

ENRICHING EXCELLENT BOYS AND GIRLS IN THE NETHERLANDS

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In this project we examine the impact of a secondary school enrichment program on the school performance of gifted students in secondary and tertiary education. The secondary school enrichment program offers gifted students the option to work on projects of their own choice instead of following all regular classroom lessons. We estimate the causal effect of the enrichment program on student achievement using a regression discontinuity design, by comparing assigned and non-assigned students with virtually identical test scores taken at school entry. We find that the enrichment program improves student achievement for gifted students, most notably in math grades, despite an overall reduction in regular classroom instruction time. In addition, we find that these positive program effects carry over to university; students exposed to the program in secondary school tend to choose more challenging fields of study with, on average, higher returns.

Keywords: Gifted education; Educational performance; Gender differences; Regression discontinuity; Evidence based; Returns of education.

Introduction

Education for the gifted and the talented receives much attention in OECD-countries. The latest PISA-report carries the title “Excellence through Equity”, which hints at the debate whether educational money is better spend at the low or the high end of the ability distribution. In many countries governments have been blamed to concentrate too much attention on the low end. In doing so, the potential of gifted students could be hurt, as were the possible positive external effects on the economy. The excellence equity debate has changed in recent years. Developing the full potential of gifted and talented students is increasingly seen as an important task for educators.

A problem for policy makers in education is that not much is known about the effects of educational programs for the gifted on any indicator. The scarce research which has been done, seems to suggest that there are small or no causal effects of gifted education on students’ performance or on any other indicator (Bhatt 2011) The few credible studies around which evaluate the impact of gifted education, which takes many shapes, focuses on widely varying outcomes (Abdulkadiroglu et al. 2011) (Davis et al. 2010), (Matthews et al. 2012), (Bui et al. 2011). According to (Subotnik et al. 2011) there are almost no formal evaluations of the effects of enrichment programs for gifted students. Segers and Hoogeveen (2013) stated that knowledge is limited on the effects and efficiency of programs to stimulate excellent learning achievements. “What works” is not known when excellence in education is considered, according to these authors in their international review. Evaluating gifted programs is of interest since the potential social returns among gifted and talented students could be substantial (Hanushek et al. 2010)

Contribution

Our research adds to the literature by finding large, positive causal effects on student performance and income levels, of an enrichment program for gifted students on a Dutch school, based on the school wide triad enrichment model by Joseph Renzulli, an American psychologist (Renzulli and Reis 1994). This gifted policy has been in place for over thirty years. The Renzulli model is not country specific.

Background

In the US the “No Child left Behind” legislation is accused of reallocating resources from the gifted to the low achieving students (Bui et al. 2011) In the Netherlands the same debate was launched after the

PISA-report of 2009. The 2009 PISA-report renewed the attention towards programs for excellence in education. While Dutch student with low ability outperform their peers in any country, the performance of Dutch top students was disappointing in PISA 2009 when compared to top students in other OECD-countries (PISA 2009). As a reaction the Dutch ministry of Education implemented the “action plan for better performance” and rearranged school funding to stimulate better performances by the top 20 percent students of each department in each school (Actieplan Better Presteren 2012). At the same time the Netherlands Organization for Scientific Research (NWO) started a funding round which is intended for scientific research that focuses on excellence in education, because not much is known on this subject (PROO 2012). This research is one of the eight NWO-funded research projects in Dutch education, which aim to increase the scientific knowledge on excellence in education.

In this research project we evaluate the causal effects of a gifted enrichment program which has been in place since 1983 at a school in secondary education in the Netherlands. Gifted and talented programs are a form of ability grouping that are commonly practiced in primary and secondary education. Gifted programs are designed to improve the outcome of participants by tailoring the school curriculum to better match the skill level of students. In the Netherlands gifted programs come on top of already tracked students. At the beginning of Dutch secondary education, students are grouped at an early age in three ability levels: vmbo, havo and vwo. The group with the strongest abilities is again grouped in two subgroups. VWO is the regular university track. The most able students would opt for a gymnasium. Gymnasia add the classical languages Latin and Greek to the curriculum. Students at Dutch gymnasia would be gifted students at most high schools in other countries. For this group of already gifted students, schools have designed special educational programs for the highly gifted. These programs can roughly be divided in speeding (doing the same curriculum in less time) or enriching (doing more in the same time span). The program in Nijmegen, subject in our research, is an example of an enrichment program for highly gifted students.

