place all year round. Founded in 1222, the University of Padua's cultural and scientific heritage is rich, including historical buildings and monuments, scientific and artistic collections, artifacts, machines and objects related to various fields of research and teaching. These objects were used (some are still used today) as tools and resources during lessons and demonstrate the scientific, didactic and cultural development of the university.

The **Padua Botanical Garden**, the oldest university botanical garden in the world, was established in 1545. Since its foundation, it has always been a centre of research, scientific dissemination and education: nowadays, it hosts over 180,000 visitors (20% of which are students), 1,600 guided tours and 220 school workshops per year.

The educational offer of the **university museums** includes 62 educational laboratories, 34 thematic guided tours that range from natural sciences to archaeology and geography, from the history of the Earth to that of motors, as well as the evolution of humans and their discoveries in the fields of physics and astronomy. Interdisciplinary activities, which encourage dialogue and interaction, are entrusted to educators specifically trained within the university to ensure maximum rigour in the content delivered to the audience. This educational offer guarantees absolute quality and truly remarkable numbers: 21 offers for kindergartens, 56 for primary school children, 51 for first-level secondary school pupils and another 41 for second-level secondary school pupils. A total of 8,100 students visited the university's museums in 2019 alone.

COVID-19 safety. The main concern in 2020-2022 was how to organise the activities of the children's university against the backdrop of the COVID-19 pandemic. In light of the prolonged restrictions imposed by COVID-19, the main priority identified by the University of Padua was to continue the planned activities online to further promote and foster contact with the target audiences (i.e., school pupils, students and families), which still expected the university to organise outreach activities. Within this context, the goal was to implement all those aspects (e.g., audio-visual tools to enable participation of children with disabilities), favouring the largest and most inclusive participation despite the COVID-19 restrictions. As meaningful examples of these activities, it is worth mentioning:

- Guided tours to CAM ([UniPD Museums Centre](#)) university museums, learning workshops organised online or face to face on special occasions, i.e., during [Carnival](#), [Easter](#), [Halloween](#), [Epiphany](#), online conferences ('[Sustainable Development Festival](#)') and special activities for children ([Museum of Geography](#), [Giovanni Poleni Museum of History of Physics](#)).
- Numerous activities held at the Botanical Garden:
 - o online learning workshops, e.g., weekly online indoor activities for children of all ages ('[Play with the Botanical Garden](#)', spring 2020);
 - o the readaptation of guided tours and related experimental activities ('[The Botanical Garden in Class](#)', autumn 2021 — free didactic online activities for schools of the city of Padua);
 - o the readaptation of other well-established event formats. For example, the Garden's scientific festival 'Awakenings' (Italian: '*Risvegli*') was divided into two parts. The first was held online in April 2020 (see [programme](#)), and a summer session took place from July to September, with several events organised in the Botanical Garden respecting all the pandemic restrictions (see the [programme](#)).
- An [online event on children's author Gianni Rodari](#) held in October 2020 as part of the 'Kids University'.

- 'Mathematical Circles', which during Christmas period became a focus point of the outreach activity of the Department of Mathematics.
- Outreach seminars online on currently relevant topics (e.g., biodiversity and pandemics, circular economy, sustainability, etc.) for high-school students and their families.

Work in this area has also included monitoring and tracking all outreach activities (mostly online) planned and delivered by the university's departments and centres during COVID-19 and using the data to implement best practices in outreach during pandemics.

Model 5: Encouragement of Talents and Cultural and educational exchange - University of Granada

The University of Granada dedicates resources and focuses on educational activities in technological sciences for children.

'ESTALMAT' is an abbreviation of the first letters of the following Spanish phrase: '[Estimulo del TALento y MATemáticas](#)'. This particular phrase means 'encouragement of mathematical talent'. In 1998, the Spanish Royal Academy of Sciences decided to start the 'ESTALMAT' project. For practical reasons, the Academy started out with a pilot programme in the region of Madrid. Nowadays, there are 12 regions in Spain involved in the project, including Andalusia and Granada university. The programme's objective is to detect, stimulate and guide the talent of mathematically gifted children, aged 12-15, without removing them from their school environment. The main activities of the project involving these children take place for two years. Once a week the students participate in 3 hours of activities, totally removed from the content of their syllabus at school. The 3 hours of activities are divided into two sections of 1 hour and 20 minutes each, with a break of about 20 minutes between them. Students are divided into small groups (usually five per group), and under the guidance of two teachers (some of them university professors and others secondary school teachers), they explore subjects such as the following: graphs, prime numbers, game strategies, polyhedral. Click [here](#) for more information on the project (in Spanish).

The main goal of these activities is to create the appropriate conditions to develop students' mathematical creativity. Whether the sessions are dedicated to explaining advanced mathematical topics or to discovering relevant results in mathematics, there is always an abundance of challenging problems to work on. In preparing these activities, we used our own expertise and a wide range of literature, of which special mention must be given to the book 'Mathematical Circles (Russian Experience)' by Dmitri Fomin, Sergey Genkin and Ilia Itenberg, published in English by the AMS.

The University of Granada is involved, as it provides much of the infrastructure that 'ESTALMAT' needs in Andalusia (e.g., classrooms, technical support, etc.). In addition, many teachers participating in the project come from the University of Granada.

'[Technology Campus for Girls: I Will be an Engineer 2021](#)'. The 'Technology Campus' is a training programme, which is free of charge and is aimed at pre-university girls (12-17 years old) in

second, third or fourth years of compulsory secondary education (Spanish: '*Educación Secundaria*' (ESO)), first or second years of Baccalaureate (Spanish: '*Bachillerato*') or Training Cycles. The main objective of the 'Technology Campus' is to awaken vocations in STEM areas in pre-university girls.

Girls participating in the programme tackle a technological project for two weeks and reveal the results on the final day via a live broadcast on the internet. This year the 'Technology Campus' took place online in Granada and face-to-face in the Ceuta Campus of the university. In Granada, the programme only took place in a face-to-face format on the first and last day at the School of Technology and Telecommunications Engineering of the University of Granada. The remaining activities took place online, via videoconferencing.

During the 'Technology Campus', young participants had different materials at their disposal free of charge (both electronic and technical), tools and computer support, as well as the support of a supervisor. In the first days of the programme, different technological projects were proposed, and some seminars were held to explain the basic operation of the tools necessary to carry out the projects. From 4th to 9th day of the 'Technology Campus', the participants were free to choose a project to develop, with brief guidelines for its realisation. The autonomy enjoyed by the young women was almost total, limited only by the availability of materials. Thus, the projects were carried out under supervision, but it was the girls who had to find solutions to the challenges posed and who decided when the project was completed.

The project consisted of creating a system that displays information on an LED screen, plays music and has functional buttons performing different actions. The girls received materials, and the classes consisted of explaining how each element worked and how to integrate it into their project. In addition, they also had to use recycled materials from home to assemble the structure of the project using their imagination.

