

Regional Academy OWL

Concept of a Multidimensional Enrichment Programme

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ABSTRACT

The enrichment programme “Regional Academy OWL” is an extracurricular project for the promotion of gifted pupils aged 12 - 16. It was founded by the Department of Didactics of Biology at Bielefeld University and has taken place once a year since 2010 in cooperation with the district government Detmold. Several other cultural and educational institutions of the region are involved as well. The programme’s objective is to convey new knowledge in an action-orientated and interesting way without neglecting the fun of learning in small groups during two to three-day workshops. The thematic scope of the project is quite broad and includes the areas of natural sciences, technology, media, social sciences and arts. Apart from the mere acquisition of knowledge, there is also a focus on social competences.

THE PROJECT

The **Regional Academy OWL (RAOWL)** was brought into being in 2010 and constitutes an enrichment programme for gifted pupils in the area of eastern North-Rhine Westphalia (Ostwestfalen-Lippe) in Germany. Since highly talented pupils are often under-challenged and can experience mental underload in the regular school setting, it is important to provide them with the customised promotion of their giftedness. In the Regional Academy OWL they can expand their commitment and curiosity as well as acquire basic competences with regard to knowledge acquisition and the ability of self-motivation (Trautmann, 2005).

These goals, however, can only be pursued if the pupils’ existing special talents are developed since they are no fixed constants. Rather, they are subject to individual developmental processes (Urban, 1996). In order for all gifted children to discover their potential, a qualitatively adequate promotion and education is necessary. Based on that assumption, the promotion of gifted pupils is pedagogically and psychologically justified (Urban, 2005).

The district government Detmold is in charge of the whole project, funded by the Familie-Osthushenrich-Foundation, in cooperation with Bielefeld University (Dr Claas Wegner, Didactics of Biology). The project is offered as an extracurricular supplement (see Figure 1 for an overview) and addresses pupils of school years seven to nine attending grammar schools. Since its inception and first implementation in Spring 2011, it has been repeated three times. The concept is constantly evaluated and optimised so that minor changes such as increasing the demands in terms of content and methodology and a greater focus on product-orientation could already be realised. Further, teachers of participating schools are involved in the long-term work of the workshop groups to a higher degree in order for them to bring working with giftedness back into the school context and in so doing helping colleagues in dealing with that challenge.

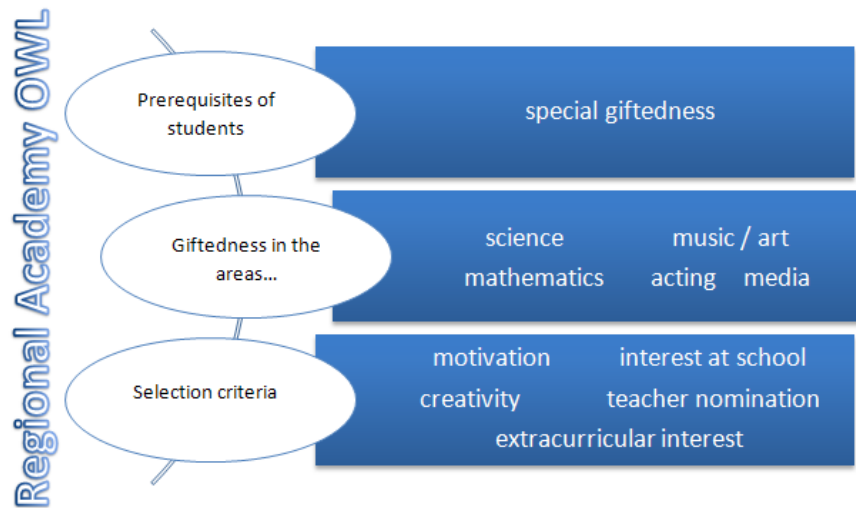


Figure 1: Overview of the focal points of the Regional Academy OWL as an extracurricular enrichment programme.

GIFTEDNESS

A problem is the attribution of “giftedness”, since various descriptions can be found in the literature. According to Hany (Hany, 1987 in Mönks, 2005), there are more than a hundred definitions for the phenomenon of (intellectual) giftedness alone. Holling and Kanning (1999) categorise the existing definitions as follows: 1. Ex-post-facto definitions, 2. IQ definitions, 3. Talent definitions, 4. Percentage definitions, 5. Creativity definitions (Holling and Kanning, 1999).

