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Comment

LISTENING AND EMPOWERING: CHILDREN IN SCIENCE COMMUNICATION

Children's Universities — a "leading the way" approach to support the engagement of higher education institutions with and for children

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ABSTRACT: Children Universities *are an emerging approach and acknowledged example of successful science communication for and with children. They represent in fact a scheme to implement science in society and society in science. Since its beginning around 2003 to its development into a global movement, the children university approach has also evolved new questioning, beyond proposing an opportunity for young people to meet the university world. Can Children's Universities help higher education and research institutions to recognize children as a relevant dialogue group, and at the same time to be more responsive and inclusive concerning disadvantaged groups? Is there an impact on educational policy developments? Can face-to-face encounters lead to a change of mindsets – for both the young participants and the academia? The objective of building a two way dialogue between higher education institutions and young people highlights several difficult issues, in particular when a socially inclusive approach is sought, but at the same time opens up new opportunities for both science, scientific institutions, science communication and the public.*

In times of teaching and learning with technologies, a continuing financial crisis and the related struggle for limited resources in science and academic research, universities and individual academics are more and more called upon to present and justify the relevance of their contemporary undertakings; they are faced with a discussion about their authority and their role between the poles of a modern knowledge society and the information society. Moreover, there are increasing expectations on universities in face of the grand challenges — and to contribute to the benefit of society.

Parallel to the highly dynamic last decade of developments in education, the term "Children's University" has become a widespread synonym for science communication and outreach programmes at Universities or within other settings that have a strong link with the academia. The evolution of these programmes has advanced hand in hand with a general claim for efficiency in academia and a call for

more graduates from the classical STEM fields, as soon as the increasing undersupply has been identified on the labor market.

So how are science communication programmes for and with children and the transformation of higher education institutions linked to each other? In other words: it is possible to establish a process of mutual enrichment that involves children as well as academics at various levels? Are Children's Universities the appropriate model to give children a voice in the governance and practice of science and research? Is there an opportunity for new, dialogic approaches, which can have a stronger impact also on the evolution of higher education practices and institutions?

Typically, Children's University programmes include science-related lectures, workshops, hands-on tutorials or similar activities which take place as summer programmes, after-school activities or at weekends. The programmes are usually designed by academics and involve university students in particular cases.

The activities are specifically prepared to meet the needs and demands of children, in the large majority aged 7–14 years, and — ideally — to match their commonplace curiosity with topics of professional scientific interest. As a main goal, beside other specific inherent objectives, Children's Universities are aiming to raise interest in science and research from an early age, to provide a first glimpse into the academic world and to possibly spark interest for later careers in science. In order to support this endeavour, Children's Universities usually link scientific topics to the living world of children and their current experiences with everyday phenomena.

Milestones

The distinctions between Children's University programmes and other occasional science programmes, open labs or outreach programmes which are in operation at HER establishments are — to a certain extent — a scholarly discourse in itself: All these activities share the aspiration to go beyond the boundaries of the traditional mission of universities and research institutions, when they are turning towards a wider audience within society. However, the somehow innovative and advanced aspect of Children's Universities is rooted in the exemplary effect in the university ecosystem: Within a relatively short period of time and encouraged by very successful lighthouse initiatives, a larger number of universities and other science institutions implemented for the very first time similar programmes for a previously unusual audience: children.

In a recent survey, more than 350 comparable Children's University-type activities were identified by the European Children's Universities Network (EUCU.NET) — with a predominant focus on European countries, but also beyond Europe some initiatives were identified which make clear reference to the model of Children's University. By using similar labels, they are increasingly forming a recognizable widespread approach in large numbers — which was even more stimulated and accelerated by the public debate initiated by a wide-ranging coverage of the first initiatives of this kind, implemented under this label around 2003. Soon after this, the University of Tübingen (DE) was awarded the Descartes Prize for Excellence in

Science communication by the European Commission (2005) for their Children's University being an exemplary initiative. In 2008, the European Commission stated that "*Children's Universities represent the most radical approach to open Universities towards the general public*".