'Free Software Campus for Children'. The general objective of the 'Free Software Campus for Children' is to introduce schoolchildren to the knowledge and use of free software and hardware ICT tools, linking them with science, culture and open knowledge as well as with development communities. In order to achieve this general objective, different specific objectives are worked on:

- Objective 1. To awaken scientific curiosity in schoolchildren, encourage practice in cooperative and collaborative work and the use of new technologies through free software.
- Objective 2. To awaken the scientific, cultural and knowledge spirit in schoolchildren, as the common good of society.
- Objective 3. To promote the use of free software from an early age. To achieve this objective, the tools used in the Campus will be all free.
- Objective 4. To enhance schoolchildren's skills in new technologies through the use of free software.

- Objective 5. To promote the initiatives of girls participating in the Campus, providing them with support using the free software.

The activities of 'Free Software Campus for Children' cover a wide range of areas, such as learning about free licenses (such as Creative Commons), as well as free software related to design (Gimp, Krita, Inkscape, Leocad, etc.), application development (Scratch, App Inventor) or free hardware programming (Arduino).

Talks and workshops organised by the Free Software Office of the University of Granada. During events titled 'Engineering Fair' (April 2021) and 'Women and Girls in Science Day' (February 2022), the following talks were given online to different institutes and schools:

- 'Mom, I Want to be a Hacker!' (two editions). In the first edition, instructors gave talks on cybersecurity and dangers lurking online. Various women in the field were also presented.
- 'Women in Science and Video Games' and 'Video Games: A Testing Ground for Problem Solving in Computer Engineering'. These talks presented different fields of computer engineering (i.e., computer science and AI, computer architecture, etc.) and their relationship with the field of video games: graphics, AI, serious games, etc. In both talks, the work of different female scientists and developers was presented. In addition, video games that were worked on by these women were discussed.



University of Granada photo: '[Technology Campus for Girls: I Will be an Engineer 2021](#)'.

Finally, the [Free Software Office of the University of Granada](#) (Spanish: ‘*Oficina de Software Libre*’) collaborated with the Provincial Council of Granada (Spanish: ‘*Diputación de Granada*’) in the Generation G Programme. Three 8-hour workshops were carried out in different towns: Lentegí, Alfacar and Vélez de Benaudalla. The FSO offered materials and 3D printers for the workshops.

Cultural and educational exchange. The “Educational Programme” of the University of Granada is one of the structures integrated into the education and dissemination area, which, within the Rectorate for Extension, has a purpose of culture and knowledge dissemination. The particular cultural and knowledge aspects are derived from humanities and social sciences and associated, above all, with the goods, products and initiatives of the University of Granada.

The activities of the ‘Educational Programme’ are aimed at the general public, especially schoolchildren and the elderly — groups that do not usually attend the University of Granada but that should naturally approach the university in their city. In the 2021-2022 academic year, other formats and areas were added, in compliance with the objective of developing an increasingly complete and varied programme, capable of attending to the diversity of interests and levels of the public targeted. It is about gradually applying the educational perspective to the multiple areas covered by the university’s outreach efforts.

This academic year, we were able to maintain and expand our offer of specific activities with different themes and formats as well as active and playful methodologies, due to which programme participants have the opportunity to discover, share experiences and put them into practice. Some activities remained online because this allows people situated far from the capital or even coming from other provinces to participate in our activities.

Book clubs. The particular activity has been growing as part of the progressive deployment of the ‘Educational Programme’ within the Vice-Rectorate for Outreach and Heritage. Yet another great success was a reading club for girls and boys titled ‘The Cave of Books’, linked to the ‘House of Porras’ project (Spanish: ‘*Casa de Porras*’; the name refers to a cistern room, where face-to-face sessions were scheduled to take place). At the request of the attendees, there were up to two sessions a month:

- The ‘20,000 Turns of Imagination’ reading club was aimed at secondary school students interested in participating in reading sessions and exchanging commentary on works.
- Reading encouragement sessions took place throughout the entire academic year and continued along the lines of promoting a taste for reading that has characterised the project from the beginning. 18 reading encouragement sessions were held for schoolchildren from different educational stages, with some of them (6) taught by students at the University of Granada.

- Literary workshops were intended to promote a playful and creative approach to literature among school audiences of all ages. 30 workshop sessions on literature were organised, focusing on books, writers, literary themes, topics, anniversaries, etc.
- A dramatic reading on the street was hosted to commemorate the World Poetry Day. A group of students gathered on the street, inviting people to take a moment and enjoy a dramatic reading of a poem.
- Didactic workshops on other subjects and topics were organised in addition to the literary workshops. A total of 30 workshops were carried out. The sessions were aimed at the public of the non-university educational stages, providing experiential learning on different topics, such as music, art, history, the environment, etc.
- The Book Day was also commemorated as in previous years. Throughout the entire week of International Book Day, a programme of workshops, conferences and performances was launched for representatives of the different levels of infant, primary and secondary education with themes that revolved around books and the relationship between literature and other arts.
- The ‘Illustrious Characters of Granada’ literary route focused on making a poetic-literary tour on the Boulevard of Avenida de la Constitución, specifically by the figures of writers represented.
- The ‘Botanical Garden’ literary route encompassed a visit and a dramatic reading in the Botanical Garden of the University of Granada. Selected poems on nature were brought to life during the event. The route was attended by a visiting professor from the Budapest Faculty of Education.
- The ‘Legends of the city of Granada’ literary route connected various significant points of the city related to legends and lives of illustrious literary figures, such as Federico García Lorca, Mariana Pineda and others.

‘Women and Knowledge’ (March — women’s month). Throughout the month of March, 19 activities were carried out (e.g., workshops, conferences, storytelling sessions and presentations) related to women in the fields of social sciences and humanities. This has been a general trend throughout the course, paying special attention to showing the appeal of these figures and their fields of study to give them added value as vocational guidance.

Film and theatre activities. This academic year, introductory workshops on the cinematographic language and the corresponding film forum sessions were resumed. In total, six workshops of the kind were organised: one of each per quarter. Educational concerts (World Flamenco Day, World Jazz Day, ancient music, etc.)

Cycle of conferences ‘The University of Granada Goes to the Institute’. In the 2021-2022 academic year, the ‘Educational Programme’ continued the cycle of online conferences entitled ‘The University of Granada Goes to the Institute’. The goal of cycle of conferences is to share and disseminate the knowledge generated at the University of Granada’s branches focused on

humanities and social sciences through institutes interested in the different themes proposed. The topics and subsequent debates served as a contribution to vocational guidance, as students were interested in what they needed to do in order to pursue certain topics, careers, etc. The activity was successful and received great interest from students. 22 conferences on topics, ranging from literature, flamenco, Andalusia or agriculture to fine arts, restoration and philosophy, were organised. They were associated with significant holidays and special dates that are usually celebrated in schools, such as International Flamenco Day, International Book Day, International Women's Week, Halloween, etc.