A reduction of giftedness to one of the five categories cannot take place considering the basic idea of the Regional Academy OWL. In accordance with the project’s philosophy, giftedness comprises more than only one component, such as a high IQ, creativity, an allocation by stated percentages, a talent or a special performance level of older children. Still, the definition categories are not mutually exclusive, but can complement each other. Because of that reason, a definition was developed that matches the RAOWL’s understanding of giftedness:

Definition:

Gifted people stand out due to individual, creative and exceptional abilities in comparison with peers in one or more fields. Inevitable for the development and consolidation of those abilities are both the promotion of those abilities and the interaction with the social environment.

The selection process has also been adapted to the features proposed in this definition, since the pupils are given no guidelines when it comes to the formulation of their applications. Fortunately, this allows for a consideration of creativity and motivation to the same extent as intellectual abilities.

WORKSHOPS

The Regional Academy OWL offers workshops in the fields of science, engineering, media, social sciences and arts which extend over a period of half a year to allow for continuity and sustainability of the topics. The pupils have the opportunity to learn how to independently plan their projects and channel their long-term devotion to a certain topic. Moreover, they experience intensified social cohesion, also known as “networking”.

The varied orientation of different disciplines requires the cooperation with additional cultural and educational institutions such as Bielefeld’s theatre, Herford’s adult education centre, Bielefeld and Paderborn universities and other local educational institutions. The different venues offer two to three-day workshops for the project’s participants, since cancellation of school classes is reduced to a minimum.

Every Regional Academy OWL is started off by an opening event with the participating pupils, their parents, teachers and the heads of the workshops. In the official closing event, workshop results are presented in a similar framework. A workshop consists of approximately 15 pupils, although sometimes exceptions are made if circumstances permit (e.g. the workshop “Economically friendly mobility” hosts four groups with 10 participants each).

The selection of participants proceeds in three steps. First, regional schools are informed about the workshops offered by the district government which then nominate suitable pupils. Those have to hand in a motivational letter stating their reasons for applying to the district government. The government then selects pupils with the help of scientific advisors based on the criteria of intellectual ability, creativity and motivation. In 2011, for example, 110 out of over 150 applicants were given the chance to participate in the project. However, it requires mobility due to the existence of different venues, or the willingness to accommodate a participant from another district, which also contributes to positive social effects.

The Regional Academy OWL seeks to enrich the prospects of pupils’ development by stimulating interdisciplinary working and supporting social competences. The latter is focused on by getting to know like-minded people in multi-day meetings which counteracts the isolation and loneliness that can be experienced by gifted pupils in the classroom. They further become acquainted with unknown intellectual approaches since the project provides an exchange with highly qualified teachers who also might serve as a role model and offer incentives for the pupils’ future professional careers. Dealing with the workshop topics is also useful for other realms since it fosters independent working. And, it makes the pupils aware of interdisciplinary and practical connections which are put to the test through scientific methods (e.g. computer, microscope, experiment set up). It is the mediators (workshop managers) and the exceptional learning environment (university or theatre) that provide an excellent opportunity for the pupils to receive promotion in the field of their specific talent. This is especially due to the workshop managers who are experts in their

discipline and therefore convey the content with a great deal of personal engagement and motivation. In schools teachers do not always have the same facilities and material at their disposal and they have not always enjoyed specialist training regarding giftedness. Another very important focus of the project is social integration and communication. The pupils acquire different presentation techniques, learn how to give and receive valuable feedback, organise discussions, develop solution strategies and reflect on working methods, their participation throughout the project and on their knowledge increase.

To give an indication of the topics that are dealt with in the context of the Regional Academy OWL, a list with the workshops and a short description of the first round is provided in Table 1.

Table 1: Descriptions of the workshops offered previously by the Regional Academy OWL.

Marine Biology and Bionics (Bielefeld University)	The pupils work on several bionic phenomena in the 12,000-litre marine installation of the university. They conduct different experiments, measurements and tests and use new technology and real objects. These vivid experiences help the participants to understand the importance of the marine habitat.
Insects and Robots (Bielefeld University)	Exploring cybernetics is central in this workshop. The pupils observe insects' fascinating abilities and, besides anatomical and shape knowledge, evaluate application opportunities for human reality.
Theatre Workshop (grammar school)	The pupils develop a collage of improvisation, writing and dialogues which is then performed. They can influence the topic choice on the basis of their interests.
Experimental Music (grammar school)	Participants experiment with sound-producing instruments, voice and movement, develop rules for interactions and create their own pieces of music.
Linear Optimisation (University of Paderborn)	Participants get to know the scope of tasks of linear optimisation and discuss how processes in industry and technology can be described with the help of linear models. Different programme packages on the computer are introduced to solve linear optimisation tasks.

