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Research Article

Cooperation between gifted students and university staff: a micro case study of the Preliminary Academic Research Project (PARP) in Germany

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Abstract

The Preliminary Academic Research Project (Besondere Lernleistung, abbreviated as BeLL) is a self-chosen, but also self-responsible contribution of a student to increase the ability to study and to prepare for university studies. By working on a Preliminary Academic Research Project (PARP), students demonstrate complex action competence and further develop their communicative and cooperative skills. This micro case study highlights the importance of working with external partners at universities and shows, from the perspective of an external supervisor, what is expected of actors in the process of creating a PARP and how such work can contribute to the promotion of gifted and high-achieving students in the form of enrichment. To this end, the content and formal requirements of a PARP are presented and placed in the context of the timeline of the work process from a praxeological angle. Based on the theoretical and legal framework of a PARP as well as experience, this micro case study aims at making suggestions on how to support the mentees in the work process in order to provide the external supervisors with a clearer picture of the requirements for their role.

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Introduction

For over a decade, most German states have offered academic high school students the opportunity of completing a Preliminary Academic Research Project (PARP) as part of attendance at the upper secondary level (*Gymnasiale Oberstufe* or *Sekundarstufe II*, Years 11-13) and including it as an achievement within the general higher education entrance qualification (*Allgemeine Hochschulreife*, commonly referred to as *Abitur*). In such a complex achievement, students are expected to work independently in a subject area and address a question in accordance with scientific requirements (as far as this is possible at school). A PARP is particularly suitable for promoting gifted and high-achieving learners as it takes a lot of time and requires a high degree of motivation and perseverance. In the long run, however, it brings a great gain with a view to later life, since it promotes independent work and prepares students for

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the demands of scientific studies.

The Current State of Research: School-University Partnerships in Gifted Education

By establishing an elective element of pre-academic training such as the Preliminary Academic Research Project (PARP) at the upper secondary level, educational officials have emphasized recognizing and rewarding youngsters who are considered exceptionally gifted. Various organizations, from parent associations to charitable endowments, work together to satisfy the unique needs of gifted and high-achieving children, fostering communication and collaboration within themselves and with other institutions as well as organizations. For the case of Germany, Fischer and Müller (2014) claim that the country does not have a unified national policy for gifted education or talent assistance due to being challenged by networking on educational matters across the separate federal states (pp. 34, 50-51). The 16 states might gain insight from one another if they shared information and ideas on how they put ability promotion into practice. The authors emphasize that the integration of the ideas of gifted education and talent support into many contexts, such as inclusive education or the results of international comparative research, could lead to further development. On the other hand, Abdrafikova et al. (2014) look at how other states have dealt with the challenge of educating exceptional children in the modern era. One of the most effective education methods for working with gifted children is engaging them in projects and research (p. 54). Their article illustrates how the "school-university" paradigm (as represented by the collaboration of a student with a university instructor within the context of a PARP) can be used by (student-)teachers and students in gifted and high-achieving classrooms to organize integrated projects and research activities. Abilities, brilliance, and talent are all classified according to the same standard: the level of achievement (p. 55). Consequently, according to the authors, the modern understanding of giftedness is that it is not a fixed characteristic but rather a dynamic one, denoting a skill that exists only in motion, in development, and as a result, its growth necessitates particular environments such as the academic context of universities and other research institutions.

In his 2021 contribution to a compilation, Tortop (2021) delves into the *Education Program for the Gifted Students' Bridge with University* (EPGBU) a vital example of school-university collaboration. Turkey's school system has catered to the gifted for a considerable amount of time since the country acknowledges the gifted to be its brightest students and some of its most valuable assets. Currently, many Turkish students who are considered to be gifted and/or high-achieving have access to mentorship and E-mentoring programs (pp. 145-146). Practical examples of how to improve self-regulation, scientific creativity, thinking skills, the scientific process, and research skills are abundant in the EPGBU program described by Tortop (2021), making it a valuable model for interventions with the gifted and/or high-achieving all over the world (pp. 176-177). Furthermore, the researchers Piske et al. (2021) have recently published a comprehensive guide to recognizing and nurturing talent in gifted learners. Each chapter invites readers to consider the evolution, philosophy, and current state of gifted education and high IQ programs worldwide.