Students have been sending us their **drawings and artistic creations** from the educational workshops they participated, and we have created a virtual museum exhibiting these drawings, which can be found [here](#).

School radio contest at the University of Granada. Taking advantage of the celebration of World Radio Day (on February 13), the 'Educational Programme' launched the second edition of this contest. The topic of the contest was the University of Granada itself. The objectives of the competition were as follows: to promote a taste and knowledge of radio among non-university students, to invite them to participate and create learning experiences based on research and interdisciplinarity around this project, to contribute to practicing and improving the oral communicative competence of the participating students, to introduce schoolchildren to what the University of Granada has been representing as a teaching and research institution, as well as a social and cultural agent in our province, since its inception until today.

Model 6: Universal Design — University of Bergen

The University of Bergen has a wide range of activities directed towards children and youth. Some of them will be briefly introduced here, including the specific activity called 'Children's University'. The main resource for research dissemination to young people is the University Museum of Bergen. Not only through its public exhibitions — which have free admission for people under 18 — but especially through programmes designed for different groups ranging from kindergarten to university level.

Universal design. Universal design is a requirement by law for both Norwegian private and public companies and organisations. This means that the design of products, environments, programmes and services must be in such a way that they can be used by all people to the greatest extent possible, without the need for adaptation and custom design. In line with this, there are no separate activities or programmes aimed at vulnerable groups or children with special needs. However, it is encouraged to make contact in advance if there is a need for special arrangements to carry out the planned activity or visit.

The principal of universal design is explicitly stated in Norwegian state documents (i.e., the Norwegian government's action plan '[Norway Universally Designed by 2025](#)'). **Seven principles**

of universal design have been developed, showing the functional and performance requirements that products, buildings and solutions must satisfy in order to be good for people with varying requirements (For more information, click [here](#)):

- Equal opportunities for use (the design must be usable and accessible to people with varying skills).
- Flexibility of use (the design must serve a broad spectrum of individual preferences and skills).
- Simple and intuitive use (the design must be simple to understand, without regard to the user's experience, knowledge, linguistic skills or level of concentration).
- Understandable information (the design must communicate the necessary information to the user in an effective way, irrespective of any circumstances relating to the surroundings or the user's sensory skills).
- Tolerance of faults (the design must minimise dangers and damage that may produce adverse consequences and minimise unintended actions).
- Low physical exertion (it must be possible to use the design effectively and comfortably, with minimum difficulty).
- Size and space for access and use (the appropriate size and space should be available to allow access, reach, service and use, irrespective of the user's body size, posture or mobility).

Faculties. For the faculties, direct contact with children and young people is important for several reasons. On the one hand, conducting research dissemination to society is part of the main mission of the university, and, on the other hand, it is important to recruit new students by arousing interest in various subjects and providing relevant study information. Collaboration with schools often serves more than one purpose and benefits both parties.

The University of Bergen invites school classes to visit the university. There are various offers to choose from: guided tours, lectures on specific topics, participation in experiments or demonstrations of equipment. In addition to the knowledge the pupils get, this is also an amazing opportunity for pupils to learn more about how research is done and what it is like to be a student at a university. Click [here](#) for more information (in Norwegian).

The University of Bergen also offers teachers different types of competence development (train the trainers), giving them new insight and tools connecting children with the latest research. For instance, at the Centre for Science Education, teachers can take short day courses or enrol as students and get further education. The Centre also develops learning resources for schools and helps teachers develop exciting teaching methods for their pupils with the help of projects at the Centre.

Another type of school collaboration is when students from the university become assistants to teachers, which is done through the 'Vector Programme' (Norwegian: '*Vektorprogrammet*'). The programme aims to increase interest in mathematics and science among elementary school pupils. This is a national student organisation (students from the University of Bergen, the Norwegian University of Science and Technology and the Norwegian University of Life Sciences are taking part in it) that sends students with good science and pedagogical skills to schools to assist in math classes. These students are good role models for the pupils. Click [here](#) for more information (in Norwegian).

'Open Day' at the University of Bergen aims to showcase the academic environments at the university and to motivate pupils to apply for higher education. The purpose of 'Open Day' is to ensure that students who begin at the University of Bergen are as prepared and informed as possible about higher education and about which subject areas and studies are offered. In addition, it is important to address topics like student welfare and give information on how a good framework surrounding the studies facilitates students. Hopefully, participants of 'Open Day' will get a positive impression of the University of Bergen and reassure students of the important choice they face in choosing their educational path. It is also an attempt to give pupils a realistic picture of what it is like to be a student, so that they can make the most considered study choice possible.

'Children's University' of the University of Bergen. This is a conference in the University Hall for pupils in form 6 (approximately 12 years old). It started in 2015 and has become a tradition every autumn. Usually, there are 200-300 pupils taking part. Normally, there are four different topics, presented by researchers from different academic units. The rectorate is directly involved in the planning and the event itself: in the welcome speech at the beginning and in handing out diplomas for attendance at the end. The event is hosted by a popular TV personality, widely known in this age group.

The programme of this event is prepared annually and usually the deputy rector welcomes the children before the University of Bergen alumni and the host of event show some experiments as part of the opening event. The first experiment was about what happens when one mixes liquid nitrogen and boiling water, while the second experiment was about how to use a plastic pipe as a magic wand with the help of wool and static electricity. Later, the leading professors were introduced to a curious audience. For example, in 2021, the presentation made by Prof. K. Kleiven was about what the Arctic looked like 50 million years ago and that this ice desert was once bustling with wildlife that is now extinct. The pupils are always encouraged to comment and ask questions. Prof. Kleiven was followed by Assoc. Prof. Viggo Krüger who talked about music. He did some singing exercises where he encouraged pupils to participate. After a lunch break, Assoc. Prof. Ellen Haug talked about gaming and physical activity and whether it has changed in the COVID-19 era. Prof. Sissel Undheim delivered a presentation where she asked if one can play

with religion, talked about prophecies and gods in the toy box. In the end, the children were given a diploma by Rector Margareth Hagen. For more information (in Norwegian), click [here](#).



'[Children's University](#)' at the University of Bergen. Assoc. Prof. Viggo Krüger engages children with a song. Photo: Thor Brødreskift

The University Museum of Bergen. The University Museum offers several teaching programmes and teacher training courses based on the curriculum in both nature and culture. The teaching programmes are based on the Museum's exhibitions and collections. Both admission and tuition offered for school classes and kindergartens are free of charge. The tuition is adapted to the children's different levels and needs. The different programmes use methods and tools, including those taken from drama pedagogy, to stimulate children's different ways of learning. The children should not be passive during a visit to the Museum but be active in their own learning:

- The pedagogical arrangements adapted for the kindergartens' 4-6-year-olds are all based on stories. More information (in Norwegian) is available on the following initiatives: '[Philosophy with Animal Eyes](#)', '[Where was Bubo, I Wonder?](#)' '[From Wild Animals to Domestic Animals](#)'.
- Age 6-12 (form 1-6) — the pedagogical arrangements are adapted for the primary school and the intermediate stage and are all based on current curricula. More information (in Norwegian) is available on '[Stone Age Laboratory](#)' and '[The Whale, Plastics and the Human](#)'.