<p>Autarchic Energy Supply in a New Housing Estate (University of Paderborn)</p>	<p>The pupils are asked to design an energy concept for a new housing estate that can sustain itself autonomously. By that, they gain insight into engineers' working methods and discover modern technology. It is further focused on renewable energies and the decentralisation of energy supply.</p>
<p>Radio Workshop (Herford's adult education centre)</p>	<p>A radio moderator accompanies the pupils on their way of developing their own radio programme. The project is divided into a theoretical and practical phase, with the latter being the designing of the programme, working on basic journalistic forms and developing the broadcasting scheme.</p>
<p>Opera Workshop (Bielefeld's theatre)</p>	<p>The pupils work on a scenic interpretation that introduces the topic of the chosen opera or musical. A performance with audience rounds off this workshop.</p>

In 2013, the RAOWL offered nine projects, as can be seen on the following map (see Figure 2, adapted from Bezirksregierung Detmold, 2013).

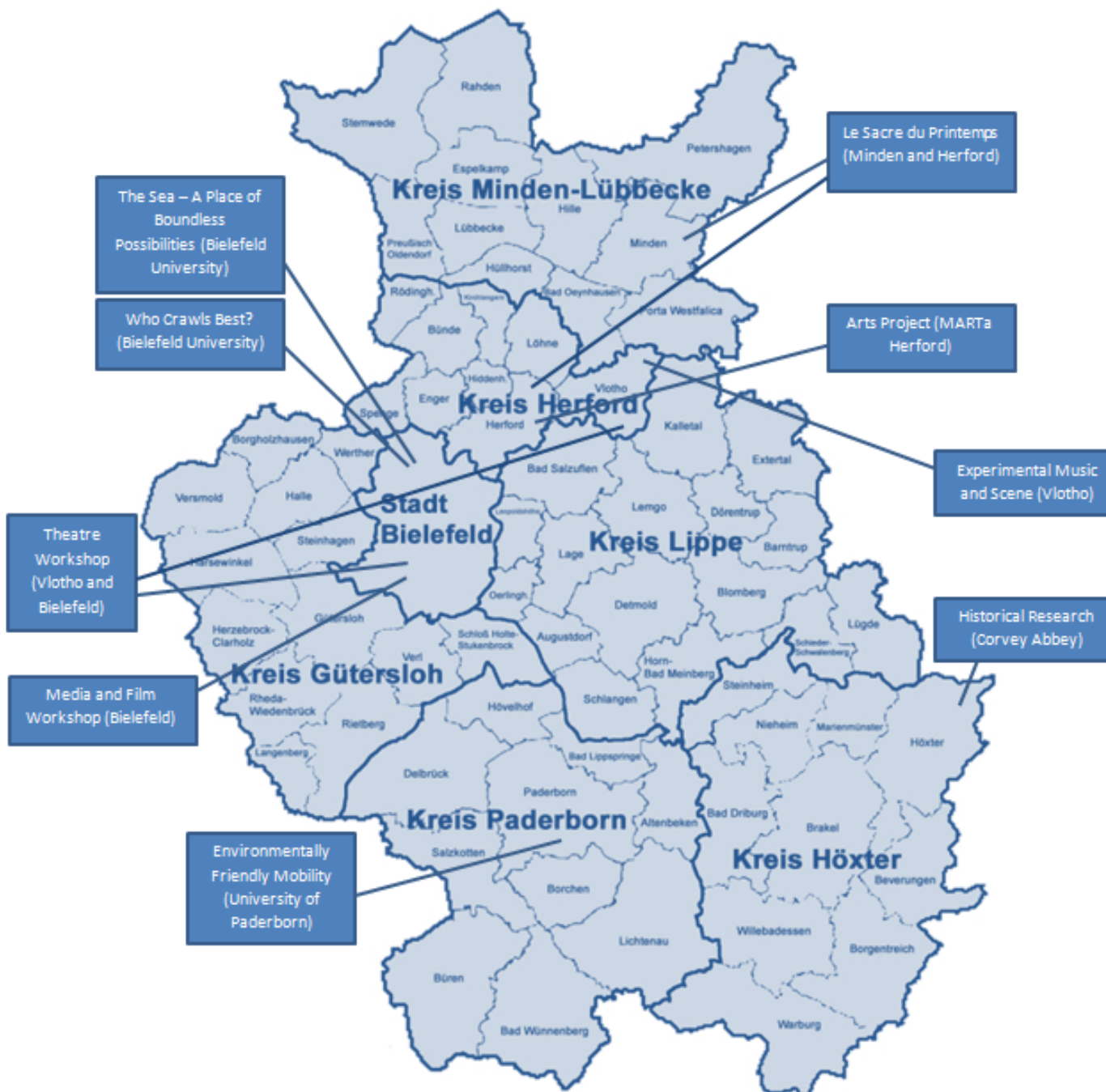


