

The place of assessment in the pedagogical projects of the Mathematics degree of a public institution in São Paulo

O lugar da avaliação nos projetos pedagógicos das licenciaturas em Matemática de uma instituição pública de São Paulo

El lugar de la evaluación en los proyectos pedagógicos de las licenciaturas en Matemáticas de una institución pública de São Paulo

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ABSTRACT

This article analyzes the space that the educational assessment occupies in the pedagogical projects of the Mathematics degree courses of a public institution in São Paulo, seeking to answer the question: how does the Mathematics degree courses of the aforementioned institution understand and address, in their course pedagogical projects, the content related to the educational assessment and the space reserved to it in these documents? A documental analysis was launched on 12 course pedagogical projects of these available courses in the institution. Also, in the data treatment, it was conducted a content analysis process to categorize different conceptions of assessment present in the documents. The results show that the assessment field has, in general, little space in the courses' curricular organization and that its different levels (learning, institutional and large-scale) are not always present and articulated in these documents that guide the educational processes of mathematics teachers.

Keywords: Educational assessment. Teacher education. Course pedagogical project.

RESUMO

O artigo analisa o espaço que a avaliação educacional ocupa nos projetos pedagógicos dos cursos de licenciatura em Matemática de uma instituição pública de São Paulo, buscando responder à pergunta: como os cursos de licenciatura em Matemática da referida instituição compreendem e abordam, em seus projetos pedagógicos dos cursos, os conteúdos relacionados à avaliação educacional e que espaço a ela é reservado nesses documentos? Foi empreendida análise documental dos 12 projetos pedagógicos desses cursos existentes na instituição. Ainda no tratamento dos dados, foi conduzido um processo de análise de conteúdo para categorização das diferentes concepções de avaliação

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presentes nos documentos. Os resultados evidenciam que o campo da avaliação possui, de maneira geral, pouco espaço na organização curricular dos cursos e que seus diferentes níveis (aprendizagem, institucional e em larga escala) nem sempre estão presentes e articulados nesses documentos que orientam o processo formativo dos/as professores/as de matemática.

Palavras-chave: Avaliação educacional. Formação de professores/as. Projeto pedagógico de curso.

RESUMEN

El artículo analiza el espacio que la evaluación educacional ocupa en los Proyectos Pedagógicos de los Cursos de Licenciatura en Matemáticas de una institución pública de São Paulo, buscando contestar a la pregunta: ¿Cómo los cursos de Licenciatura en Matemáticas de tal institución comprenden y alcanzan, en sus PPC, los contenidos relacionados a la evaluación educacional y qué espacio a ella es reservado en estos documentos? Fue emprendido el análisis documental de los doce PPC de estos cursos existentes en la institución. Aun en el tratamiento de los datos, fue conducido un proceso de análisis de contenido para categorización de las diferentes concepciones de evaluación presentes en los documentos. Los resultados evidencian que el campo de la evaluación tiene, de manera general, poco espacio en la organización curricular de los cursos y que sus diferentes niveles (aprendizaje, institucional y en larga escala) ni siempre están presentes y articulados en estos documentos que orientan el proceso formativo de los/las profesores/as de Matemáticas.

Palabras clave: Evaluación educacional. Formación de profesores/as. Proyecto pedagógico de curso.

INTRODUCTION

Among so many weaknesses that historically permeate Brazilian public education, and that could be discussed in a paper in order to indicate possible propositions, we will be focused, at this moment, on assessment in teacher education.

The Brazilian Law of Guidelines and Bases of National Education, of 1996, Article 62, defined that the “[...] education of teachers to work in basic education will take place at a higher level, in a full degree course [...]” (Brasil, 1996, n. p.).¹ Such courses may be offered by public or private institutions. However, in addition to the offer of vacancies, it is necessary to reflect on the educational process developed by these courses, in order to problematize the conceptions that support them and that, therefore, can guide the way they are structured, as well as the practices carried out in them.

