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Initial Education of Philosophy Teachers in Colombia: Association Between new Public Policy Requirements and National Standardized Tests

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Abstract: This paper evaluates the association between new public policy requirements for B.Ed. programs in Colombia —1) demand high-quality accreditation, 2) restrict distance modality, 3) restrict multidisciplinary programs, and 4) increase academic credits in education courses and pedagogical practices— and the outcomes of 1387 B.Ed. in Philosophy students in the National Saber Pro test 2016-2018, in 'Education' component. The methodology was multilevel linear regression; the residential region is the level variable, and were included other control variables (gender, age, ethnic minority, socioeconomic index, etc.). The results show that outcomes are associated with pedagogical practices and with non-multidisciplinary programs, supporting new regulations. Students attending on campus programs had better outcomes, but students in distance programs came from regions where there are no programs, so this must be taken carefully. Contrary to the hypothesis, high-quality accreditation was not significant. This should lead to a review of accreditation criteria and its mandatory nature.

Keywords: initial teacher education; educational public policy; philosophy education; pedagogical practices; high-quality accreditation

Introduction

Improving the quality of teachers has been one of the most important concerns in education in recent years. More than one hundred studies conducted in the last ten years have concluded that teacher experience and specific education in teaching and learning are the most important factors determining school performance (Coenen, Cornelisz, Groot, Maassen, & Klaveren, 2018). The quality of teachers in the classroom is considered a key aspect of economic development because better teachers will help their students get better jobs, leading to better income and, consequently, to the improvement of the economy even at national levels (Hanusheck, 2011). In recent years, there has been an increasing concern in Latin America to improve teacher quality. A recent report by the World Bank revealed that this region, despite having considerably increased coverage of primary and secondary education, has not yet reached the same rates of economic growth of other regions of the world with the same condition, such as

in Southeast Asia, and this can be associated with teacher quality (Bruns & Luque, 2015, p. 56), as Hanusheck & Woessman (2012) also concludes. A report carried out by the UNESCO-supported Regional Bureau for Education in Latin America and the Caribbean, (*Oficina Regional de Educación para América Latina y el Caribe* - OREALC), shows how the problems of education systems in Latin America seem to be associated mainly with teacher quality. There has been a rapid increase in the teaching population, without adequate preparation or remuneration, and this may be related to the lack of school achievement (OREALC/UNESCO, 2013). Because of this, UNESCO recommends increasing the requirements for those who enter the teacher education programs, strengthening the quality of these programs and improving their interaction with the schools where their graduates will teach (OREALC/UNESCO, 2016). This has led many countries to undertake several reforms in their educational systems (Bernasconi & Celis, 2017).

In Colombia, the increase in coverage in the last fifteen years had the effect of reducing the quality of the education system (Barrera-Osorio, Maldonado, & Rodríguez, 2012; Camacho, Messina, & Uribe, 2016). From 2015 to 2017, a series of policy regulations were enacted in Colombia to improve quality of teacher education. These regulations put new requirements to undergraduate teacher education programs, or B.Ed. This paper examines and evaluates four of these new requirements for B.Ed. Programs: 1. High-quality accreditation; 2. The prohibition of virtual programs and some restrictions on distance programs 3. Restrictions to the disciplinary focuses of the programs, and 4. A significant increase in pedagogical practices. The objective of this paper is to evaluate if these requirements are correlated with better student outcomes in the national standardized *Saber Pro* test, mandatory for all undergraduate students in Colombia.

Context

In 2015, the Congress of the Republic of Colombia (CRC) enacted Law 1753, or *National Development Plan 2014-2018 - All for a New Country* [*Plan Nacional de Desarrollo 2014-2018 – Todos por un nuevo país*] (CRC, 2015, June 9). This began a series of changes in public policy to increase the quality of national education in its different areas and levels. As shown by the conceptual document that underpins the *National Development Plan* (DNP, 2015), education in Colombia is of low quality, revealed, among other things, by poor results in the Programme for International Student Assessment (PISA) tests, which are lower than in other Latin American countries with similar GDP per capita (DNP, 2015, pp. 77-80; Abadía, Bernal, & Muñoz, 2018). The 2015 Law required all B.Ed. programs to obtain high-quality accreditation, granted by the Ministry of Education (*Ministerio de Educación Nacional*: MEN) through the National Accreditation Commission (*Comisión Nacional de Acreditación*: CNA) within two years of the national government enacting the law, if they met the conditions of having four or more cohorts of graduates by the date—June 9 of 2015—or two years after if they did not have the four cohorts (CRC, 2015, June 9, art. 222). In Colombia, any undergraduate program must obtain a qualified registry, granted by the MEN through the National Intersectoral Commission for the Quality Assurance of Higher Education, (*Comisión Nacional Intersectorial de Aseguramiento de la Calidad de la Educación Superior*: CONACES) (PRC, 2015, May 26, art. 2.5.3.2.1.1). According to the *National Development Plan*, programs that fail to obtain high-quality accreditation will also lose qualified registry and, consequently, must be closed.

After the enactment of the *National Development Plan*, the President of the Republic of Colombia (PRC) enacted Decree 2450 (2015, Dec. 17) and the MEN enacted Resolution 2041 (2016, Feb. 3), which established the *Quality Conditions for B.Ed. Programs in Colombia*. These conditions include a minimum of 50 academic credits of pedagogical practices, 40 mandatory on-campus credits for distance programs, and the standardization of B.Ed. names and disciplinary areas. These new regulations necessarily led to the substantive transformation of all programs. Before the reforms, none of the programs had these number of credits of pedagogical practices, and some of them must have to change their denomination (Farieta-Barrera, 2018). In 2017, and partly due to lobbying from institutions arguing about the negative effects of the implementation of Resolution 2041 of 2016 (Arias, Díaz, Garzón, León, Rodríguez, & Valbuena, 2018, pp. 18-19, 105-107), the MEN and the national government enacted new regulations that changed some of these requirements. In May 2017, the President enacted Decree 892, which gave an additional 32 months to obtain high-quality accreditation for programs in prioritized regions in the *National Development Plan* because of their low development indexes. This would avoid the closing of programs in locations where there is need for more and improved educational institutions compared to the rest of the country. Additionally, in September, MEN enacted Resolution 18583 (2017, Sep. 15) which changed the number of mandatory credits in pedagogical practices to 40, and the number of credits for on-campus courses to 20. These reforms affect only B.Ed. programs. According to Law 30 (CRC, 1992, Dec. 28), and Decree 1278 (PRC, 2002, Jun. 19), graduates of these programs can enter in the Educational Public Service as teachers in basic and high schools. Graduates of different programs —B.A. programs— must do a pedagogic course for being qualified to enter in the Educational Public Service. B.Ed. in Philosophy graduates are hired normally as professors of philosophy courses for grades 10th-11th, where traditionally these courses have been mandatory (CRC, 1994, Feb. 8); although some schools have philosophy courses in previous grades. However, in some small schools with few students and teachers, graduates of B.Ed. in Philosophy are also in charge of ethics, religious education, literacy, or social sciences courses (Bonilla-Mejía, Londoño-Ortega, Cardona-Sosa, & Trujillo-Escalante, 2018).