- Age 13-16 (form 7-10) — the pedagogical arrangements adapted for the lower-secondary level are all based on current curricula. More information (in Norwegian) available on '[Why does Moses have horns?](#)'. The pedagogical arrangements adapted for the secondary level are all based on current curricula. In the various teaching programmes, great emphasis is placed on the pupils gaining an understanding of how knowledge is created.

The University Museum of Bergen also has various activities for the public during the year, many of them well suited for children, like the archaeological day, cultivating yourself, wondering trails, star hunting, mushroom picking, etc. The Museum also offers digital exhibitions and resources available for schools and the public. More information (in Norwegian) available [here](#).

The University Museum of Bergen — Natural History won the award the [Portimão Museum Prize for Welcoming, Inclusion and Belonging](#). The award was received for audience work and the way contributions to society were made. In 2021, the University Museum was named 'the Museum of the Year in Norway' by the Norwegian Museums Association.

Model 7: For Successful Cohorts — University of Lyon/Saint-Etienne

Actions undertaken by the university in relation to children's universities are part of a national campaign, launched by the government in 2008, titled 'Hopes for Suburbs' (French: '*Espoir Banlieue*'). Its flagship action 'For Successful Cohorts' (French: '[Les cordées de la réussite](#)') is based on partnerships between universities and some middle or high schools situated in neighbourhoods that are characterised as 'priority neighbourhoods' for education by the ministry (due to social or geographical difficulties). The goal is to make tertiary education more accessible for populations that are usually (and due to social or territorial reasons) less inclined or less supported to pursue a university degree. It is also aimed at promoting access to higher education for young people who — because of their social or territorial origin — sometimes limit their academic ambition or do not have certain key things needed to successfully pursue university education.

The University of Lyon/Saint-Etienne is getting increasingly involved in this programme with each passing year, forging partnerships with one or several different schools to organise multiple events (involving the aforementioned teenagers) throughout the year. This methodology (focusing on fairly small cohorts for a whole year) was designed to provide real support in the medium/long-run, with the hope to have a real impact on the students. Indeed, the participating teenagers, having multiple activities throughout their school year can more deeply integrate the university world as something close to them and certainly reachable.

Based on this logic, the 2022 edition was run in partnership with only one middle school for a total of about 40 students. It included a broad range of visits, meetings and discussions paced throughout the whole school year. The fairly low outreach (in terms of number of students) each year is the reason why the partner institution changes every year.

Hence, the activities of the model developed are focused on a specific cohort, facilitating the creation of a deeper link between the targeted students and the university world, to hopefully eliminate the social barrier that prevents them from applying for university after high school.



University of Lyon/Saint-Etienne photo

As an example, the 2017 edition of the initiative was implemented in relation to three partner institutions (an important number considering the overall model adopted and described above) for a total of about 150 students.



Actions put in place were spread from April to May, with the usual visits of the different campuses (for example, those of science and medicine) and the laboratories associated, simulation of courses with professors, encounters with current university students who gave some feedback on their personal experience.



University of Lyon/Saint-Etienne photos

During the visit to the scientific campus, the participants of the programme also had the opportunity to do some activities and small scientific experiments in the laboratories with students and professors at the university. This programme is handled by the University of Lyon/Saint-Etienne Career Centre (French: '*Cap Avenir*'). All information can be found on its [website](#) (in French).

4. INSIGHTS AND RECOMMENDATIONS TOWARDS INCLUSIVITY

The ARQUS Alliance's TF 2.2. 'Children's universities' of Action Line 2. 'Widening access, inclusion and diversity' reflects on and shares the best practices in the field of children's universities, focusing on inclusivity and diversity. This has a strong impact on universities' civic engagement mission to increase the awareness in the local environment about different forms of disparity and to deepen the understanding of under-represented groups from which children might be coming to the university community. The richness of experiences of children's universities provides insights how to make them more inclusive.

Broad Spectrum of Activities

There are various types of activities offered by universities. As mentioned in the models above, the children's university activity might be organised as a thematic lecture for a huge audience. However, in addition to that, other activities might be more focused on a particular topic for small (up to 30 participants) groups of people. The design of activities varies greatly among ARQUS universities, as it reflects different practices, experiences and socio-cultural contexts in the society. The most popular and engaging forms of activities are pointed out below. However, it is worth mentioning that the field is extremely dynamic. For this reason, new ways of interacting with children are emerging every day:

- Activities empowering girls — '[Technology Campus for Girls: I Will be an Engineer 2021](#)' (developed by the University of Granada). The programme serves as a tool to promote

technological vocations among girls in high school, introducing them to the work of female engineers. They meet other girls of the same age, having the same concerns and doubts. The activity goes on for two weeks in a summer campus (that has been organised for about two years). The technological project is guided by computer engineering supervisors (students and teachers). Activities promoting gender equality are also included here.

- STEAM education activities at Vilnius University. The activities supplement formal education for pupils attending forms 7-12, as well educational activities for pupils in forms 1-12 in the country's regions (more information (in Lithuanian) about Vilnius University Šiauliai Academy STEAM Centre is available [here](#)). Pupils are welcome to explore technology advancements, as well as the practical side of scientific research, at the STEAM Centre's laboratories (i.e., Biology and Chemistry Laboratory, Physics and Engineering Laboratory, Robotics and IT Laboratory and Health Technologies and Quality of Life Laboratory). The Centre is open for pupils the whole school year.
- Experimental shows (the University of Graz, the University of Padua and Vilnius University) and workshops in specialised fields (such as the radio station in Vilnius University, child sensory stimulation workshops, storytelling, dramatisations, musical performances, etc.). More information (in Lithuanian) on the 'Mobile BioClassroom' project available [here](#).
- The '[Student for One Day](#)' project (an open day at Vilnius University). The project enables pupils to visit open lectures. The lectures take place at Vilnius University throughout the week. Children are invited to join and thus become students for one day. Open lectures take place in all 15 faculties. Many lectures are available remotely, for children living in remote areas.
- Visits and guided tours to innovative companies (the University of Graz and Vilnius University), as well as guided visits to art exhibitions and historical buildings (the University of Granada) and the Botanical Garden (the University of Padua).
- Students or professors visiting schools. This activity pays particular attention to the schools in regions. Lectures, laboratories on wheels and workshops are organised.
- Summer camps as children's university activities during the holidays (Vilnius University, the University of Graz, the University of Granada). The University of Graz has been organising thematic activities to promote gender equality in a summer camp format ('Coding for Kids — Girls Only'). Vilnius University held a [summer camp](#) for children at Vilnius University Health and Sports Centre.
- Specific activities for children with disabilities and their families to meet their individual needs. The University of Granada, in collaboration with the Autism Association, was involved in such a project. A pilot project at Vilnius University, focusing on deepening connection with families raising children with Down's syndrome, took place. Both projects

involved university students and invited families to share their experiences, acting as a platform for different interested parties, allowing them to get involved and to share best practices.