While everyone may agree that not every partnership is the same, existing partnership hierarchies assume some alliances are healthier than others . Research done by Behrens and Roberts (2021) provides a new classification system for describing educational partnerships, one that is grounded in the results of a comprehensive study of charter schools across the United States. The findings by Behrens and Roberts (2021) and Mofield and Phelps (2020) note that different types of partnerships can be identified by the means by which they are formed, the nature of the services they provide, and the degree of organizational participation. According to the latter, their monograph offers practical ideas for making collaborations among gifted teachers and professionals beyond being well-mannered to each other. To encourage students to study, teachers might rely on several types of enrichment pedagogy that could serve as an illustration of the nature of a PARP (Reis et al., 2021). In their article, they list measures such as differentiation and curriculum compacting, interest-based learning pedagogy, project-based learning, the application of creative productivity to student learning, and open-ended choice along with the contributions of gifted education to the development of these strategies.

Research Question

The field of gifted education spans a broad range of different approaches, models and theories. This variety is also

reflected in the diverse body of people who are involved in it. Academic staff such as university instructors and researchers can serve as agents of change for school education by establishing specific practices related to the promotion of science propaedeutics in gifted and high-achieving students (Mannewitz, 2020) . However, the number of respective programs tailored to the needs of the aforementioned target group is limited in terms of their scope and variety at a local as well as global level (Tortop, 2021). Therefore, examining such practices in detail can contribute to the dissemination and sustainability of the assets these programs hold for the expansion of gifted education to the realms of academia. This micro study is aimed at considering the case of the Preliminary Academy Research Project (PARP) as one potential approach to school-university collaboration in Germany. Accordingly, this article focuses on the following research question:

- Which affordances (potentials) does a PARP offer to university staff as well as to gifted and high-achieving school students regarding its value for the promotion of pre-academic learning and science propaedeutics within the context of the German education system?

Method

The topic presented in this article is mainly pertinent to the praxeological research paradigm as this approach often serves to make the tacit dimensions of what is experienced visible (Herbert & Kraus, 2013). Based on relevant literature, the German PARP regulations as well as on experience, this micro study sets out to explore this type of project work for school students as a model for school-university collaboration. Departing from the provisions made by legal documents, the article describes the general structure and process of a PARP. Moreover, it offers experience-based reflections on the educational affordances originating from the completion of such a project. In line with the Affordance Theory (Gibson, 1979; Gaver, 1996), attention is drawn to the productive links of the perceptions made in the process of supervising a PARP to the actions derived from those perceptions by the (external) supervisor, e.g. at a university. These links are primarily established by considering the needs as well as the prior knowledge that school students bring to the learning setting once they embark on the journey of working on such a formal research project. Finally, the scientific format of the micro case study was chosen for presenting the affordances of a PARP as it combines the pithiness of a scientific overview with the conventionalized procedures of qualitative research. Even though this term might not be frequently used in educational research, a micro case study can be defined as the analysis of cases "that occur in a brief time frame, [... as well as] in a confined setting, and are simple and straightforward in nature" (Alpi & Evans, 2019, p. 2). Consequently, such a study is very brief and relates to a clear problem of interest. Moreover, it can be adapted to reflect the praxeological perspective as it does not necessarily need to rely on a multitude of artifacts, interviews, or observations. On the contrary, its richness of description facilitates the understanding of the findings from the case when considering various aspects within the context of a PARP.