Objective

The objective of this paper is to evaluate the association between the new guidelines for B.Ed. in Philosophy programs and student outcomes. To improve the quality of programs, the National Colombian Government specified four requirements that all B.Ed. programs must accomplish: 1) increase the number of credits in educational courses and pedagogical practices, 2) restrict distance education, 3) eliminate some multidisciplinary programs, and 4) obtain high-quality accreditation (MEN, 2016, Feb. 3; 2017, Sep. 15). The preliminary version of the *Quality Guidelines for the B.Ed. Programs*, the first draft for public discussion of which was released in May 4 of 2014 (MEN, 2014), established the main competences for these programs according to the *Saber Pro* test, that is administered by the Colombian Institute for the Assessment of Education (*Instituto Colombiano para la Evaluación de la Educación*: ICFES). All the students of any undergraduate program in the last year of his career must take this test, mandatory to obtain a professional degree, although there is no failing score (PRC, 2009, Oct. 14). The *Saber Pro* test includes two components; a generic one of five modules: 1. Critical reading, 2.

Quantitative reasoning, 3. Citizenship competences, 4. Writing, and 5. English language (ICFES, 2017d); and a specific component according to the knowledge area of the undergraduate program. B.Ed. students take a specific component in education, which includes the following three competency modules: 1. Teaching (*enseñar*) (ICFES, 2017a), 2. Evaluating (*evaluar*) (ICFES, 2017b) and 3. Shaping (*formar*) (ICFES, 2017c), which, as indicated in the draft *Quality Guidelines for the B.Ed. Programs*, “are directly related to the practice of the teacher” (MEN, 2014, pp. 8-9). According to this document, these changes to the requirements of the B.Ed. programs should improve student outcomes in the *Saber Pro* tests for the specific education modules.

The association of standardized tests with curriculum changes is difficult to study over time because the cohorts that enter the new curriculum are not evaluated until at least four or five years later. However, it is reasonable to assume that, if there are outcomes of the *Saber Pro* test directly associated with these new guidelines from before the reform, this would be an indicator with which to estimate the improvement that the reforms may achieve.

Our research hypothesis is, therefore, that these four measures are directly associated with student outcomes in *Saber Pro* test. Worth noting that this is the same hypotheses on which the *Quality Guidelines for the B.Ed. Programs* are based. As we shall see in the next section, this hypothesis is strongly supported in the literature; nevertheless, our objective goes even further, also analyzing the interactions between these four measures and evaluating which of these measures, and which interactions, could work best, and which might not work well enough. This can help to determine if these measures will work for all the programs, or if some are better or worse according to program characteristics. There are no studies in the literature about interactions between these variables, so the objective and the methodology used can be a significant contribution to the discussion about these issues.

Literature Review

Disciplinary Area

Cerletti (2012) points out that philosophy and its teaching has certain peculiarities that make it different from other disciplines, and that a philosophy professor can't be educated by isolating educational, pedagogical, and didactic content on the one hand and disciplinary content on the other. Their education must combine both, as well as combining the teaching of philosophy with its application in the classroom, otherwise, it is meaningless (Cerletti, 2012, p. 37). The teaching of philosophy has specifications that are not easily articulated in a curriculum or are difficult to fit with public policy such as those that are established in Colombia for undergraduate programs. The idea of connecting philosophy to pedagogical practice has met a great deal of resistance in undergraduate programs in Colombia. B.Ed. in Philosophy programs have historically taken a more disciplinary than educational approach (Valderrama-Leongómez, Murillo, Farieta-Barrera, & Vela, 2019), except in the program of the National Pedagogical University, where, due to the nature of this university, the emphasis has been placed more on education (Valderrama-Leongómez et al., 2019).

Some B.Ed. programs in Colombia combine philosophy with other disciplines (religious studies, ethics and values, political thought, etc.) (Farieta-Barrera, 2018). MEN's main reason for the restriction of B.Ed. denominations was to make them match the *General Law of Education*

(CRC, 1994), but there is no evidence regarding the performance of B.Ed. students related to multidisciplinary areas. Nevertheless, the B.Ed. in Philosophy and other disciplines have fewer credits for theoretical courses in education and pedagogical practices, presumably to give more space to these other knowledge areas (Farieta-Barrera, 2018). There is evidence that a greater number of disciplinary credits in philosophy is associated with better outcomes in critical reading and citizenship competencies, which directly affects these multidisciplinary programs (Farieta-Barrera, 2019).

It is also important to point out that all B.Ed. in philosophy programs—before MEN enacted the new *Quality Conditions for the Bachelor of Education Programs*—generally included few academic credits for pedagogical practices; the national average was 7.75 credits, and 31.43 credits for theoretical courses in education (Farieta-Barrera, 2018). Therefore, to comply with the new regulations, these programs had to carry out substantive adjustments in their study plans. Among other consequences for the programs, the reforms led to discussion about the connection between philosophy, education, and pedagogical practice, and some teachers focused on disciplinary groundwork became more interested in issues and discussions of education (Valderrama-Leongómez et al., 2019).

Pedagogical Courses and Practices

It is widely accepted that the best teachers—better prepared, with more skills and academic abilities, as well as more training—encourage the best students (Auguste, Kihn, & Miller, 2010; Barber and Mourshed, 2007; Rockoff, 2004). In a recent work, Hanusheck, Piopiunik, & Wiederhold have offered evidence from 31 countries that substantial differences in the cognitive skills of teachers are strongly related to student performance (2018). The literature about theoretical courses in education, their connection with the pedagogical practices, and their relevance to effective teaching, has been very prolific in recent times (Edwards, Higley, Zeruth, & Murphy, 2007; Ermekova, Stukalenko, Tasbulatova, Kalymova, Kainikenova, & Kulmakhanova, 2013; Platonova, Shkurko, Lukina, Sentizova, & Bugaeva, 2016). Freire had already discussed the need for pedagogical training to be directly oriented to the practice, the action in the classroom, and the transformation of student lives, rather than only to the ‘theory of education’, which may be useless in classrooms and in the exercise of teaching itself (Freire, 1998 [1966]). There are studies that show the positive role of pedagogical practices in the training of teachers from the subjective and personal perspective (González & Gómez, 2014; Miles & Knipe, 2018; Ruppert, 2013) and on the effect that better teaching practices can have on students (Vargas, 2016).

High-Quality Accreditation

The CNA accreditation criteria reflects an expectation that programs with high-quality accreditation generally produce students with better outcomes (CNA, 2013). There is evidence that students in programs with high-quality accreditation obtain a better performance in standardized tests (García J., Maldonado, Perry, Rodríguez, & Saavedra, 2014; Sarmiento, Silva, & van Gameren, 2015; Timarán-Pereira, Hernández-Arteaga, Caicedo-Zambrano, Hidalgo-

Troya, & Alvarado-Pérez, 2016). One of the factors to obtain high-quality accreditation is the impact of graduates in labor market (CNA, 2013), so only programs with consolidated trajectories can obtain this award. According to this, young programs cannot obtain high-quality accreditation, and it is expected that students in these young and non-accredited programs could underperform compared with students of accredited programs. Nevertheless, there is evidence that the gap in outcomes between accredited and non-accredited programs is smaller than expected (Camacho et al., 2016).