Figure 2: A map showing all the venues and which workshop takes place where at the Regional Academy OWL of 2013.

OBJECTIVES

The main objectives of the programme are to promote participants' learning behaviour as well as to train their social competences (see Figure 3). With regard to the workshop "Marine Biology and Bionics", the pupils' learning motivation and performance should be facilitated through direct contact with real objects (e.g. cat sharks, lobsters, and starfish) at the marine installation of Bielefeld University (see Figure 4¹). This also includes an association with extracurricular topics, such as marine biology, dealing with special computer programmes used in the context of linear optimisation, or the topic of radio production (see Figure 5). Due to intensive examination over a period of several days, the pupils have the chance to become acquainted with the new field of interest.

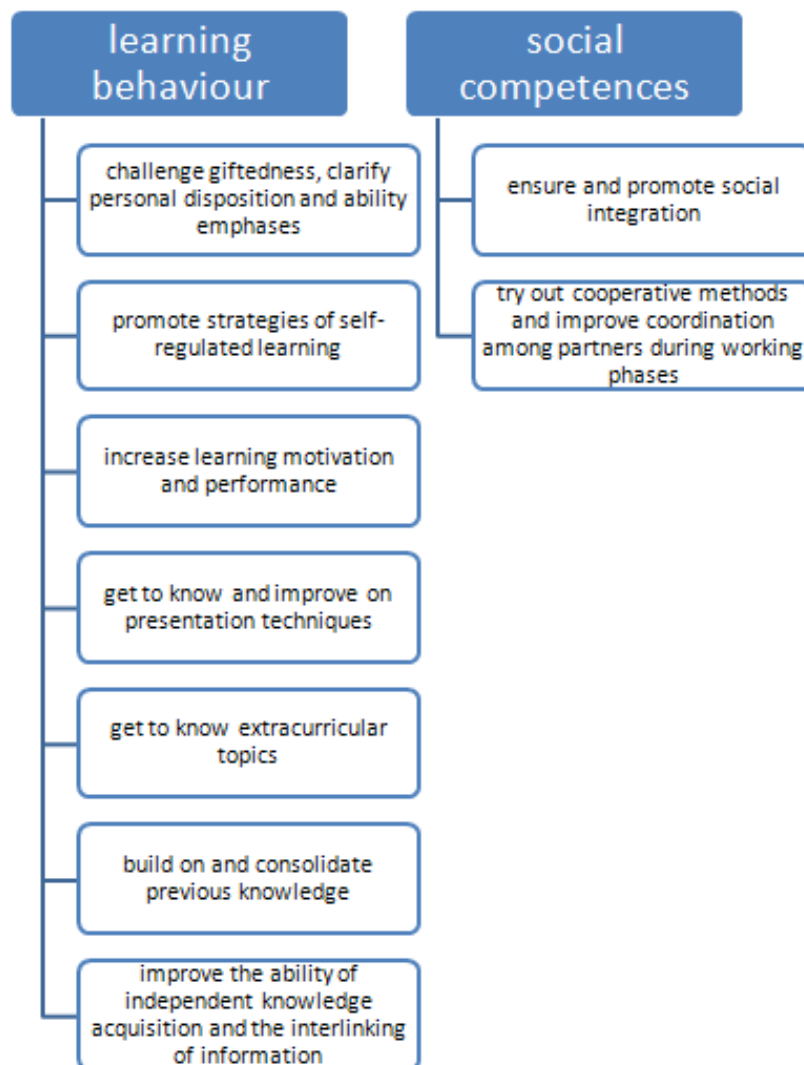


Figure 3: Aspects that are sought to be achieved in the fields of "learning behaviour" and "social competences" due to participation in the Regional Academy OWL.