Vilnius University photo

- Vilnius University students, who are volunteering in the programme titled ‘Guiding Star’ (Lithuanian: *‘Kelrodė žvaigždė’*), devote part of their time to pupils in forms 3-6 who come from vulnerable social groups, have communication or behavioural difficulties or experience hardship when engaging in community life.
- European campaigns and activities, such as the ‘European Researchers’ Night’ are also gaining popularity. For example, the University of Granada organises workshops to engage both kids and teenagers (e.g., hands-on experiments, demonstrations, workshops for children, competitions, such as science quizzes and games) in the framework of the activities carried out. The ‘European Researchers’ Night’ serves as a platform to disseminate science knowledge to the society and introduce children and youth to the university. The activities showcase the diversity of university research and highlight the

impact of research on our daily lives. The aim is also to motivate young people to embark on research careers. The University of Graz does the same (e.g., during '[Long Night of Research 2022](#)').

- Activities devoted to children (prospective students) as a part of individual academic counselling. At the University of Bergen, as well at Vilnius University, mentoring, academic counselling and career counselling services are provided to all children who want to talk about their future choices. They are even encouraged to come for a consultation. The possibility to have personal consultation with academics, admission officers or students is highly valuable. It is a chance to get to know more about a study programme and the learning environment. For example, at Vilnius University, a very successful programme is organised annually titled '[Ask a Student](#)'. During the series of dedicated events, volunteer students in each study programme share their impressions of studying, being a member of the university community with pupils.

To sum up, all the activities concerning children's universities at ARQUS partners are very broad and diverse, covering a wide range of scientific disciplines. They are organised on a wide range of themes and have many different forms. However, when planning new activities, it is significant to maintain their inclusivity and ensure that all children have the opportunity to be included in them (regardless of their social, cultural background or any other factors). For this reason, when planning activities for children:

- It is crucial to assess in advance whether the activities planned are accessible and understandable. Organisers of the activities should consider these factors when planning events. They have to consider the age of participants and whether all the participating children have unhindered access to the physical environment (space) of the event. To ensure the quality of the event, all individual needs should be clarified in advance. For this reason, a question concerning special needs of each child should be included in invitations.
- It is important to consider whether the information and/or educational content can be adapted, is understandable or accessible to children with individual needs (e.g., poor vision, blindness, hearing impairments, etc.).
- It is necessary to assess whether the information should be presented in different languages to overcome language barriers if pupils come from different cultural backgrounds.
- It is valuable to target activities to specific social groups (e.g., girls in STEAM activities or children from socially vulnerable backgrounds). Reaching a specific group may require specific tools or efforts.
- It is needed to promote activities that include children from regions or remote areas (living away from the capital or major cities), enabling them to learn more about the university environment and to participate in all activities equally.

- It should be considered that the activities planned have to create possibilities for children to get into direct, personal contact with members of the university community, thus enabling them to find out personally relevant information that may not be discussed or touched upon in the planning of large-scale activities (e.g., access to a study programme of interest if individual needs arise). In order to give children the broadest possible view of the world, the activities of the children’s university should involve experts from all academic and non-academic university departments (including museums, libraries, botanical gardens, etc.).
- It is paramount to reflect, evaluate and select the best aspects of the experience of distance learning during the COVID-19 pandemic. The COVID-19 pandemic has created many unique solutions that are also relevant from an inclusion point of view (i.e., access to activities for participants with limited mobility, living in remote regions, living abroad, etc.). The best practices should be selected and developed further.

Towards Inclusive Learning Environment

Children’s universities develop and initiate activities based on the knowledge of science, culture and arts. As universities offer a very wide range of activities to children, the totality of them could be analysed from a perspective of the learning environment, which may be defined as the learning culture, as well as the physical surroundings, created by those who teach (facilitate) and those who learn (see [School Education Gateway](#)):

- learning culture as a way to integrate various learning approaches and methodologies with other classroom management processes, ensuring inclusivity and equal opportunities for all children;
- learning environments which include physical spaces where activities take place (e.g., classrooms at schools, auditoriums and laboratories at universities, cultural venues or public outdoor areas) and digital learning environments where teachers (facilitators) and pupils are not physically together yet connect through the same activity;
- co-creators of supportive and inclusive learning environments as safe and inspiring learning spaces. Such environments are created by ensuring that everyone is participating: teachers and academics as main facilitators, other staff members in a school or university and parents/guardians.

Universal design. For a children’s university, universal design is important in terms of creating the learning environment and reaching all children — including everyone and not leaving anyone out. As the University of Bergen puts it, a university is a large work and study place whose guests, students and employees naturally reflect the population’s diversity, and this includes people with a reduced functional capacity. The inclusion of people with a reduced functional capacity is of great importance to the individual and also vital to the general society. It is crucial for everyone with reduced functional capacities not only to receive support for their rights but also, at the same time, to be able to fulfil their duties as equal members of society. A lack of accessibility is

discriminatory; therefore, universal design should provide solutions that take everyone — with or without a reduced functional capacity — into account (click [here](#) for more information). Support and consultations about universal design are provided by the national driving-force unit at the Norwegian University of Science and Technology. Its goal is to help implement, follow up and revise action plans for the universal design of universities and university colleges. This unit also follows up the plan to improve the expertise in universal design at all educational institutions in Norway. This means, among other things, including universal design in the curricula and increasing the expertise of professional personnel (for more information, click [here](#)).

Physical, online and hybrid learning environments. In order to enhance the experience of the joy of discovery and learning, children should be able to learn in a different environment than the usual and traditional classroom. At universities, they are engaged in activities that are different from traditional activities at school or activities provided by local actors in other contexts (for example, educational spaces in modern art museums). In this way, they can make connections between science and daily life and experience the fun part of learning through individual and group work.

Open lectures on the university campus or outside. In all ARQUS universities, the open lectures are usually held on the university campus – sometimes inviting up to hundreds of children simultaneously (lectures at Leipzig University take place in the auditorium of 850 seats). On another hand, the activities are not limited to open lectures only. For example, at Leipzig University, various activities and types of activities for children take place on campus: family brunch, school laboratory, ‘Youth Conducts Research’ (German: ‘*Jugend Forscht*’) young science competition, campus tours, etc. Activities inviting pupils to come and visit university campuses as a separate programme — ‘[Ropes of Success](#)’ (French: ‘*Les Cordées de la Réussite*’) — are also handled by the University of Lyon/Saint-Etienne Career Centre (French: ‘*Cap Avenir*’).