Gifted education

The investigated enrichment program is based on work being done by the American psychologist Joseph Renzulli. Renzulli proposed a dichotomy between schoolhouse giftedness (high test scores) and creative-productive giftedness (high level performance and innovative ideas). He developed the School wide Triad Enrichment model for gifted students (Renzulli 1976). The variables for developing giftedness in this model are above-average cognitive ability, creative ability and task commitment. The talent pool for developing giftedness consists of individuals in the top 15 % to 20 % on these constructs.

An attempt for a comprehensive overview of research literature on gifted and talented students is done in Bhatt (2011). A regression discontinuity design (RD)-design is a promising design to evaluate gifted education states (Matthews et al. 2012). Randomized experiments are difficult to organize in gifted education but a RD could be just as powerful to establish causal relationship and avoid selection bias, according to this publication. The only known study (to us) to credibly assess the causal effects of a program for gifted students on achievement is Bui et al. (2011). The authors use a RD design-with many similarities to our design, and find no effect of a gifted educational program on achievement for students for gifted students in South Western US in primary education. The difference between this paper and our project is that we focus on secondary education, whereas the Bui-paper concentrates on primary education (grade 5 to 7).

Furthermore Bui et al concentrate on a form of ability grouping in which students in grade 5 are selected for gifted and talented services starting in sixth grade. Bui et al study a large urban school district in the Southwest of the United States with over 200.000 students who are heavily minority and low income. This district has developed a gifted and talented program for students who are selected

using an identification matrix. The selected students qualify for a GT-program in 6th and 7th grade in which gifted students are surrounded with better peers - other gifted students, and more advanced courses. The authors are “perplexed” that they find little evidence of positive impacts on achievement. They suspect that a trade off in positive and negative peer effects explains the lack of positive impacts. In most of the literature ability grouping is correlated with higher achievement. Many of these studies are likely biased because of unobserved characteristics of students, such as differences in motivation, that explains why some students are successful and to their grouping with highly able peers (Bui et al. 2011) Duflo, Dupas and Kremer find that ability tracking in an experiment in Kenya benefited all groups. The performance of students with high ability improved as did the performance of the grouped students with low ability. Peer effects would account for positive effects in the high able group, while teachers adapting their teaching to the average level of the low able group, would explain the improvements for the low able group. Duflo et al. (2011) Gifted education could not only have positive effects on student performance, but also on society as a whole. Davis et al. (2010) do not focus on achievement in their RD-paper on gifted education. After correcting for manipulation of the forcing variable these authors find a positive relation between a gifted policy and retaining gifted students within the school district, using a comparable RD-design.

Treatment

Contrary to Bui et al, we do find a positive impact of a policy for gifted students on performance. The students who are just entitled for the treatment, score significantly better on math and language, than do their peers who have just missed the selection for the gifted program. We even find a significant effect on labor income.

In the present paper we use a regression discontinuity design for a school that has been selecting gifted students since 1988. This school used a selection tool that was designed by the CBO (Center of Giftedness Research, Centrum voor begaafheidsonderzoek) at the Radboud University. In 1988 CBO started testing to identify gifted students at gymnasia, the highest track in the Dutch educational system.

The enrichment program at the Stedelijk Gymnasium Nijmegen (SGN) is known in Dutch as “Verbreding”. This would translate in English as “widening”, but enriching is the international accepted term for such a program. SGN is a school for the smartest Dutch secondary school students. A certain percentage of this school qualifies as “gifted student”. The enrichment policy of SGN is aimed at these gifted students. The school wants to avoid boredom and underachieving of its gifted students. SGN wants to help gifted students finding the right track, as one teacher puts it. “A rising tide, lifts all boats”, is a Renzulli quote which SGN refers to (Renzulli 1998). CBO cites these words of Renzulli in their review paper for NWO (Seger and Hoogeveen 2013).