Figure 4: Pupils working in the marine installation of Bielefeld University.

With respect to social competences, social integration is fostered through establishing contact among similarly interested and talented pupils, on the one hand, and through the use of cooperative working methods (group and partner work), on the other hand (see Figure 6).



Figure 5: Pupils of the radio workshop.



Figure 6: Pupils of the theatre workshop.

EVALUATION

At the beginning of every workshop the participants are asked to write down their wishes and expectations for the respective workshop. Their answers are categorised under the areas “contact”, “content” and “fun”. After having done that in the first year for 93 pupils (excluding the participants of the opera workshop), the results are as follows (see Figure 7).

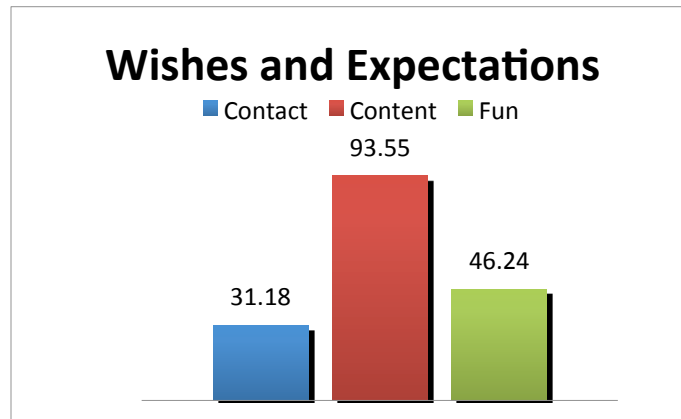


Figure 7: Wishes and expectations on the workshop, divided into the categories contact, content and fun. The ordinate provides the degree of the characteristic in per cent [%].

The statements show that subject-specific topics make up the largest part of the expectations. Still, nearly 50% of the pupils expressed the wish to have fun and about a third of the participants wanted to come into contact with other group members. The statements also correspond with the aims of the RAOWL as set out above (see Figure 3). That the wishes could also be converted into reality is shown by the fact that the evaluation after the workshop is in accordance with the forward-looking statements previous to the workshop (see Figure 8).

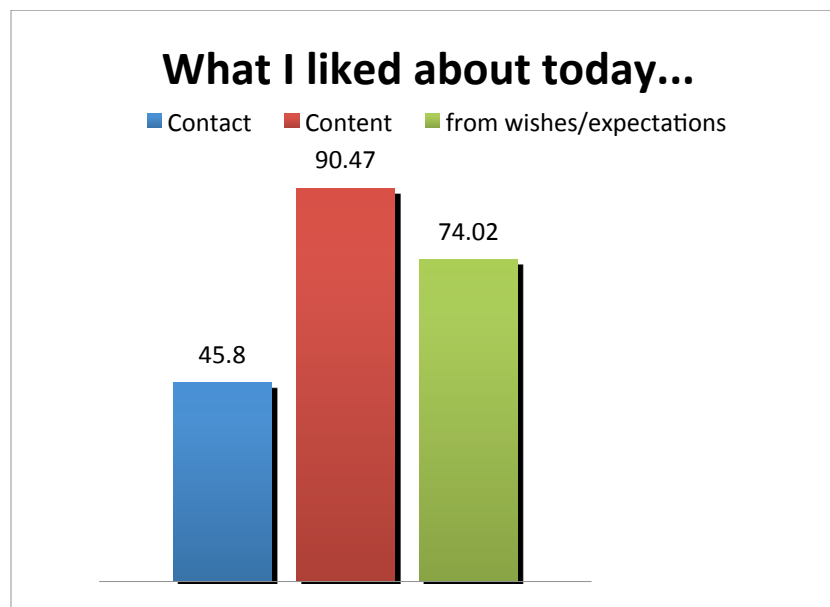


Figure 8: Answers to the statement "What I liked about today", categorised into the areas of contact, content and wishes. The ordinate provides the degree of the characteristic in per cent [%].

These very positive results show that more than 90% of participants are mostly interested in the content, which again resembles the first survey of wishes and expectations. About a half of the pupils regard the contact to other group members as successful and noteworthy. The content dealt with in the workshop as well as the social competences fulfilled the pupils' expectations to a great extent (75%). To what extent they learned something new and in what way the topics treated might prove beneficial for them can be read from the following diagram (see Figure 9).