Modality

The number of distance programs has increased considerably in Colombia in recent years, mainly as delivered in virtual modality, via the internet. However, evidence demonstrates that, in Colombia, students in on-campus programs obtain better results than students in distance or online programs (Arias-Velandia, Rincón-Báez, & Cruz-Pulido, 2018; Rodríguez, Gómez, & Ariza, 2014; Timarán et al., 2016). Recent studies also show that, there is less theoretical content in distance programs in Colombia, and that students have a smaller academic load and lower writing skills than students in on-campus programs (Pineda & Celis, 2018), characteristics that explain the underperformance of students, instead of distance or virtual modality.

Other Factors Associated with Student Outcomes

Recent studies show considerable educational performance gaps between the regions of Colombia. These gaps are demonstrated not only in the outcomes of school students, but also in teacher assessments (Arias et al., 2018; Bonilla-Mejía et al., 2018). These studies reveal that there is a serious lack of highly qualified teachers in underdeveloped regions in Colombia, and this, along with lower incomes, more difficult working conditions, fewer development opportunities, and generally fewer and less educated people, could explain the gaps between regions with high and low outcomes in education. This led to a postponement of the deadline to get into the process to obtain high-quality accreditation for B.Ed. programs in these regions, as enacted in *Decree 892* (PRC, 2017, May 28).

One of the most important factors in educational outcomes is gender. It is common in the literature to find gender gaps in standardized test scores (Morris, 2012; OECD, 2018). This is important because gender gaps may be due, not to biological or psychological reasons, but to behaviors in the classroom, such as male domination over women (Sadker & Zittleman, 2009) or stereotyped and biased treatment by teachers towards one gender or another (Campbell, 2015). In Colombia, there is evidence that women perform better in reading and worse in math and science between the ages of 15-16 (OECD, 2016a), and at the end of high school (ICFES, 2013). In higher education, gender gaps are generally found in favor of men in *Saber Pro* tests (Rodríguez, Ariza, & Ramos, 2014; Arias-Velandia et al., 2018). There are no studies based on the performance of women in the 'Education' modules of the *Saber Pro* test, although the average scores were higher for women than men in the ICFES 2016 report (ICFES, 2017e).

Age is a common variable in tests, mainly due to differences in people's psychological and cognitive development or a slowing of learning ability. In Colombia, it is quite common to

find significant differences according to age in the results of standardized tests (Castro, Ruiz, & Guzmán, 2018; Rodríguez, Ariza, & Ramos, 2014; Timarán-Pereira et al., 2016).

According to the National Constitution, Colombia is a multi-ethnic country (Colombia, 1991, art. 7). The *General Law of Education* (CRC, 1994) thus establishes differentiated education for ethnic minority populations (Flores & Palacios, 2018). Following this law, all public universities have special admission processes for indigenous and Afro-descendant populations, who tend to have lower performance due to the contextual characteristics of their own ethnic and cultural education (Palacios, Sánchez, & Córdoba, 2015).

There are 137 teacher high schools—or normal high schools—accredited by MEN. Unlike conventional Colombian schools that offer conventional education from Kindergarten to 11th grade, teacher high schools offer an additional two-year cycle of teaching and learning training after which they are enabled to teach in elementary schools—from Kindergarten to 5th grade. These teacher high schools must comply with quality conditions (PRC, 2008). Because this grade consists of both theoretical contents in education and pedagogical practices, it is probable that students with a degree from teacher high schools will have a leverage over other students from conventional high schools. There is evidence that students who attend teacher high schools have greater opportunities to enter a B.Ed. program, and obtain better results on average in the *Saber 11* test than students who did not complete the pedagogical complementary grade or attend conventional or technical high schools (Figueroa, García, Maldonado, Rodríguez, Saavedra, & Vargas, 2018).

Socioeconomic conditions are normally associated with the general performance of students in Latin America (Avendaño, Barrera-Osorio, Nieto-Parra, & Vever, 2016; OECD, 2016b; 2018). In Colombia, it is one of the main factors affecting performance, especially in basic and secondary education (García V., Espinosa, Jiménez, & Parra, 2013; Melguizo, Sánchez, & Velasco, 2016; Rodríguez, Ariza & Ramos, 2014; Timarán-Pereira et al., 2016).

The generic modules of the *Saber Pro* test—critical reading, quantitative reasoning, citizenship competences and writing—may affect performance in specific modules although there is no evidence in the literature. Other international tests have similar components, such as PISA (OECD, 2016b). Reading, writing and quantitative reasoning tests assess basic cognitive skills that any graduate must apply in professional contexts, and the citizenship test assesses social and emotional skills, as well as the ability to live in community (ICFES, 2017d).

Methodological Approach

We use a quantitative correlational approach to evaluate the hypothesis that the main four changes to the new requirements for B.Ed. programs in Colombia have an association on outcomes of the students of B.Ed. in Philosophy in the specific education modules of the *Saber Pro* test—as presumed by the new public policy. This is an *ex ante* study, because it will use the B.Ed. in Philosophy curricula prior to the reforms. The newly reformed programs have only been in operation since 2016, so there are still no graduates or students in the last year of their career. There is also still no consolidated data of the post-reform plans. The sample comprises students who took *Saber Pro* test from 2016 to 2018. Since 2016, the test was designed using item response theory (Demars, 2010; ICFES, 2018; Linden, 2016), so the results of previous years are not comparable.

The outcome—or dependent—variable is the score in the *Saber Pro* standardized test, published directly in the ICFES database (2019), in specific modules for education. The methodology of the estimation involves a taxonomy of models using multilevel mixed-effects linear regressions (Johnson & Wichern, 2007), with interactions between the four explanatory variables. The residential region of each student is the level variable. The models include a series of control variables—reported as determinants in the literature—to increase the estimation accuracy and to identify other sources of variability that affect the outcomes.

Sample

The sample consists of 1387 of the 1592 students of B.Ed. programs who took the test. The excluded students either did not complete the test or reported incomplete relevant information. The sample students belong to 21 institutions nationwide and are from all 27 undergraduate programs in Colombia. Thirteen programs combine philosophy with other knowledge areas or disciplines (literature, religious studies, ethics and values, history, etc.), and the remaining 15 study philosophy only. There are seven distance programs, including 554 students of the sample (40%), and the remaining 21 on-campus programs comprise 833 (60%). Sixty four percent of the sample attend private institutions (891), and the remaining 36% (496) public.