More than just lectures

Can Children's Universities come up to the expectations and help higher education and research institutions to open up to the public and to recognize children as a relevant dialogue group and at the same time to be more responsive in this endeavour and inclusive as concerns educationally and socially disadvantaged groups? Is there an impact on educational policy developments? Can face-to-face encounters lead to a change of mindsets — for both the young participants and the academics? The success of Children's Universities and the intended impact of these programmes remain to be proved, no matter the fact that Children's Universities all over the world count on more than 350.000 attendances per year.

Actually, not much comparable data is available from or about Children's Universities to clearly answer the above questions about the impact of this approach. This is notably true as the definition of impact heavily depends on the local context, as well as on the aims and objectives of a particular project. In many cases, project data and evaluation results are missing or vague. EUCU.NET is currently conducting a survey which will provide more insight in due time. However, in face of the diversity of the particular Children's University approaches, it will still be difficult to estimate the effects of such interventions in a comparable manner, especially in the long view.

Children's Universities may appear as a simple concept — to prepare and deliver activities for children at a university — but even though the overall effects are difficult to record, there is one outstanding characteristic of Children's Universities, which is undoubted: they enable a direct personal encounter with academics in large numbers, at places which were initially not intended for children — neither by definition, nor by tradition or mission. And there are several artefacts and anecdotes which suggest that this personal dialogue with children in an unusual environment has a wider effect, which goes beyond what happens in a particular lecture hall at a Children's University.

Institutions and society — the potential of listening to children

Soon after the first Children's Universities were launched, massive media attention was attracted by prominent lighthouse initiatives. Presumably, this may be perceived as a counter reaction to the first results of the PISA study on educational achievements, which were often very disappointing and disillusioning — and still heat up the education debate in many European countries. Coincidentally, the question was raised in the media whether universities were the "better schools", as they managed to establish successful out-of-school programs to arouse interest in

science and technology in an obviously pleasant and interesting way — whilst in formal education, schools were stuck in controversies about educational reforms over years.

This comparison may have been far-fetched — as Children's Universities are not part of the formal education system. But the attention attracted by the initiatives of Children's Universities increasingly fitted into strategies of universities to present themselves as innovative and socially responsive institutions relevant for the general public. Obviously, this was very welcome at a time when they had their own bad press about (likewise) inefficiency or too much efficiency orientation in Higher Education, limited access and the Bologna reform.

This thinking may not necessarily imply a sustainable approach, but it encouraged higher education establishments to implement similar programmes, and thereby contributed to form a critical mass of outreach activities within a short period of time. In return, a growing number of activities — and the positive response to them — in some cases even encouraged authorities at various levels to implement funding schemes to provide support for such initiatives. Provocatively said, because of the simple fact that the public debate (notably including the parents) liked the idea of "cute little Einsteins at universities".

Media attention came along with a rapidly growing demand on the side of parents and families, who were keen on enrolling their children in Children's Universities in an achievement-orientated educational climate which is distinguished by limited access and raising costs. And it was especially true for educational climbers, as well as for an education elite that Children's Universities were frequently deemed as talent factories for highly capable pupils, which are worth striving for and an opportunity not to be missed. Notwithstanding that this in fact is not at all an aim of Children's universities.

This is a simplified and slightly exaggerated description of the initial phase of the Children's University approach, which was definitely very influenced by media attention. But it seems to be so that this was the driving factor during the first years, whereas just after a while universities started to have a second look at how this successful model can be aligned with existing or modified strategies, how quality development can be achieved within Children's Universities and how this may lead to institutional development, including an impact on academic teaching. With some delay in time, higher education establishments seem to have realized the full potential which lies in this approach. Enhanced institutionalization processes become visible when universities started to involve in the programmes their well-established departments as external communication or admission offices — unlike what had happened in the earlier years, when such initiatives were often initiated by committed individuals only.

Consequently, the outcomes of listening to children and entering into an active dialogue may also become effective just after a while in some cases, before institutional learning continues as a direct consequence of this dialogue with children. There is a growing number of participatory forms of governance of Children's University projects, where children are included in various advisory panels or

committees and their voices are listened to — to design and implement institutional strategies and activities.