Nevertheless, there is a very large number of talented children who are not able to participate in university activities due to socio-economic reasons. Having this in mind, the University of Granada and Vilnius University have been planning a cycle of outgoing lessons to regional schools in particular. Groups of researchers will go to schools and lead several practical activities to introduce children to the interesting aspects of science, generously sharing experiences, scientific knowledge and values with the children, thus inspiring them. Another possibility, already experienced by the University of Padua in 2019, was a number of activities addressed to students and their families. Organisers reported active participation of more than 200 children who could join and follow activities close to their area of residence. This proposal was very beneficial, especially for children who could not otherwise reach the university buildings located in the city centre.

Practices of online learning environment. The COVID pandemic situation and the related constant status of emergency provided new challenges for some of the most disadvantaged students, such as those living in poverty, those in out-of-home care and those with disabilities. Among these challenges were difficulties in accessing technology to engage in remote learning, isolation from

classroom peers, as well as the loss of support for accessing the curriculum. All of this had a direct impact on the activities of the children's universities, which could no longer be carried out in the usual manner.

On the other hand, the pandemic has provided an opportunity to find new ways to address these challenges in planning children's university activities. For example, restrictions on mobility, school trips and contact imposed by legislation forced to postpone or rethink all the activities that were designed for a face-to-face interaction. At the same time, however, universities have changed, opening up more opportunities for remote engagement, which will continue to be widely used after the pandemic to reach children in remote towns. Many creative solutions and opportunities concerning children's universities were found in different contexts during the pandemic, for instance: virtual visits to the University of Padua's museums were designed (see webinar of November 2021 for more information), '[Climate Solidarities](#)' sessions took place virtually (and included children from different geographical locations and different backgrounds), Vilnius University's 'Guiding Star' involved volunteers who kept in touch with kids via gadgets, etc.



University of Padua photo (from the materials of the webinar). Museum of Padua virtual activities

Although online activities are providing many opportunities, the fact that they are digital may increase difficulties to guaranteeing an inclusive children's university offer. For example, technological aspects related to web security, including protection against '*zoom bombing*' and privacy issues, may limit participation. Obstructions to accessibility for students with impairments and students with a weak financial or cultural background might also happen. Also, maintaining the level of interaction and participation of all children during webinars or other online activities requires a structuring that is completely different from what is common in face-to-face formats

(e.g., keeping the attention of all participants and supporting those who encounter difficulties in following the activity).

Co-creators of learning environments. Collaboration and partnerships between universities and schools are particularly important, as children's learning environments are created both by teachers working in schools and by university lecturers or other staff members. They become co-authors of all children's university activities for pupils and soon-to-be secondary school graduates. School teachers, in cooperation with academics, decide to which children's university activities to enrol their classes or groups of pupils and the intensity and frequency with which children should participate in these after-school activities. Teachers and university staff create an inclusive and welcoming learning environment for children from vulnerable backgrounds. Various options of individual and/or group participation are provided in most universities, and individual or group participation for the specific event/activity is possible.

The solutions on how to better create learning environments for different children's age groups depend on the activities that universities could offer. Usually, children are admitted to children's universities between around the age of 6-7 and 18-19. The narrower choice of the specific age group depends on the nature of the lecture or practical activity, as different activities are organised for different age groups. The activities are specifically designed to meet the needs and demands of children, and, ideally, to match their everyday curiosity about topics of professional scientific, cultural and artistic interests.

It is important to emphasise that the younger children join the activities of children's universities, the earlier their emotional connection with science and arts begins. It can be assumed that children from a very young age can participate in activities that do not require so much concentration and that intertwine with play (the University of Granada offers activities for the youngest ones, with a range of 3-6 years of age, such as the activities carried out in the Classroom-Laboratory of Early Childhood Education of the Faculty of Education, Economy and Technology of Ceuta). The children (6-13 years old) enjoy lectures and special programmes at, for example, university museums (the University of Bergen, Vilnius University, the University of Padua).

Some activities of children's universities are also aimed at lower-secondary school pupils (11-14 years of age), and, of course, most of the activities are aimed at upper-secondary school (high school) pupils (15-18 years of age). The number of children reached by the activities at the different universities varies greatly. For example, in the 2018-2019 school year, the University of Granada had 29,000 children participating in the activities organised. In comparison, up to 3,500 children and adolescents aged 8-18 participated in the activities of the University of Graz during the same period. The descriptive profile of the activities provides an opportunity to better understand the outreach although the comparison of numbers *per se* (i.e., the number of children attending activities, or the number of events organised) is hardly possible because of the contextual differences between ARQUS universities.

The parents/guardians or family members are also co-creators of a safe and inclusive environment during children's university activities, participating both live and remotely. Parents/guardians are invited to take part in some of the activities and to attend lectures at the children's universities; however, children have a priority. For example, at University of Padua, guided tours have been organised during the time children were involved in educational activities. As parents/guardians accompanying children are satisfied with the activities at the university, they may later influence their children's career choices. Such activities strengthen the relationship between parents and children, especially in regard to their sense of safety, creativity and well-being.

To **sup up**, it is important to consider the following aspects when looking at children's university activities from an inclusive perspective:

- The universal design of services and learning environments should provide solutions that take everyone — with or without a reduced functional capacity — into account while organising activities of children's universities. Therefore, it is very important to develop a set of activities which include all life environments and reach children in as many socio-economic and cultural contexts as possible. Leaving no one behind will be possible only if universities try to include experts of accessibility, universal design and inclusion in the task forces dedicated to realising children's university activities.
- Numerous possibilities of digital educational activities, which were not existent in pre-COVID contexts, are truly eye-opening from a perspective of inclusiveness: opening resources, creating new way of communication or attracting remote audiences.
- Co-creators of learning environments — schools, universities and families — should be encouraged to create possibilities for a positive interaction between children, science and art at various stages of life: from kindergarten, primary school to secondary school, with certain activities adapted.

Resources Devoted to Activities of Children's Universities

The activities of children's universities are rarely mentioned in the strategic plans of universities or related documents. The most common practice is that activities intended for children are planned at the level of a centrally supervising administrative unit or academic (faculties) and non-academic units implementing the activities (e.g., a university museum, a botanical garden, etc.). By the same token, in some cases, activities are planned according to the principle of decentralisation: when university departments autonomously decide which age groups of children to target, how the calendar of activities is planned, how the employees who organise and participate in these activities are motivated and how the funds and other resources intended for the implementation of activities are allocated.