Outcome Variable

The outcome variable is the performance of the students in education competences, operationalized through the specific education modules of the *Saber Pro* national standardized test. The test has two components: a generic one for all the undergraduate national programs, which includes five modules: 1. Critical reading, 2. Quantitative reasoning, 3. Citizenship competences, 4. Writing, and 5. English language. The second, specific component, for B.Ed. programs, has three modules: 1. Teaching (*enseñar*), 2. Evaluating (*evaluar*), and 3. Shaping (*formar*). For each module—both generic and specific—the score ranges from 0 to 300. Each specific module in education has these characteristics:

- **Teaching:** This module assesses skills related to the understanding, formulation and use of the didactics of the disciplines in order to improve the learning of students (ICFES, 2016a, p. 3; 2017a, p. 15; MEN, 2014, p. 8). Scores in the sample ranged from 66 to 233, with an average score of 161.72.
- **Evaluating:** Assesses skills involving reflecting, monitoring and making decisions about training processes, with the purpose of favoring self-regulation and proposing improvements in teaching, learning, and the curriculum (ICFES, 2016b, p. 3; 2017b, p. 15; MEN, 2014, p. 9). The average score for the sample was 164.31, the maximum is 238 and the minimum is 84.
- **Shaping:** Assesses competencies required to reconceptualize and use pedagogical knowledge that allows the creation of educational environments for the development of students, the teacher and the community (ICFES, 2016c, p. 3; 2017c, p. 15; MEN, 2014,

p. 9). The average score for the sample was 158.48, the maximum was 232 and the minimum 56.

The main variable, 'Education outcome' is constructed from the average of the scores in these three modules. The sample had an average score of 161.5, the minimum was 84.33 and the maximum was 219.33.

Explanatory Variables

The study includes four explanatory variables, that, as we have explained before, are taken from the assumptions of the new regulations for B.Ed. programs in Colombia. The data of the programs are taken from previous studies (Farieta-Barrera, Gómez, & Almeida, 2015; Farieta-Barrera, 2018).

High-Quality Accreditation

High-quality accreditation is granted to the programs by the CNA (2013) for four to ten years. In the sample, 16 of the 27 programs had Qualified Registry only, and no high-quality accreditation. Only one program was accredited for eight years. The rest held four or six years of accreditation. Four programs obtained accreditation in 2017 and one in 2018. This variable was operationalized by years of accreditation and not as dichotomic—accredited/not accredited—, which can be considered an improvement comparing with former studies.

Modality of the Program

In the sample, 554 students (40%) were enrolled on distance programs; this percentage is high, if we consider the fact that only six programs are in distance modality. It is worth noting that Resolution MEN 2041 of 2016 established that all distance programs had to comply with at least 40 on-campus credits in addition to practice. This meant programs had to include at least 40 on-campus credits in their distance modality or be closed.

Disciplinary Area of the Program

The sample includes 504 students in B.Ed. in philosophy programs. The remaining 881 students were enrolled on B.Ed. programs that combined philosophy with other knowledge areas or disciplines, such as Literature, Religious Studies, Ethics, History, etc. Only four of the multidisciplinary programs had high-quality accreditation, compared to six B.Ed. in Philosophy programs.

Credits in Education

The last explanatory variable is the number of credits for the study plans both in theoretical courses in education and in pedagogical practices. The main difference between B.Ed. in Philosophy and B.A. in Philosophy programs is that these usually do not have these kinds of courses. It is worth noting that in the implementation of the public policy, some programs are mixing the theoretical with practical courses (Valderrama-Leongómez et al., 2018). Prior to the reforms, the theoretical courses in education and pedagogical practices were presented separately (Farieta-Barrera, 2018). We will count both types of academic credits to explore both possibilities, first, as one operationalized variable, and after, as two disaggregated variables.

- **Theoretical Courses in Education:** All programs offer courses in the history of education, pedagogy, curriculum, general or specific didactics, evaluation methods, psychology of learning, sociology of education, educational policy, educational management, and so on, as tools for the formation of teachers, which are grouped in the curricula as the core area in education. In general, these are purely theoretical courses, although in some cases these courses are related to, or are co-requisites, of pedagogical practices. This value ranges from 12 to 80 credits for the 1387 observations, with an average of 32.9 and a standard deviation of 18.16 cr.
- **Pedagogical Practices:** These are the academic credits in B.Ed. programs that are linked to classroom practice in high schools, usually in philosophy courses (grades 10th and 11th); although there are schools where philosophy is offered as a course in lower grades. In some cases, students also undertake their practice in other areas or courses related to philosophy, such as ethics, democracy, social sciences, and literature, among others. The credits for pedagogical practices ranged from 0 to 15 in the sample, with an average of 8.16 cr., and a standard deviation of 3.48 cr.
- **Total Credits in Education:** This is the sum of the number of credits for theoretical subjects in education and pedagogical practices of the program. They are added together to determine whether there is any codependence in the combination of the theoretical and practical subjects or if they are independent. For the sample, values ranged from 17 to 90 cr.; the average is 41.17 cr., and the standard deviation of 19.43 cr.

Level Variable: Region

The region—in Colombia, the administrative region is called “Department”—is taken as a level variable, for two main reasons. The first is that, as Decree 892 (PRC, 2017, May 28) says, there is clear educational underperformance by some regions in Colombia. In the sample, 23 of the 27 programs are in Bogotá D.C., Antioquia and Valle del Cauca, the capital and the two most populated Colombian departments, respectively. There were also 554 students enrolled in distance programs, of whom 265 live in regions where there are no programs.

Control Variables

The control variables used in this study are recurrent factors associated with the performance of students in Colombia, as observed in the literature review. The Socioeconomic Level Index (*Índice de Nivel Socioeconómico*: INSE) is a variable calculated by ICFES based on a socioeconomic survey carried out by students when they sign up to take the *Saber Pro* exam. This information includes parents' education, assets owned by the student or their family, place of residence, and composition of the family nucleus (ICFES, 2015). The index ranges from 0 to 100. The mean for the sample was 44.53, the maximum value was 77.14 and the minimum 14.79. The standard deviation was 8.48.

442 participants were women (31.87%). The median age of the sample was 29.1 years; the maximum was 65 years and the minimum 18. The standard deviation was 7.89 years. 82 students (5.91%) of the sample belongs to minority ethnic groups. 72 students (5.19%) had finished teacher high school program. Institutional accreditation ranged from 10 to 0 years (no institutional accreditation). The mean of the sample was 3.44 years of institutional accreditation. The scores in generic competences for the students ranged, like the specific education modules, from 0 to 300. Critical reading had a mean of 162.51, a standard deviation of 30.27, a maximum of 300 and a minimum of 74. The quantitative reasoning mean was 140.26, 225 maximum, 67 minimum and 28 standard deviation. The citizenship competences mean was 152.52, with a maximum of 300, minimum of 63 and 33.16 standard deviation.

Analytical Strategy and Modeling

The general analytical strategy is multilevel modeling. This technique analyzes variance in outcome variables when predictor variables are at varying hierarchical levels (Hox, Moerbeek, & van de Schoot, 2017; Johnson & Wichern, 2007; Kreft & de Leeuw, 1998; Raudenbush & Bryk, 2002; Snijders & Bosker, 2012). A series of models are developed to estimate both the association of the outcome variable with the explanatory ones and the interaction between main explanatory variables.

The main equation is:

$$y_{ij} = (\beta_0 + \beta_1x_1 + \dots + \beta_nx_n + u_{0j} + e_{ij}) \tag{1}$$

Where y_{ij} is the outcome variable of student i in region j . β_0 is the intercept over all regions. β_1x_1 to β_nx_n are explanatory and control variables, u_{0j} is the error term (residual variation) for each region, and e_{ij} the error term (residual variation for observation i within region j).