Eventually, this well illustrates the impact and the capacity which the Children's University approach can provide for science institutions — when they make a transition from one-way communication models towards the implementation of an active dialogue with children that, as EUCU.NET continues to prove, can be relevant for the entire institution — when science organisations acknowledge children as responsible citizens, as potential students and as future scientists who will have to cope with the grand challenges — which will not be solved within one generation.

> "*The University of Vienna will celebrate its venerable 650th anniversary very soon — and the five years of existence of Vienna University Children's Office is not long in comparison. However, you may wonder why it lasted 645 years before the university realized that indeed children are a relevant target group."*

(Georg Winckler, former rector of the University of Vienna, in his laudation at the 5th anniversary of Vienna University Children's Office)

The limits of children's voices

In the above sense, Children's Universities can enable universities to become aware of the needs and perceptions of potential future students, as well as to reconsider the role of a university within the communities around them. Consequently, Children's Universities provide the opportunity to come into contact with the academic world at a very young age — to some of them for the very first time, and the same may be the case for their parents, families and communities who have not had the chance to approach places of academic research and knowledge production.

However, there is an issue with social inclusion, and — irrespective of a vast load of positive experiences reported about Children's Universities by participants and organizers — not everything is just sunshine and roses at Children's Universities.

Firstly, as said, comparable and exhaustive data is missing about Children's Universities — but there is fragmented evaluation and first-hand impression which reveals that there is still a substantial bias in terms of social origin and social-economic background of participants: Those who are more likely to go onto higher education and those who have sufficient information about educational opportunities are still over-represented at Children's University activities — much more than children from educationally disadvantaged social milieus, even though social inclusion is a central aim of many of these programmes in face of the universities being under the pressure of demographic changes in many European countries.

As a matter of fact, not all voices of children can be heard through the Children's University model. In reaction to this, organizers have started to implement supplementary actions — and this may well have a long-term impact on how non-traditional students are perceived at particular universities in general.

Secondly, there is a tendency inherent to Children's Universities to imitate a rather traditional understanding of university culture and to provide idealized images to a certain extent: such interactions between students and lecturers "at eye level" and potentially biased by the absence of any pressure to achieve may not represent what really happens inside the academic system. Such idealized mimicry of science, arts and humanities at Children's Universities brings along the danger that the perception of the children will not meet the educational reality in their future study life. Important ethical questions come along with the educational stimuli of such programmes. Ethical questions do indeed become relevant, if "to become a scientist" is communicated as something desirable to long for — and simplified as achievable for all who are just interested enough in a particular subject. By all statistics this is not true, and not everybody can achieve positions in academic research — even if people have ability and motivation to perform! Science as a social system is not unbiased and this shall not be ignored in science programmes for children.

Moreover, there is an overall tendency to simplify the core message of outreach programmes by reducing it to "science is fun" — which is definitely not true in all aspects. This may cause false expectations which are likely to even more reproduce and sustain traditional thinking about universities and higher education — rather to transcend the current circumstances.

In the end, there is still a serious need to carefully and continuously consider the impact of the direct engagement with children within higher education institutions and other science organisations, in order to better examine objectives and strategies as well as to control the quality of implementation of activities within an institutional setting.

Who is listening?

It is not the institutions but the acting individuals who directly engage in this dialogue and personal encounters with children, for which the institutions and their representatives provide the framework.

The role of the academic researchers is to prepare the scientific programme of a Children's University, in support of programme coordinators. The idea is to encourage scientists to reflect on their complex and sometimes out-of-reach research in a way that is suitable to meet the demands of curious children — and it is a very challenging endeavour to present research in a catching and profound way. Children's Universities can be suitable to enable these encounters between academics and children, which would not be possible at such large numbers otherwise. Nowadays, scientists are torn between a demand to prove and communicate success and relevance of their research within a wider society. But in return, the ability to do so is not yet acknowledged as a key competence within academia, if compared to achievements in scientific publishing or raising research grants.

Within this dilemma, the engagement with children appears to be more likely to be appreciated than other science communication activities. Provocatively, this may be assumed because the interaction with smart little children gives nicer pictures in

reports and brochures — but indeed it is relatively uncontested that it makes sense to raise awareness for science, research and continuing education at an early age. In return, children are grateful recipients with an unbiased interest and spontaneous enthusiasm — much more than many adults would be.