Results

On the Classification of the Preliminary Academic Research Project (PARP) in the Context of the German Education System

In 1997, the Standing Conference of the Ministers of Education and Cultural Affairs (*KMK*) agreed that a Preliminary Academic Research Project (PARP) can be included in the *Abitur* examination. This agreement is part of measures to ensure the quality of the general higher education entrance qualification (Kultusministerkonferenz, 1997). This means that PARPs are not only to be found in the Free State of Saxony as shown here but are also envisaged in other federal states. The associated goals can be roughly described by the terms study ability, scientific propaedeutics and individualization of school education (Martin-Beyer & Mergenthaler-Walter, 1999). It should be noted that due to the aforementioned German educational federalism, the regulations for the implementation of PARPs differ in the respective federal states with regard to duration, period, scope, admission of group work and choice of topic. However, as a fundamental approach, preparation for later study forms the unifying element and thus assumes great importance. This is because, as in other countries, there are repeated complaints in Germany that school graduates are increasingly

less able to meet university requirements because they do not bring the respective knowledge and skills with them from school (Hoffmann & Henry-Huthmacher, 2016, pp. 5-6).

The Preliminary Academic Research Project (PARP) as an Element of the Academic High School (*Gymnasium*) Education

By working on a Preliminary Academic Research Project (PARP), students demonstrate complex action competence and further develop their communicative and cooperative skills. The students work their way into a subject-related topic, demonstrate as well as further develop their skills in the process of obtaining, processing, documenting and presenting information. They plan and structure their work independently over longer periods of time, present their work results coherently in writing and orally in different work phases and in different demand situations. The demands associated with the development of a PARP result primarily from the requirements that colleges and universities place on students. The PARP must be documented in writing and defended in a colloquium (Sächsisches Staatsministerium für Kultus, 2008, p. 2). In the case of Saxony, three different types of projects are permitted as part of the PARP (Sächsisches Staatsministerium für Kultus, 2021, p. 47):

- a comprehensive paper in an academic competition event sponsored by the Free State of Saxony, a comparable federal benchmark event, or an international benchmark event,
- an extensive work with scientific propaedeutic claim, as well as
- the completion of a comprehensive, also interdisciplinary project or internship.

In Saxony, there is no obligation to complete a PARP, so the decision to present it as part of the *Abitur* examinations (as a substitute for an oral examination in a subject from the school canon) is made individually by each student. Precisely because of this voluntary nature, the PARP is an ideal instrument for promoting giftedness in the sense of enrichment.

The PARP can include a practical component (e.g. independently developed artistic results, series of experiments, simulations or computer programs). Normally, each student has an internal supervisor who is a schoolteacher for the subject to which the chosen topic of the PARP can be most closely assigned. In many cases, however, the young researchers also look for an external supervisor at a university or research institution. In addition, there is also the possibility of contacting agents from various industries, administration or politics. On the one hand, these kinds of cooperation relieve the teachers at the school, for whom the supervision means a high degree of additional workload and responsibility. On the other hand, cooperation with such partners possibly contributes to the consolidation of study and career aspirations, because researchers at universities can engage with the needs of gifted students in a completely different way due to the academic setting.

The University as a Place for Promoting Giftedness

In this context, cooperation with universities and other research institutions makes a special contribution to strengthening the promotion of giftedness in schools. It picks up on the willingness of gifted young people to deal with specific subject problems and issues. In this way, work at a university cannot only enable learners to deepen their own knowledge in an interest-driven manner, but also foster independent problem-solving strategies and a keen interest in research-based activities. Beyond the material of traditional school subjects regulated by curricula, they experience a scientific discipline as a dynamic continuum with different contents, methods and approaches. The Preliminary Academic Research Project (PARP) as a new format of learning and working at school can be seen as a form of qualifying enrichment with regard to gifted education. The enrichment takes place with reference to a specific school subject, which is enriched, but the young people dealing with topics or subjects that are less common in the classroom. However, it is not only the internal supervisors (schoolteachers) and the learners concerned who are expected to meet certain requirements. It is also important for university instructors and researchers to be prepared to be engaged in this unique form of supervision of scientific work.