More levels are not considered because the next level would be the institution or the program. However, our interest is to examine the incidence of similar characteristics of the programs so that an additional level is unnecessary.

The analysis is divided into two groups of models because explanatory variable “credits in education” is taken first as one aggregate variable and then as a disaggregate two variables: “theoretical courses in education” and “pedagogical practices”. This allows us to estimate interactions more carefully. The general equation for the interactions is:

$$M2: y_{ij} = (\beta_0 + \beta_1x_1 + \beta_2x_2 + (\beta_1x_1 \times \beta_2x_2) + \dots + \beta_nx_n + u_{0j} + e_{ij}) \tag{2}$$

Where $(\beta_{1x_1} \times \beta_{2x_2})$ is the interaction of explanatory variables. We thus have models without interactions, and models with interactions, for a total of 13 models, M1-6: with “credits in education” aggregate variable:

- M1 without interactions
 - M2: accreditation \times disciplinary area
 - M3: accreditation \times credits in education
 - M4: modality \times disciplinary area
 - M5: modality \times credits in education
 - M6: disciplinary area \times credits in education.
- M7-13 with ‘credits in education’ disaggregate into ‘theoretical courses in education’ and ‘pedagogical practices’.
- M7: without interactions
 - M8: theoretical courses \times accreditation
 - M9: theoretical courses \times modality
 - M10: theoretical courses \times disciplinary area
 - M11: pedagogical practices \times accreditation
 - M12: pedagogical practices \times modality
 - M13: pedagogical practices \times disciplinary area

Since some region sample sizes are small, restricted maximum likelihood (REML) estimation were used, so small sample bias is avoided (De Leeuw & Meijer, 2008, pp. 21–22; Hox & Roberts, 2011, p. 184). The estimation was made with Stata© 14.

Results

Variable	M1	M2	M5	M6	M7	M9	M10	M11	M12	M13
Education Outcome										
TCE	-0.014	0.006	-0.178***	0.101*						
YPA	-0.676*	-1.500***	-0.241	-0.417	-0.623*	-0.201	-0.270	-2.148***	-0.163	-0.553*
OCP	-0.866	-1.267	-11.511***	-2.322	-1.599	-11.362***	-3.945**	-1.696	-16.067***	-1.917
MDP	-1.231	-3.421*	-0.619	8.540**	-1.597	-1.060	8.489**	-0.972	-1.133	6.399*
YPA * MDP		1.198**								
OCP * MDP										
OCP * TCE			0.248***							
MDP * TCE				-0.264***						
CTC					-0.053	-0.255***	0.066	-0.039	0.007	-0.017
CPP					0.364*	0.479**	0.576**	0.047	-1.005**	0.898***
CTC * OCP						0.278***				
CTC * MDP							-0.357***			
CPP * YPA								0.207***		
CPP * OCP									1.688***	
CPP * MDP										-1.002**
Woman	4.494***	4.399***	4.353***	4.593***	4.395***	4.290***	4.453***	4.438***	3.973***	4.410***
Age	0.196**	0.195**	0.202**	0.196**	0.201**	0.206***	0.200**	0.195**	0.221***	0.215***
Ethnicity	-0.838	-0.767	-0.896	-0.691	-1.121	-1.287	-1.195	-1.045	-0.895	-0.914
Teacher high school	4.783*	4.717*	4.642*	4.566*	4.661*	4.411*	4.294*	4.648*	5.077*	4.674*
INSE	-0.019	-0.010	-0.015	-0.010	-0.012	-0.006	-0.002	-0.002	-0.008	0.007
Quantitative reasoning	0.208***	0.210***	0.209***	0.211***	0.205***	0.205***	0.208***	0.206***	0.207***	0.206***
Critical reading	0.277***	0.273***	0.280***	0.277***	0.275***	0.278***	0.276***	0.279***	0.280***	0.272***
Citizenship competences	0.200***	0.201***	0.197***	0.199***	0.199***	0.196***	0.196***	0.200***	0.199***	0.201***
Institutional accreditation	0.418*	0.560**	-0.012	-0.124	0.558**	0.152	-0.042	0.588**	0.227	0.441*
cons	50.891***	51.314***	57.922***	48.628***	49.187***	55.469***	47.023***	49.351***	57.160***	43.423***
lns1_1_1										
cons	0.784*	0.823*	0.716*	0.760*	0.894**	0.818*	0.898**	1.180***	0.935**	0.930**
lnsig e										
cons	2.873***	2.871***	2.869***	2.870***	2.871***	2.867***	2.866***	2.865***	2.865***	2.868***

Table 1. Results of the analysis; significant models only. TCE = Total credits in education; YPA = Years of program high-quality accreditation; OCP = On-Campus program; MDP = Multidisciplinary program; CTC = Credits in theoretical courses in education; CPP = Credits in pedagogical practices. Legend: * p<.05; ** p<.01; *** p<.001.

Estimates with “Educational Credits” Variable

The results of M1 do not support the hypothesis for any of the explanatory variables; three out of four were not significant. The only significant one was “high-quality accreditation”, but, contrary to the hypothesis, it had a negative association. As we shall see, this raises serious questions concerning public policy implementation, because this also happens in eight of the thirteen models. In the other five models it is not significant.