Although they immediately let you know by their reaction and behaviour if something is not interesting or relevant, scientists do experience satisfaction through purpose and motivation when sharing their research and knowledge with these very unusual audiences — and there are quite a few anecdotes to this effect which can be retrieved from many Children's Universities.

However, not all lecturers and explainers at Children's Universities have the same ability to engage and to prepare their topics in a suitable way for 7–12 year olds — as this is not at all part of their professional profile. Normally Children's Universities' coordinators provide didactic support and expertise, but still it is heavily dependent on the personality of scientists and their readiness to listen to children and to respond in a flexible manner — and this is both true for particular questions, as well as for an entire setting of an intervention.

Within the academia there seems to be a growing acknowledgement of the involvement in such programmes, and there is an understanding that if scientists are able to communicate their highly complex field of research and particular findings to children, they could do the same for almost everybody else — and thereby support the overall expectation towards universities to be more proactive in public science engagement.

However, such an understanding is very likely to imply the danger of false simplifications! In the endeavour to make reference to the world of children and their (supposed) perception of everyday phenomena, the subjects are translated into simple questions in many cases, like "*What are parasites?"* or *"Why did the dinosaurs die?"*. However, when dealing with scientific subjects children may use less complex words or phrases, but in fact their comprehension of the world is not necessarily simpler than that of adults — and even in their world the sky is not always blue, whilst "*Why is the sky blue?*" seems to be one of the most common subjects at Children's Universities. Indeed there is a tendency within such programmes to prefer the "easy-going" commonplace issues — and to leave untouched the more controversial, maybe even disturbing ones.

To cope with the challenge of going beyond the "easy" way and let children know about the less attractive facets of science is definitely a great responsibility — and this may include threatening and sinister topics, even or especially what is still "unknown" or controversial in science. If we stick to the "fun parts", we ignore the fact that science and research in itself are not always beneficial, but may also be a danger to society and may hinder equitable and sustainable development. This "dark side of science" also includes academic malpractice and the fact that "scientists are not only the smart nice folks in white coats, but sometimes really bad guys".

If we take children seriously as interlocutors for science organizations and universities, and if we want to encourage more organizations to incorporate the dialogue with children in their mission and strategy, there is a need to provide a more

realistic picture of the science system, rather than to focus on the "fun parts" of science! And this must also be reflected at the level of those who deliver the programmes as scientists and researchers.

If children are taken seriously in personal encounters, and if they are offered a holistic unbiased representation of science and research, and if — in return — scientists use this opportunity to give them an impression of their scientific integrity and authority, this may even lead to more participatory forms of research. Some illustrative examples are available from Children's Universities, of how feedback and contributions from children had a real impact on scientists' perception of their own field of research, and even of their actual research practice. For example a Polish physicist, who is highly esteemed in the automotive and aviation industry, once told us with glaring eyes how the workshops he is doing with children in his acoustic lab, where they can freely experiment with noise-insulating elements, had a real impact on his own scientific ability in solving noise reduction problems.

This may be an ideal example that the ability to communicate science heavily depends on the ability to listen to children and to take them seriously, but there are many more first-hand episodes of how the engagement with children hbas motivated academics to have a second look at their research or their role and position as a researcher — and how inspiring this was.

The message is clear: if more encounters of this kind shall be possible and if the added value that comes from such mutual inspiration will be available at a larger number of universities and other research institutions, there is a need for a clear commitment from decision makers and key players to provide suitable framework conditions. And in order to have more showcases of participatory knowledge production, the organizers of well-established models of Children's Universities are strongly obliged to accept the challenge and re-think their acknowledged models to take them to the next level of (quality) development — towards even more inclusive and engaging interventions, which leave room and flexibility for collaborative activities and shared understanding. At the same time, they are requested to develop supportive measures which specifically address those who are less likely to participate in a Children's University programme.

This may lead away from "bing bang" science events towards smaller-scale activities, and possible from on-off interventions and sporadic events towards more continuous programmes, which are embedded in a wider thematic context. This may also result in a smaller number of attendances, a decline in media attraction and may also have an impact on the required resources.

But the objective is obvious: to enable a more intensive encounter with children in the scientific sphere, and to make all diverse voices of children heard therein.

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