The **allocation of time, as well as the scope and frequency** of activities, is designed according to the local experience, such as the different formats universities use for teaching, the number and

extent of staff and/or volunteers involved. For example, even though it looks difficult to provide daily classes for children, the University of Granada offers children such a possibility. The number of events (activities) mostly depends on the model and practices implemented in each university (for example, one workshop followed by a series of lectures could be counted as one totality, or — in another university — this could be seen as several different activities). This shows the beauty and richness of authentic practices grounded in different socio-cultural contexts. But in most universities, lectures and other activities are spread over different periods of the semester. For example, at Vilnius University, multi-day sessions have been organised during the school year (usually twice a year, in the spring and autumn semester). The sessions lasted several days, each of them dedicated to a different study field. On such a day, about up to eight different lectures can take place. Yet another example, the University of Padua has a main event called '[Kids University Padua](#)' that takes place annually in October for an entire week and offers activities in all research areas. In 2022, this event was replaced by an event called 'Science4all' which includes activities for schools, families and the whole community.

Personnel involved in the activities offer children a very broad spectrum of themes and topics, too. It varies depending on the faculty or department in which the lecture is held. Art, literature, cinema, science, mathematics, civil values, history, photography, environmental education, health, archaeology and many other topics are offered. Lectures for children are held by professors, lecturers, researchers, advanced students, university technical staff and cultural agents. Everyone participating in children's university activities should be encouraged to take part in training seminars, lectures or workshops dedicated to the topics of utmost importance, such as ensuring equal opportunities and inclusive teaching in diverse classroom.

Since the size and frequency of children's university activities vary, it is only natural that the number of people working on the project also varies. Enthusiastic experts from different departments are involved in the process, ensuring that the process runs smoothly. The number of people at the universities varies from one to ten people.

Three major pillars that make the activities of children's universities possible are full-time staff (in case of centralised activities) and part-time staff (in case of focused activities on departmental-unit level), teachers and educators in primary and secondary schools and dedicated volunteers (both academic and administrative staff as well as students. Volunteer assistance is greatly appreciated in organising the activities of children's universities, as they usually help direct the flow of children at the university, help with small tasks and provide security. For example, in case of Leipzig University, most volunteers are students in teacher training (i.e., students studying in educational study programmes) and have a natural affinity in terms of the project.

Universities develop **partnerships and communication campaigns** with schools and various institutions specifically, using different communication channels. Universities have websites and pages (see the list of literature and links below) on social media, such as Facebook and Twitter accounts, with up-to-date content. Such accounts are usually managed by the universities' communication services, which highlight certain actions at children's universities at the request of

the organisers. Short reports are written (including radio and video reports) about events that take place. Photos, videos and other visual material are also used.

Developing and maintaining partnerships with schools is one of the most important resources (in terms of both time and effort) to keep the activities of children's universities running. Some universities have an agreement with schools and the non-university educational administration, which helps disseminate the activities and offers them as a complementary curriculum for cultural and extra-curricular activities in schools (e.g., at the University of Granada).

It is common practice for children to receive diplomas, gadgets, symbolic gifts and souvenirs to commemorate their visit to a children's university. Usually, they are small stationery with university-related symbols and elements (e.g., logos, colours): institutional pens, bags, USB sticks and notebooks. Some lectures also use handouts or materials that can be taken home: all children take home the work they perform in the workshops and laboratories. At Leipzig University, children receive a 'mini bachelor' diploma for the lectures they attend and for participating in children's university activities. Furthermore, the University of Graz fosters a tradition to award children with symbolic bachelor and master diplomas of the 'KidsUniGraz'. Until 2019, the University of Padua used to give a limited number of participants the possibility of receiving a diploma directly from the rector or a vice-rector in a ceremony in which the activities of the whole 'Kids University Padua' week are demonstrated in videos and testimonials.

Summarising the aspects discussed in this chapter, the following recommendations and insights can be provided:

- The totality of children's university activities should, where possible, be reflected in university action plans or inter-institutional documents as an integral part of the tradition of universities to serve and be useful to society. At the institutional level, it is important to develop policies and practices related to children's universities within a flexible internal framework of faculties and departments.
- To develop children's university activities, initiative, motivation and commitment of individual academics and students are the most important factors. Internal policies should promote and facilitate the implementation of innovative children's university activities by providing adequate resources. Human resources devoted to children's universities should be flexible and dynamic to enhance the activity: sharing information, meeting internally and with external partners, exchanging practices to develop joint children's university events among partner universities.
- Active and effective communication policies and action plans for target groups (i.e., teachers, children, families and university community members) are needed to encourage public awareness of the university's contribution to society through providing educational activities for children.

5. OUTPUTS OF TASK FORCE: DISCUSSIONS, WEBINARS AND USEFUL LINKS

During the first ARQUS year (2020), the TF 2.2 'Children's universities' conducted an initial mapping, namely, data collection and overview of practices. The TF agreed to develop a questionnaire in order to collect further information on the mission and vision of children's universities at the respective ARQUS partners, the wide range and type of activities organised for children and the involvement of faculties/departments. The information was systematised, presenting the multi-layered nature of the existing different practices in universities, which allowed showing the diversity, advantages and challenges of organising activities for children. After the initial mapping was performed, a series of webinars was planned and implemented.

Although the webinars were not foreseen in the initial project plan, the TF decided to organise them as they were a perfect opportunity to discuss and communicate with each other during the COVID-19 pandemic, which made all face-to-face meetings impossible. The series of webinars tackled different aspects related to extracurricular activities designed for children and provided the opportunity to discuss and share information not only within the ARQUS Alliance but also with attending guests.

The first webinar '[Inclusive University for Children](#)' was organized in June 2021. It was executed in three thematic sessions. Click [here](#) to access the recording of the webinar.



Session 1. 'Free Software Campus for Children' by Pablo García Sánchez (Head of the Free Software Office at the University of Granada)

The 'Free Software Campus for Children' aims at introducing schoolchildren to the knowledge and use of ICT tools of free software and hardware, linking them with science, culture and open knowledge as well as with the communities of growth. Pablo García Sánchez presented five specific objectives which the university seeks to achieve:

1. To awaken scientific curiosity in schoolchildren, encourage practice in cooperative and collaborative work and the use of new technologies through free software.

2. To awaken the scientific, cultural and knowledge spirit in schoolchildren, as the common good of society.
3. To promote the use of free software from an early age.
4. To enhance schoolchildren's skills in new technologies through the use of free software.
5. To promote the initiatives of girls participating in the Campus, providing them with support using the free software.

Session 2. 'Kids University Padua and the Botanical Garden' by Elisabetta Menegatti (Communication Office) and Agnese Comellato (Events Office — Botanical Garden & Villa Parco Bolasco)

'Kids University Padua' hosted schoolchildren in various departments of the university, where they were able to experience science and encounter researchers face to face. This format ran for five years, and the 2019 edition — the last to include direct activities with school children due to the COVID-19 pandemic — involved more than 6,000 children aged 6-13. Concentrating all activities in one week has a significant media impact, and participation of entire classes rather than individual children allows for a diverse background of participants. All the phases of work on this initiative, from planning of the educational offer alongside colleagues across the university to promotion, development, relationship with schools and families and the final ceremony, were explained in the session, with a particular focus on the activities carried out at the Botanical Garden (more information (in Italian) available [here](#)).