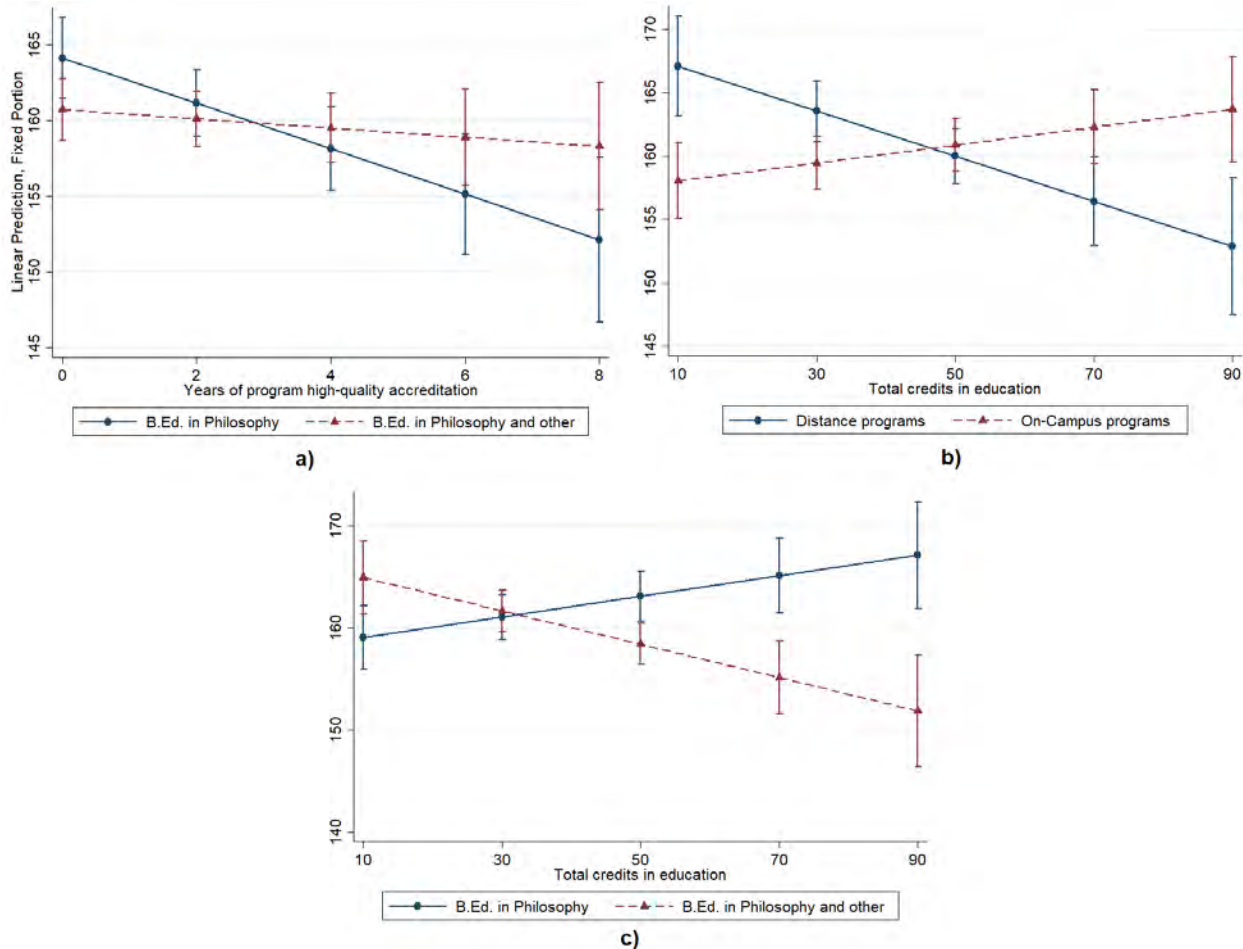


Figure 1. Predictive margins (95% CI) for interactions with “total credits in education” aggregate variable. a) Model 2. b) Model 5. c) Model 6.

In the models with aggregated “educational credits” variable only three out of six interactions turn out to be significant. When comparing the B.Ed. in philosophy with the multidisciplinary, the students of the first programs tend to have lower outcomes to more years of accreditation the program has (figure 1a), although in both programs the slope is descending. Students in on-campus programs perform better than students in distance programs when the credits for education increase (Figure 1b). Students of the ‘B.Ed. in Philosophy’ perform better for programs with more education credits, as oppose to students of multidisciplinary B.Ed. programs (Figure 1c). Interactions between years of program accreditation and total credits in

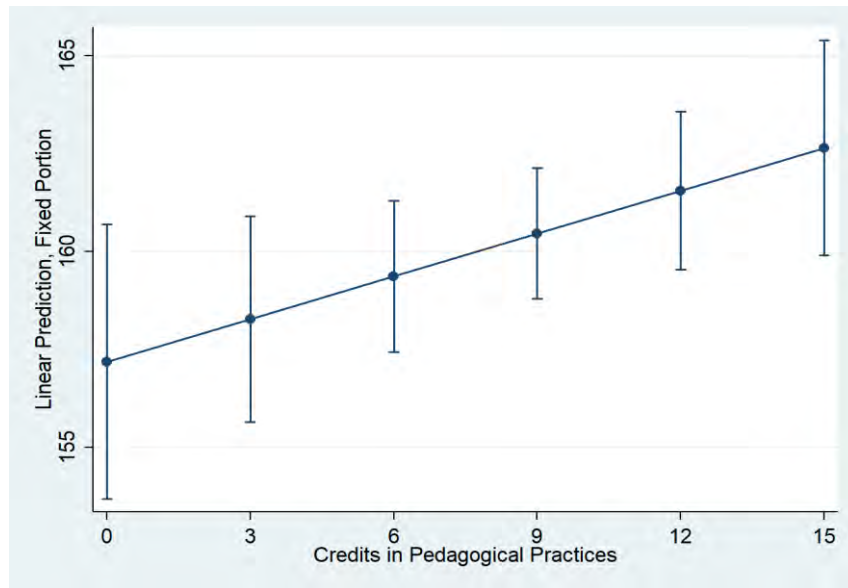


Figure 2. Predictive margins for credits in pedagogical practices (95% CIs).

education and between program modality and disciplinary area are not significant. Apart from socioeconomic level and ethnic minority, the control variables are significant.

Estimates with disaggregated ‘Theoretical Courses in Education’ and ‘Pedagogical Practices’ Variables

With the variable ‘total credits in education’ disaggregated, some results seem to be more accurate and significant. When estimating with these disaggregated variables, but without interactions, in M7, the variable ‘credits in pedagogical practices’ has a positive association of

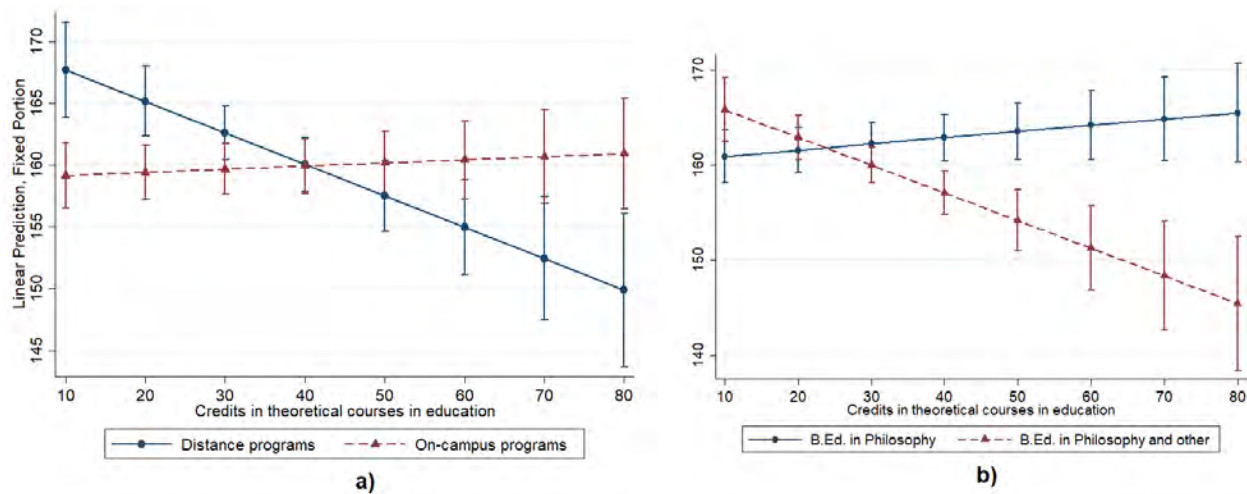


Figure 3. Predictive margins (95% CI) for interactions of credits in theoretical courses in education. a) Model 9. b) Model 10.

0.36 points in the score for each additional credit (Figure 2). Despite this, ‘Theoretical courses in education’ is not significant, like modality and disciplinary area of the program.

When there are more credits in theoretical courses in education, distance program students tend to have lower outcomes than on-campus students (M9; Figure 3a), and students in multidisciplinary programs also tend to underperform; only students in B.Ed. in Philosophy programs tend to perform better (M10; Figure 3b). Interaction of credits in theoretical courses in education and years of program accreditation is not significant for student scores.