At the organizational level between school and university, clear arrangements from the beginning (e.g., drawing up a supervision agreement with achievable goals), regular exchange (e.g. discussion rounds with student, internal and

external supervisor) as well as the definition of time frames for certain work steps contribute to the successful completion of the PARP. In this context, it can be helpful for university researchers to bear in mind that many of these students likely have little knowledge of scientific work. More importantly, unlike university students, they have virtually no experience with inquiry-based learning and work. Therefore, it seems important to provide school students with clear formal guidelines for their work as well as content orientation in the form of joint literature research, etc. from the very beginning in order to enable them to learn independently in the long term and to support their development. In the sense of promoting giftedness, a mentor at the university should strengthen the learners' own ideas and give them freedom to work on the PARP without becoming nervous if it does not develop as desired at some point in relation to the work status. Many learners complete their PARP alongside the assessments, homework and extracurricular activities that usually characterize their school day.

The Process of the Preliminary Academic Research Project (PARP) from the Point of View of the External Supervisor

The development of a Preliminary Academic Research Project (PARP) is normally a long-term endeavor, so that approximately two years of supervision should be planned for the external supervisor at a university.

While some schools already have established partners, it is not unlikely that students will choose to contact an institute of a university by e-mail and ask about possibilities of supervision by an academic employee. At best, the candidates already have a concrete idea of a topic at this point, which would narrow down the selection of possible supervisors. Often, however, they do not yet know in which direction their research should move. It would therefore be desirable for the external supervisor (a university instructor/researcher) to first meet with the student to draw up a supervision agreement and a work plan. The agreement and plan will help to specify concrete work steps and deadlines. The following aspects can be included among others:

- choice of a research area and topic identification,
- agreement on the nature of the collaboration (reliability, responsibilities, rhythm of work meetings, etc.), and
- milestone plan for the completion of the PARP.

In order to provide guiding process support, it is desirable for the learner to meet with their external supervisor on a regular basis. Meetings at intervals of two to four weeks are possible. In order to create free space and prevent overload, the external supervisor should react flexibly if they notice that their protégé is confronted with numerous tasks at the same time at a certain point, or if the research work needs more time. After about half a year, roughly these steps should be completed:

- literature research, acquisition, selection and evaluation,
- structuring of the material, and
- determination/creation of a research design.

At this point, many schools require a concept defense. This concept defense may take the form of presenting an abstract or synopsis of the proposed PARP. The majority of internal supervisors at schools will be grateful to external supervisors for assistance at this point and will rely on the expertise of university staff. After successfully defending the concept, learners will enter a work phase in the second semester of working on the PARP, which will include these sub-steps:

- adapting the research design to the feedback on the concept,
- carrying out the investigation and evaluating the results, and
- consultation and discussion of the work with external and internal supervisors (if necessary, with the involvement of further experts).

At the end of the first year, the supervised student should start writing the rough version of their PARP. After the

summer break, they will complete the first version with its appendices. At this point, students in many federal states must also make the important decision as to whether they would like to replace another examination subject in the *Abitur* examinations with their PARP. They should be given regular opportunities to attend a consultation meeting and to discuss completed chapters of the written documentation, as in many cases there will still be a great deal of uncertainty in the area of scientific work due to their own inexperience - this applies not only to content, but above all to formal aspects (e.g. uniformity, references, bibliography). The work must be completed and revised by the end of the third semester. This is followed by the submission to the student's school of origin.

The final phase of supervision is the evaluation of the PARP, which in the case of the Free State of Saxony consists of the written documentation and the colloquium as a substitute for an oral *Abitur* examination in a ratio of 1:2. The external supervisor has only an advisory function in both parts of the examination, i.e. they can be asked for their vote with regard to the examination performance in the form of an expert opinion. In the end, however, the respective examination board of the school determines the partial grades for the overall grade. Even in this situation, however, many schools are guided by the expertise of the external supervisor and respect their opinion.