In the GT-treatment of SGN, every student is tested in the first year at this school. Renzulli advises a combination of achievement test scores, aptitude test scores and teacher ratings to select gifted students. Lohman, Renzulli (2007). SGN follows this advice and hires CBO, which uses three tests for the selection for the enrichment program.

The IST-test is an intelligence test. The FES-test is a motivational test and the SVL is a school specific test. In the selection process the IST-test is dominant, according to SGN. The standard procedure is that every student with an IST-score above one standard deviation of the mean, qualifies for the enrichment program. This means that the relative intelligence towards the other members of the cohort, decides on the qualification for the enrichment program.

The selection process is not an automated process. Teacher and their rating of students also have an influence. Following the CBO-testing, SGN discusses which student to select to start with this enrichment program. As a consequence some students below the threshold are selected for the

program. On the other hand, some students that scored a high IST-score, are denied access to this enrichment program.

Whenever a SGN student is selected for the enrichment program, the selection can never be undone. “Once an enricher, always an enricher (Eens een verbreder, altijd een verbreder)”, is the saying at this school. The selected student can choose not to consume the enrichment program, but he cannot undo his or her qualification. Every selected student receives the right to trade in lessons for project time. A participating student must at least allocate two hours each school week for his or her project. In our survey data the students seem to be using two to three hours each week to work on their project. This is also our impression after visiting the yearly V-market, the yearly event where students present their project to parents and peers in the SGN.

The enrichment project choice is as free as possible. Obviously, the students are not allowed to perform illegal actions like designing weapons or drugs, but other than that, the students are free to choose almost any subject for their projects. A student must select a coach from a specially trained team of teachers. SGN claims that training the coaches is crucial in the success or failure of this program. A coach must not intervene to drastic in the decisions of the students working on their project. The coach must play a stimulating role in the progress of the project. Some young students have difficulty in planning their project. The coach is responsible for keeping the students on the right track.

In addition to coaching by a selected teacher, the students who qualify for this program receives special training in planning, mind mapping and interviewing. This training is concerned vital in developing the necessary skills to produce a successful project outcome.

In the enrichment program the outcome (the product) is not considered the most important product of the program. The “process” is what matters, according to SGN. Gifted students do not encounter many difficulties in normal school life. In their projects, they have to make some tough choices. Gifted students easily stop putting in effort after their first disappointment, claims SGN. The enrichment program is a way to gain some experience with real life difficulties for gifted students.

SGN has appointed a team for their enrichment program. The team members meet every Wednesday to discuss the development of the selected students. Within the school SGN has a dedicated classroom for the enrichment program. In a central location within the school, with huge visibility, students are able to work on computers. In the techno lab, a classroom dedicated to art and craft, these students are also able to work on their projects. Most of the project work is done working at school, is what teachers and students are saying in interviews.

Results

This research project is work in progress, but the preliminary results are promising. We find a positive, significant and large effect on math for boys. For girls we find a positive, significant and large effect on language performance. More importantly we were able to match the students in secondary education, with their choices in tertiary education. We find that enriched students choose more ambitious than do their peers in the regular program. All these conclusions hold for students who were just selected for the enrichment program, compared to students who just missed the selection. For students further away from the threshold we cannot say much because of selection bias. We have started a randomized research project on gifted education on three Dutch schools in secondary education. One these schools a gifted education is introduced very similar to the one on the Stedelijk Gymnasium Nijmegen. Because of randomly selected control and treated groups we will be able to draw some conclusions on the complete population of students. For this project we will need another year of data gathering.

Author

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The research interests of Frederik Haan comprise gifted educational programs, differences in performances of boys and girls in Dutch secondary education, renewal of educational programs.

Haan was a government trainee at Bofeb at the Dutch ministry of economic affairs after graduation as an economist at University of Amsterdam. In 1993 Frederik Haan served as a United Nations soldier in Bosnia during the civil war.