‘Credits in pedagogical practices’ is the most significant explanatory variable, both as an isolated variable and in interaction with other explanatory variables (M11, M12, M13). Students in high-quality accredited programs with more credits in pedagogical practices outperform students in programs without this award (M11, figure 4a). This is the only case in which high-quality accreditation seems to improve student performances. Students in on-campus programs with more pedagogical practices tend to perform better than distance program students who, with more credits of practices, hence the worst performance (M12; Figure 4b). Finally, the B.Ed. in

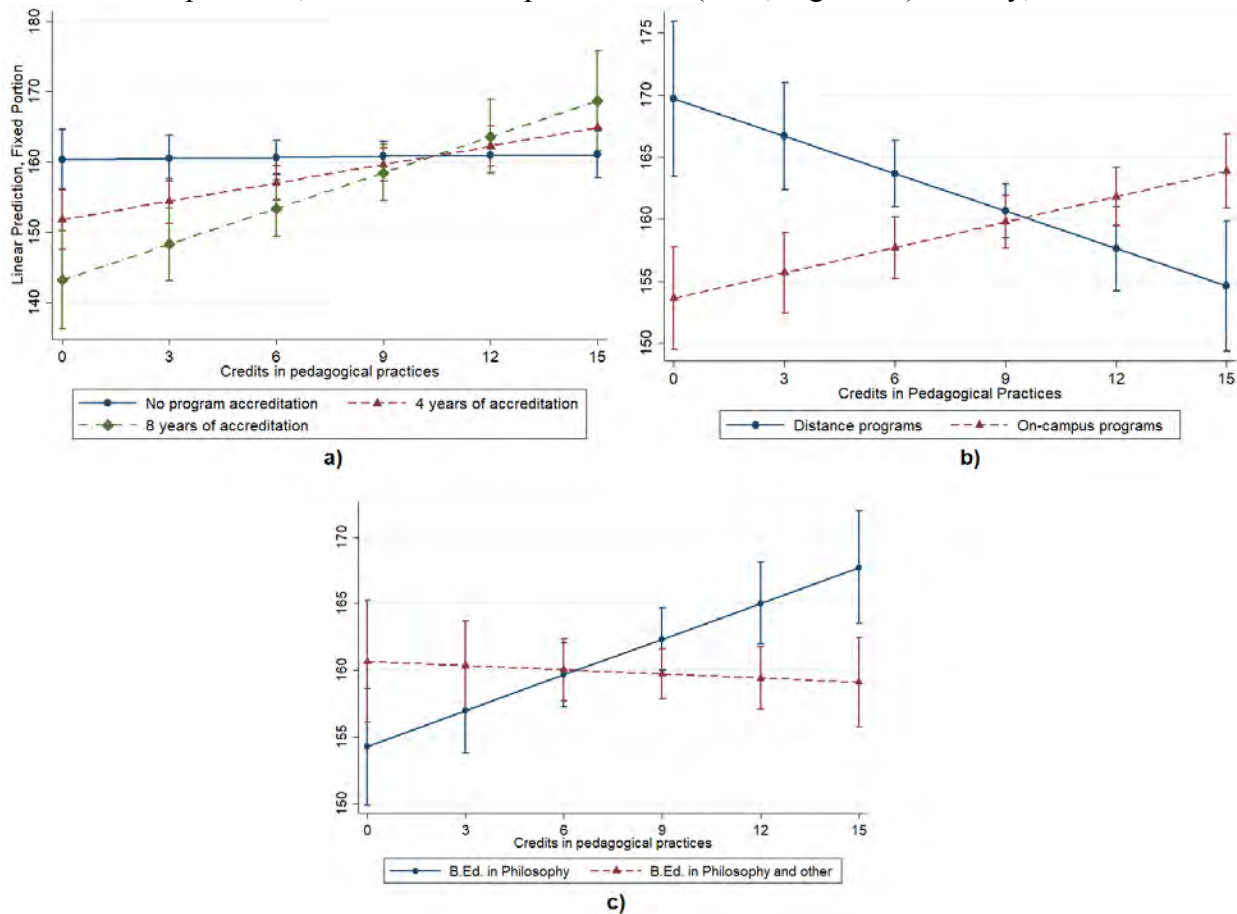


Figure 4. Predictive margins (95% CI) for credits in pedagogical practices in interaction. a) Model 11 b) Model 12. c) Model 13.

Philosophy students with more credits in practice tend to perform better than students of multidisciplinary B.Ed. programs (M13; Figure 4c).

Discussion and Conclusions

Credits in Educational Courses and Pedagogical Practices

The main positive finding is that the number of credits for pedagogical practices has a positive association with the performance of B.Ed. in Philosophy students in Colombia, as Model 7 explicitly shows and Models 11 to 13 support. This suggests that recent public policy reforms for these programs could have positive effects, as also shown in the literature (Auguste, Kihn, & Miller, 2010; Barber & Mourshed, 2007). The association is stronger in on-campus programs and philosophy only programs (M12-M13). This supports policy reforms, as these two new restrictions seem to work. The number of credits before the reforms, and in the sample, was relatively low; no program had more than 15 credits, with some programs having no credits for pedagogical practices. An increase in the number of credits would therefore be positive, especially for programs with low credits on pedagogical practices. It cannot yet be determined, however, what will be the effect beyond 15 credits. Some programs have been adjusted to meet Resolution 2041 (2016, Feb. 3), in which MEN requires 50 credits, but others still meet the most recent Resolution 18583 (2017, Sep. 15), which only requires 40 credits. It is not possible to conclude that student performances will increase in the same way beyond 15 credits. The new curricula, adjusted to the new regulations, have recently been launched, so it will be necessary to wait some years to evaluate the effect *ex-post*. This study can shed light on what could happen in these programs and could also serve to guide those who are designing new study plans. In the opposite direction, the incidence of ‘total courses in education’ and ‘theoretical courses’ in almost all the models has a negative or null association with performance. It is not easy to explain this phenomenon, because Saber Pro test is not a practical assessment but a standardized theoretical test; so, what is expected is exactly the opposite, that more theoretical courses were correlated with better outcomes. What seems to happen is a problem of curricular alignment between contents of these theoretical courses and the content of the test, so, teaching purely theoretical courses of education in the classroom is not giving any added value to the students. The teachers of theoretical courses may be sensitive about this, as public policymakers could simply propose eliminating any related courses, or institutions could arbitrarily dismiss professors who deal with these subjects without more detailed considerations. However, it is important to note that educational theory should be intertwined with teaching practice, the contexts in which it is taught, and the communities in which learning takes place (Freire, 1998 [1966]; Pérez & Gimeno, 1997; Zimmerman N., 2017). The fact that the association between theoretical courses and outcomes is contrary to the association between pedagogical practices and outcomes may suggest some disconnection between educational theory and pedagogical practice in curricula, and it would be worthwhile for programs and teachers to review this in detail. To solve this issue, some programs (Valderrama-Leongómez et al, 2019) have decided to transform the most part of its courses in education as entirely or partially practical, so educational theory is studied in specific contexts and more connected with pedagogical practice.