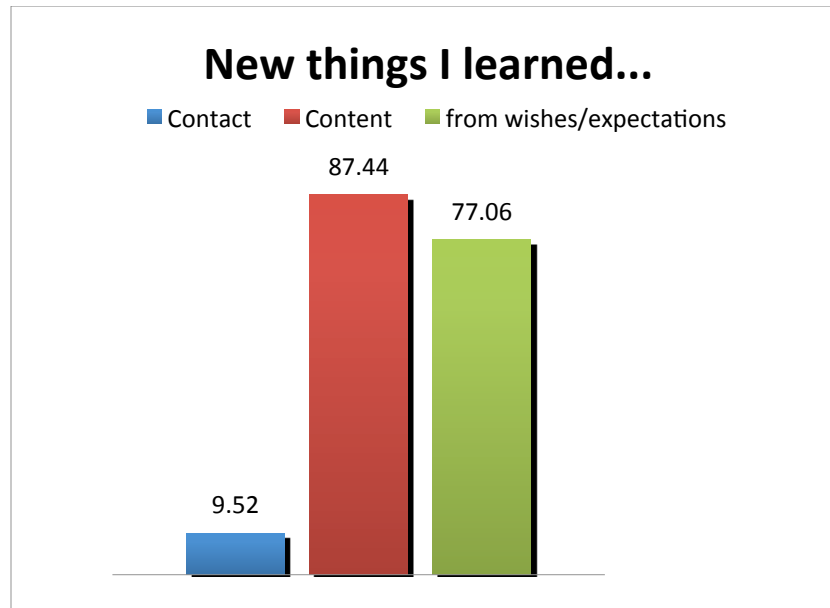


Figure 9: Answers to the statement “New things I learned”, categorised into the areas of contact, content and wishes. The ordinate provides the degree of the characteristic in per cent [%].

Figure 9 suggests that the aspects that have been newly acquired concern content mostly, but also with regard to social behaviour new insights could be mediated. Another question was how the pupils considered the relevance of the input for school and everyday life (see Figure 10).

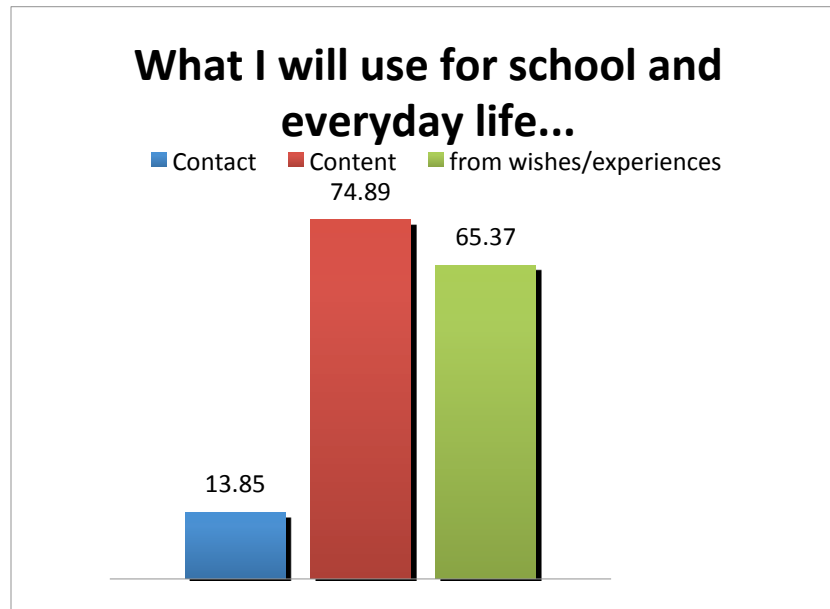


Figure 10: Answers to the statement “What I will use for school and everyday life”, categorised into the areas of contact, content and wishes. The ordinate provides the degree of the characteristic in per cent [%].

Nearly 75% of the participants claimed that new content-related insights would be useful for their school or everyday life. This was previously wished for by 65%. These results displayed only a small proportion of the project’s success which are therefore further exemplified by excerpts of the workshop journals (Table 2).

Table 2: Objectives and the corresponding fulfilment in terms of pupils’ statements of the respective workshops.