Session 3. 'The Contribution of University to Inclusive Regional Growth' by Prof. Renata Bilbokaitė (Head of Vilnius University Šiauliai Academy)

The impact of higher education on the region should mostly manifest through the formation of human capital, education, qualification and assurance of conditions for life-long learning. Moreover, the contribution of universities should be visible in the processes of creation, implementation of knowledge and innovations in the region, while closely collaborating with business. STEAM could help assure real inclusion of various children, teenagers and young adults, working together in the interdisciplinary teams, solving scientific problems in a creative way. The whole activity of higher education and STEAM education for children and students should have an essential impact on regional development as well, which would decrease emigration, increase international advantage, create a high added value and cultural socio-economic welfare.

In July 2021, Leipzig University organised an international online youth congress titled '[Climate Solidarities](#)' under its children's university initiative. The activity was addressed to activists, young people, educators and scientists, and it was meant to be an opportunity to exchange experiences across borders, expand networks and improve creativity. Links to the online congress activities, podcast were arranged, and children from partner universities were able to join freely.

In November 2021, an open webinar '[Inclusive University for Children](#)' was organized, and examples of best practices of Leipzig, Granada, Vilnius, Padua and Bergen universities were presented.



The webinar was organised in six sessions, each tackling various aspects of children's university activities.

Session 1. 'Climate Solidarities – a Proposal for an ARQUS Children's Universities Online Project' by Dr. Dominik Becher (Leipzig University)

The presentation was about the online project 'Climate Solidarities' as a possible model to bring students and children of European children's universities together. During the webinar, the platforms were switched to gather town, to try out the virtual conference area. The event was a proposal to establish international digital public events in the framework of ARQUS.

Session 2. 'ESTALMAT- Andalusia. A Project for Promoting the Mathematical Talent' by Rafael Ramírez and Miguel Luis Rodríguez (University of Granada).

'ESTALMAT- Andalusia' aims to discover students with outstanding mathematical skills (12-14-year-old) to encourage their talent and create a space for them to develop a scientific vocation. These are students with special educational needs since their exceptional skills cannot be easily developed in the context of the regulated school system, which has to respond to a wide variety of learners. The course runs parallel to the official school activities, neither interfering with them nor isolating students from their educational and family environment.

Session 3. Volunteering Project 'Guiding Star' by Simona Aleksynaitė and Simona Šalčiūnaitė (Vilnius University)

During the volunteering project “Guiding Star” Vilnius University students devote part of their time to pupils who are currently experiencing communication or behavioural difficulties or have difficulty in engaging in community life. The presenters introduced the progress of the project and demonstrated how to involve children experiencing social exclusion.

Session 4. ‘The Educational Offer of CAM for Children Before and After COVID-19 Pandemic’ by Nicola Carrara (Curator of the Anthropological Museum of the University of Padua)

The University Centre for Museums (CAM) of the University of Padua coordinates the activity of 13 museums and 16 museum collections. Over time, several educational activities for primary and secondary schools, for private users of school age, for special events and periods when schools are not in session were proposed as well. All these activities required physical presence, but, with the advent of the COVID-19 pandemic, they underwent adaptations.

Session 5. ‘Music as a Resource to Promote Children and Young People’s Participation in Society’ by Assoc. Prof. Professor Viggo Krüger (Grieg Academy’s Centre for Music Therapy Research (GAMUT), University of Bergen)

Music is available and used everywhere in society, and especially by children and young people. For some, music is noise, while for others, music represents joy, social expression and is part of the way the social life for them is organised. Music is a source of both problems and opportunities. In other words, music can be used as a tool both to connect and disconnect from others, as a source of joy and belonging, but it could also cause irritation and obstacles. In addition, music can be a medium to gain a voice in processes of democratisation, for example, in a child welfare setting. The presentation is based on music therapy research done by researchers at GAMUT. More information on GAMUT’s [website](#) (in Norwegian).

Session 6. ‘Annual Children’s Conference at the University’ by Bente Oddveig Krossøy (Senior Adviser at University Director’s Office, University of Bergen)

Since 2015, the University of Bergen has been inviting children (of the age of 12) from different schools in Bergen municipality to an annual conference. A short presentation on how to involve the children and why this is important for the university was presented in a webinar. In March 2022, a [video of children’s universities at Granada, Graz, Leipzig and Vilnius](#) was released (directed and finished by the ‘KidsUniGraz’). It is a short video containing monologues of pupils who at least once took part in children’s universities. They answer concrete questions concerning their countries and activities at children’s universities, for instance: ‘what should every person know about the country you call home? How did you like your city’s children’s university? What do you wish for this year?’ Girls and boys from Granada (Spain), Graz (Austria), Leipzig (Germany) and Vilnius (Lithuania) answered these and other questions in a short video. The video is available [here](#). It gives insight into how science is conveyed to young people at the universities of the European network ARQUS.

ONLINE RESOURCES

1. Authority for Universal Design of ICT (*UUtylsinet*) — Homepage [Online access available [here](#)]
2. European Commission, *European Platform for Investing in Children — Homepage*, Accessed 23 April 2021 [Online access available [here](#)]
3. European Commission, *Investing in Children: Breaking the Cycle of Disadvantage*, 2013, Accessed 23 April 2021 [Online document available [here](#)]
4. European School Education Platform, *School Education Gateway — Homepage* [Online access available [here](#)]
5. Norwegian Ministry of Children and Equality, *Norway universally designed by 2025* [Online document available [here](#)]
6. Parveva, T., Motiejunaite, A., Noorani, S. & Riihelainen, J., *Structural Indicators for Monitoring Education and Training Systems in Europe 2017: Eurydice Background Report*, Publications Office of the European Union, Luxembourg, 2018 [Online document available [here](#)]
7. Phillips, W., Dufresne, E., Larmour, S., Brown., E. R., *Benefits of Extracurricular Activities for Children: A Focus on Social Inclusion and Children from Disadvantaged and Vulnerable Backgrounds*, Publications Office of the European Union, Luxembourg, 2021 [Online document available [here](#)]
8. University of Bergen — Homepage [Online access available [here](#)]
9. University of Granada, *Educa — Homepage* [Online access available [here](#)]
10. University of Graz, *KidsUniGraz — Homepage* [Online access available [here](#)]
11. University of Lyon/Saint-Etienne, *Ropes of Success — Homepage* [Online access available [here](#)]
12. University of Padua, *Kids University Padua — Homepage* [Online access available [here](#).
Note: no longer updated, to be rebranded as 'Science4all']
13. Vilnius University, *Children's University — Homepage* [Online access available [here](#)]
14. Women and Girls in STEM Forum, *Policy Brief*, 2021 [Online document available [here](#)]

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