There may also have a disarticulation between university curricula and the *Saber Pro* test content and assessment criteria. According to some institutions, these criteria are not entirely clear; in some cases, universities have spoken out against them or have claimed that MEN and ICFES organizations are not listening to them.; the institutions often call for more dialogue between the parties, particularly on the issue of evaluating teacher training (Arias et al., 2018, pp.

103, 330–345). So, it is possible that the discrepancy of the results can be explained because the *Saber Pro* content do not fit or do not consider the contents, the competences, or the skills developed in these courses.

High-quality Accreditation of Programs

The most disturbing result, and which is completely contrary to the hypotheses, is the fact that in almost all the estimated models, high-quality accreditation for programs has null or negative significance. This is a very important issue, both for public policy makers and for CNA assessments, since the first and most important requirement for programs was to obtain high-quality accreditation, a requirement established by the *National Development Plan* (CRC, 2015, art. 222), the norm of the highest level in all the reforms. As our results show, high-quality accreditation for programs is not a guarantee of better student performance. This requirement needs to be reviewed on behalf of either CNA, MEN, even the Congress of the Republic, in which any modification to *National Development Plan* depends directly. We cannot conclude from this study that high-quality accreditation does not help at all to improve student performance, but something seems to be going wrong with this requirement.

It is difficult to explain this situation. Performance in the *Saber Pro* test may not be a strong criterion by which to obtain high-quality accreditation; or perhaps programs, once they have obtained their accreditation, do not worry about student performance in the test. It may also be that new programs, which have not yet entered the accreditation application process, are doing an exceptional job to achieve this award. In any case, what the study shows is that there is no direct connection between having high-quality accreditation in the programs and high student performance. High-quality accreditation should be an expected effect of public policy due to performance and other factors, but the estimates suggest that this effect does not exist, and this is happening partly because accreditation is taken, in public policy, as a cause but not as an effect. The relationship should be the other way around: accreditation is a recognition of high performance, so public policy should be more focused on improvement in performance—among many other specific criteria—instead of compelling programs to obtain high-quality accreditation, since obtaining this recognition cannot improve the performance of students automatically. This issue with accreditation processes and requirements has been widely reported in other studies worldwide (Call, 2018; García R., 2017; Garrity, Longstreth, & Linder, 2017; Hunkin, 2018; Jerez, Orsini, Hasbún, Lobos, & Muñoz, 2018; Pavlakis & Kelley, 2016; Prasad & Bhar, 2010; Rowe & Skourdoumbis, 2019; Sin, Tavares, & Amaral, 2017).

Distance Programs and Region Level of Analysis

The results show systematically that students in distance programs underperform compared to students in on-campus programs, and this, *prima facie*, seems to endorse the hypothesis of educational policy reforms and what other studies show (Pineda & Celis, 2018). Nevertheless, these results must be taken carefully. As has been pointed out, the students in the sample belong to 29 regions in Colombia, but only seven regions have B.Ed. in Philosophy programs. Distance students mainly live in cities and regions where there is no opportunity to

enter such a program except in a distance modality. This is reinforced by the fact that, in all the models, the region level has been significant. If these programs are closed, these regions will all be affected due to lack of philosophy teachers.

It is more reasonable for public policy not to punish distance programs by closing them, because there will be an effect, not only in the programs and the institutions, but also in the regions and cities that are more in need of improved education in quality and coverage. Instead of this, public policy should turn its objectives to encouraging the opening of high-quality regional programs. This can be done by incentivizing institutions—whether they are public or private. *Decree 892* (PRC, 2017) was enacted to prevent this harmful consequence for the regions (Arias et al., 2018); nevertheless, real solutions for the regions need a more active participation by the National Government because market logic has not been able to solve this core-periphery educational problem (Apple, 2001; Czyżewski & Polcyn, 2016; Lepori, Barberio, Seeber, & Aguillo, 2013; Zimmerman A., 2018). This seems to be the case for Colombia (Bonilla-Mejía et al., 2018; García J., Rodríguez, Sánchez, & Bedoya, 2015), where there are other factors, such as politic instability and internal conflict affecting education actors (Novelli, 2009; 2010a; 2010b).

Control Variables

Some of the control variables behaved according to the literature in all models. Women, for example, performed four points above men. This may be evidence of a gender gap in these programs, although this point should be studied in more detail afterwards; but there can be stereotyping of women in teacher education (Cordón-Gómez, Gutiérrez-Esteban and Cubo-Delgado, 2019; Engebretson, 2016). The advantage obtained by students who come from teacher high schools was also clear, and was also systematic and constant in all models, outperforming other students by around 4-5 points in the test. Unlike program accreditation, institutional accreditation did have the expected positive association with student performance. Similarly, the incidence of generic competences, particularly the Critical Reading module was remarkably high, oscillating between 0.27-0.28 additional points in the specific education test for each point in this generic module of the test. This issue is important in designing a curriculum, as it would be harmful to the curricula to reduce courses that improve basic skills such as reading and writing; especially when they are directly related to the disciplinary core of these programs: philosophy. There is positive association between the number of disciplinary credits in disciplinary courses in the B.Ed. in Philosophy and the performance of students in the *Saber Pro* generic module of critical reading and citizenship competencies (Farieta-Barrera, 2019). A drastic reduction in the credits in disciplinary courses will not only have a negative effect on generic competences, but, indirectly, also in specific education competences.

Socioeconomic level and ethnic minority behave contrary to literature review. This can be taken as a positive aspect of these programs, since these are social gaps that are difficult to close. The results show that these programs are providing an equal education for historically disadvantaged communities (Abadía, et al., 2018; Flores & Palacios, 2018). This is important not only in Colombia, where those who enter a B.Ed. program generally have a low socioeconomic index (García J. et al., 2014), but also in other countries in Latin America, where this

phenomenon is frequent (Bruns & Luque, 2015; Mandarino & Beltrão, 2018; Salazar-Morales, 2018).

General Conclusions

There seem to be good reasons for the educational public policy to increase the required credits for pedagogical practices, as MEN argues. However, as we have shown, a discipline such as philosophy requires that we also keep in mind collaterals that this can have on the other skills and abilities that students acquire, and the need for disciplinary credits. The change in MEN regulations from 50 credits (2016, Feb. 3) to 40 (2017, Sep. 15) focuses the discussion not only on the role of pedagogical practices, but also on the ‘magic number’ of credits. The reduction of 10 credits from one resolution to another in only a year seems to presuppose that there is a point at which achievement due to practice decreases as the number of credits increases. Now, and as we have tried to show, the connection between practice and theoretical subjects need to be reevaluated, insofar as the theory alone in education without practice seems to be inconvenient. It is also necessary to review other factors of student performance, as we have shown, such as region and context, distance learning and multidisciplinary programs. This is a message not only for policymakers, but also for curriculum designers in the universities.

It is a fact that public policy in education cannot base quality assessment on standardized tests alone, as this can have long-term undesirable effects (Bauer, Alavarse, & Oliveira, 2015; García R., 2017; Rowe & Skourdombis, 2019; Stake, 1999; Vázquez, 2016). Nevertheless, it is a good way to discuss public policy with the same language, arguments and criteria established by the government itself.

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