The overview below illustrates the process of a PARP using a concrete example focusing on Anglicisms in the present-day Albanian language based on the text corpora various contemporary magazines provide:

Table 1. Timeline for a Preliminary Academic Research Project

Time frame	Work phase
September 2021	➢ Contact on the part of a student (L1: Albanian, L2: English, German) from an academic high school with the university's Institute of British Studies ➢ Confirmation of supervision on university supervisor's part ➢ Discussion of possible topics in the fields of literary studies, cultural studies and linguistics ➢ Determination of the topic and the working language (English)
October/November 2021	➢ Joint tour of the university library to introduce the organization and working methods of a scientific library ➢ **Introduction to scientific propaedeutics (1):** formal uniformity, citation styles, formats of scientific writing (exposé, abstract), compiling a bibliography ➢ Development of concrete research questions: How often are Anglicisms used in contemporary Albanian-language magazines? What types of Anglicisms are found in these magazines? ➢ Cooperation meeting with internal supervisor (subject teacher for English) for further arrangements ➢ **Practical task (1):** compiling a bibliography on the topic of the PARP
December 2021-February 2022	➢ Familiarization with the research literature ➢ Procurement of data material in the form of Albanian language magazines from different domains (youth, fashion, economy/politics, sports) ➢ **Introduction to scientific propaedeutics (2):** relationship between theory and own work, developing a research design based on existing models ➢ **Practical task (2):** elaboration of a research design for the developed questions ➢ **Practical task (3):** writing an abstract on the subject of the PARP in English and German
March-June 2022	➢ **Introduction to scientific propaedeutics (3):** dealing with quotations in continuous text, scientific writing style ➢ **Practical task (4):** writing a theory chapter based on the state of research on the linguistic development of the Albanian language ➢ Work on refining the research design ➢ **Practical task (5):** carrying out the research and evaluating the results
June-September 2022	➢ Further work on the first version of the PARP ➢ **Introduction to scientific propaedeutics (4):** formal and content-related requirements for scientific presentations ➢ **Practical task (6):** creation of a scientific presentation on the subject of the PARP

October-December 2022	➢ Completion and revision of the PARP ➢ **Introduction to scientific propaedeutics (5):** finalization of scientific work, appropriate presentation of own research results ➢ Submission of the PARP to the school
January-April 2023	➢ **Introduction to scientific propaedeutics (6):** formal and content-related requirements for a colloquium/scientific poster ➢ **Practical task (7):** preparation of a scientific poster on the working topic ➢ **Colloquium training:** presentation techniques, preparation of possible questions by the examination board

Conclusion

Although university supervision of a Preliminary Academic Research Project (PARP) may seem challenging at first glance, it is an enriching and fulfilling experience overall. This means enrichment for a gifted and high-performing learner and enrichment of the work at universities. By supervising a gifted learner's project, university teachers are given a better insight into the level of performance and knowledge of school students. This experience allows them to develop a better sense of what can be expected of university students in their first years of study. Especially for didacts and educators such a mentoring situation can be interesting as they can identify possible desiderata based on observations and experiences and initiate new research regarding teaching and school development. By creating ongoing working partnerships between schools and universities, it would further be possible to establish a more efficient theory-practice transfer. For example, scientists and researchers could go to schools before the start of upper secondary education and the work on a PARP in order to design and support training focusing on study skills and/or conduct several days of scientific work at academic high schools. The students would then develop a better understanding of the requirements of university learning and work, so that they would have an experience-based decision-making aid with regard to their career and study orientation. In terms of desiderata, it can be stated that more empirical research needs to be carried out to corroborate and expand the experience-based findings of this micro case study. Focusing on the PARP process, the underlying motivations and attitudes, qualitative research could provide deeper insights into the perspectives of supervisors and mentees alike, whereas quantitative research could be aimed at determining the overall prevalence of school-university collaboration and the specific distribution of school subjects involved in such pre-academic endeavors. In conclusion, it can be said that the completion of a PARP contributes to the promotion of gifted and high-achieving students in general. The cooperation between internal and external supervisors creates a variety of educational networks which could possibly be exploited beyond the limited scope of collaborating on a PARP. Finally, there is also potential for preparing students for their university studies, and scientific content is consequently reinforced in school curricula.

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