Objective	Pupils’ remarks	Workshop
1) challenge giftedness, clarify personal disposition and ability emphases	“figured out that I like bionics more than marine biology” “sound technology is also fun” “finally working in exciting areas”	[Bionics II] [Media workshop] [Bionics II and Autarchic Energy Supply]
2) promote strategies of self-regulated learning	“did many practical things compared to school lessons” “creating your own roles” “becoming active”	[Bionics I and II] [Theatre workshop] [Bionics I and II, Theatre workshop]
3) increase learning motivation and performance	“learned many new things” “touching animals”	[all six workshops] [Bionics I and II]
4) get to know and improve on	“the presentations were good”	[Bionics II, Linear Optimisation, Autarchic]

presentation techniques	“how to present” “handling the computer/Power Point”	Energy Supply] [Theatre workshop] [Linear Optimisation]
5) get to know extracurricular topics	“getting to know the university” “marine installation was great” “working with AMPL”	[Bionics I and II] [Bionics I and II] [Linear Optimisation]
6) build on and consolidate previous knowledge	“new detailed knowledge” “getting to know examples of application”	[Bionics II, Autarchic Energy Supply] [Linear Optimisation, Bionics I]
7) improve the ability of independent knowledge acquisition and the interlinking of information	“planning your own experiments” “experimenting” “creating roles on your own” “group work”	[Bionics II] [Bionics II] [Theatre workshop] [all workshops]
8) ensure and promote social integration	“getting to know new people” “finding friends” “group work” “playing together”	[all workshops] [all workshops] [all workshops] [Theatre workshop]
9) try out cooperative methods and improve coordination among partners during working phases	“particularly working in groups” “presenting” “partner work” “methods in the workshop”	[all workshops] [Theatre workshop, Media workshop] [Linear Optimisation] [Bionics II]

The results illustrate that the overall aim of the Regional Academy OWL (see Figure 3) has been largely accomplished. Fortunately, there has been an overlap of the participants' ideas as could be seen in the expression of their wishes and expectations and the objectives as proposed in the conception of the individual workshops. Further, the acquisition of knowledge and, as a consequence, the expansion of already existing skills are aligned with the pupils' expectations.

Since Table 2 represents only some of the pupils' remarks with regard to the success of the Regional Academy OWL, the following individual student comments give a personalised insight into the workshops. The statements are from the learning journals (see Figure 11, translated into English) which the students had to keep throughout the workshops to depict individual evaluation and personal experiences. Learning journals or logs are commonly used to facilitate self-regulated learning and for the appropriate assessment of one's own learning behaviour.



Figure 11: Cover of a learning journals (in German: ‘Workshoptagebuch’).

The learning logs fulfill two functions: on the one hand, the learning journal helps pupils to document their learning process, the workshop contents and to reflect on themselves; on the other hand, it is used as an evaluation instrument in order to make statements about the success of the individual workshops. According to the pupils’ evaluations on their emotional state and knowledge increase after the workshops, the opinions are discussed to make improvements for the next RAOWL.

The concrete task of the learning journal is transformed into ten guiding questions for each workshop day. For example, the pupils should state personal wishes and expectations on the workshop beforehand. Then, afterwards, they are asked to describe the day in their own words, to judge the level of difficulty, to give positive and negative aspects about the workshop content and to rate their degree of motivation. Further, they should provide information on their knowledge growth and how the new input might be useful for everyday or school life, if at all.

In order to give an impression of how participating pupils in the past felt about the workshops, some original statements based on the categories of the learning journal entries are provided below.

Expectations

[Theatre]: “My expectations for this workshop are first and foremost that I have lots of fun in a group of new people and that I encounter them more openly. Content-wise I hope to learn how to speak more at ease and to work on my stage fright. Even though I am already pretty good at enacting different figures, I would like to improve how to express emotions thoroughly.”

[Radio]: “I really hope that I will get to know nice people and that working with them is fun. But I also want to learn something about the radio and how a programme is produced and broadcasted afterwards.”

[Bionics]: “I hope to do practical work and to learn more about marine animals. I would really like to carry out experiments and have more fun than in school. “

Positive aspects

[Theatre]: “What I liked about today was the development of my own character on stage. I could speak to others about my role and adjust it. I also noticed that I am not so shy anymore and that I really enjoyed playing with the others. The warm-up exercises probably contributed to that and I felt like knowing the other workshop members very well afterwards. Different to acting in school, all our scenes were looked at and the workshop manager provided everyone with feedback. I liked that we could decide on our own who we wanted to be.”

[Radio]: “Today was so much fun and through the interview game I got to know lots of new people. We also did live recordings in the studio and everything was perfectly organised and planned. I actually did not expect to do so much practical work, but I love it. At some points I was a bit nervous but I did the moderation nevertheless.”

[Bionics I]: “I liked that the workshop managers always trusted in us and thought we could really do the experiments on our own. I was lucky and had a great group to work with, but I could also discuss issues with them. And working with the animals was so exciting! The bearded dragon, snakes, crabs, snails and a lobster! We could take the animals on our hands and did an experiment on shark skin. Things we were not able to see were replaced by great film clips and I learned so much about the animals which I wouldn't have in school. I also liked that we got to know the university and the workshop managers gave real good talks! In the afternoon, we looked at the symbiosis of the anemone clown fish and anemones, learned about electro-location in cat sharks and that starfish have the ability to grow new limbs (regeneration). Even though I thought mussels were boring, it was so cool to see how strongly they can attach to something with their byssus threads and how crabs can open seashells. Aside from the animals, we got to know about a serious issue called “ocean acidification”.”

Negative aspects

[Theatre]: “I didn't like the exercises at the beginning. And it was talked about the scenes for quite a long time...”

[Radio]: “I couldn't be in one group with my friend which I didn't like to so much. And not everyone had the same talking share in the radio programme.”

[Bionics I]: “I found talking about ingredients of seawater too difficult because I didn't have chemistry in school yet. And the PowerPoint for that topic was a bit too long.”

<i>Impact on everyday or school life</i>
[Theatre]: “I guess for school purposes, I can definitely talk to strangers more easily and approach people free of fear. Also, speaking freely in front of a group will come in handy during presentations. Connected to that, I also learned how to give feedback even though at school I never knew what to say in such a situation.”
[Radio]: “Now I can communicate during group work better, something I will definitely need in school. I am also more confident and more open to other’s opinions. Since I learned about copyright regulations, I will now pay more attention to that when I have to give a presentation. In general, I got many tips about interviews and speeches and I am dead sure that I will do an internship at a radio station next year.”
[Bionics I]: “I guess everything I learned about water in this workshop will be important in physics or chemistry later on in school. And I already know something about movement patterns of marine and land animals which might come up later in biology. In general, detailed knowledge about bionics is definitely an advantage for me. Now I understand how so many things in the human world and technology actually derive from biological effects and I can explain that to my family and friends.”
<i>What was learned/knowledge growth</i>
[Theatre]: “I noticed that after today, I can connect to people way faster than before and was able to cast off a bit of my shyness. Compared with classes in school, I liked working in groups and was trained in playing with others on stage. Since the workshop managers encouraged us all the time, I improved in speaking loudly.”
[Radio]: “What I learned in this workshop: how to produce a radio programme, how a press conference works and how to come up with questions for an interview. I got to know lots of technical stuff.”
[Bionics I]: “Now I know about the composition of seawater and about the movement of many different water animals. We also focused on the digestion of starfish and the sensory organs of sharks. I got to know how shark scales are built and that starfish are light-shunning. What I really liked was that we learned the appropriate terms for the different topics.”

As a result of the mainly positive response, further workshops and in general a continuation of the programme will be offered. The workshop journals will continue to be used in order to evaluate future workshops and work on improvements within in the whole project. University students who want to become teachers are able to participate in the workshops and can gain useful experiences in dealing with gifted pupils for their later professional life.

CONCLUSION

After four years of implementation, the project is now a great success and should be pursued in an even greater scope in future years. It provides gifted pupils with a great opportunity to grow and be promoted regarding their talents and at the same time to meet like-minded people who might experience similar challenges at school. The programme goals do therefore not only imply subject knowledge but also the consolidation of social competences. Another advantage of the Regional Academy OWL is that teachers are

trained in dealing with extraordinary pupils. Thanks to the various organisations and institutions involved in the project, the pupils are able to gain insights into many different fields that are of interest to them and which would not be possible at school, even if it offers some extracurricular activities. The evaluation has shown that the pupils were very happy with what they had learned content-wise in the workshops in 90% of the cases and that 75% considered this new knowledge important for their later lives. The personal statements also suggest that the pupils made good progress in working with special equipment and using certain methods and techniques characteristic of their field of expertise as well as in becoming familiar with several methods of group work. For further information on the enrichment programme please visit www.kolumbus-kids.de and navigate to the menu item "Regional-Akademie OWL".

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¹ Permission for photographs to be taken and used in the reporting of the project was obtained.