Intending to contribute to the reflection on the educational process of future teachers in the area of Mathematics, this paper presents and discusses the data obtained from a study developed by members of the Assessment and School Relations Research Group (*Avaliação e Relações Escolares* — ARES) of the Federal Institute of Education, Science and Technology of São Paulo (*Instituto Federal de Educação, Ciência e Tecnologia de São Paulo* — IFSP). That study aimed to analyze the place that educational assessment occupies in the course pedagogical projects (CPP) of Mathematics degrees² of a public institution in São Paulo. More specifically, the following question was sought to be answered: how do the Mathematics degree courses of the public institution chosen to be

1 This and the following direct quotations translated were made by the translator of the paper. “[...] *formação de docentes para atuar na educação básica far-se-á em nível superior, em curso de licenciatura plena*”.

2 Course most offered by the institution.

researched understand and address, in their CPP, the contents related to educational assessment and what space is reserved for it in these documents?

It is worth mentioning that the researched institution started offering undergraduate courses in 2008, allocating 20% of its vacancies to the education of teachers at a higher level, especially in the areas of Science and Mathematics, given the shortage of teachers with adequate training in the area in which they work. Concerning the focus on educational assessment, it was chosen because it is the central category of the organization of pedagogical work, which has the power to open or close doors, submit or develop students (Freitas, 1995; Freitas *et al.*, 2009). Thus, it refers to a category permeated by contradictions, which highlight the plurality of conceptions, as well as the absence of its neutrality, guiding the practices of educational actors, in order to contribute or not to a socially referenced quality education.

Regarding teacher education, it is worth remembering, as highlighted by Gatti and Barreto (2009), that it corresponds to a complex process in which many factors are involved. One of them is the political pedagogical project called, in higher education, CPP. The CPP cannot be understood as a simple document that must be done to fulfill bureaucratic tasks, and then being archived. It means, therefore, the very organization of pedagogical work, something built and experienced at all times by those who are involved in the educational process (Veiga, 2002). Thus, in addition to bringing together the conceptions of those involved in its construction, it indicates what are the intentions and possible actions that were planned and that are revealed in the curricular structure, in the methodological procedures, as well as in the assessments.

In this sense, the CPP were an important source of information for the study developed, contributing to the achievement of the proposed objectives. From the analysis of these documents, it was possible to identify the priority given to educational assessment, favoring reflections on the conceptions and practices described that can have effects on the future performance of teachers in training.

We clarify that this paper is organized into six sections, this being the first one. In the second one, there is the presentation of some considerations about the relation between teacher education and educational assessment, demonstrating some studies in the area. In the next section, there is the description of the steps taken in carrying out the research, considering the mentioned objective. In the following two sections, the data obtained during the study are presented, as well as the analyses developed from the findings. Finally, the main reflections built throughout the investigative journey are exposed.

EDUCATIONAL ASSESSMENT AND TEACHER EDUCATION: SOME CONSIDERATIONS

Educational assessment, as a central category of the organization of pedagogical work, is not restricted to technical aspects, devoid of political conceptions and worldviews. Based on Freitas *et al.* (2009), in this paper, educational assessment is understood as the interconnection between its three levels, namely: classroom learning assessment, under the responsibility of the teacher; large-scale external assessment, developed by the country, state or municipality for monitoring and (re) elaboration of public policies; and institutional assessment, under the responsibility of the school collective, in a movement to look at itself.

As the authors point out, “[...] these three levels of assessment will increasingly tend to interact with each other” (Freitas *et al.*, 2009, p. 10),³ a fact that indicates the need to debate educational assessment without losing sight of its breadth, its different levels and how they are linked. However, previous research indicates that educational assessment does not yet have a privileged place in teacher education courses.

³ “[...] cada vez mais estes três níveis de avaliação tenderão a interagir entre si”.

Sada (2017), when investigating Mathematics degree courses from five Brazilian federal universities, one from each region of the country, found that the topic is treated superficially, with an insignificant number of references about the assessment in the CPP. And when the theme is considered, in most cases, it is focused only on one of the levels of educational assessment: the classroom learning assessment. The author highlights the need to develop more research related to the theme so that it is possible to broaden the understanding of how teachers comprehend assessment and develop their evaluative practices.

Similarly, in a study developed by Villas Boas and Soares (2016), it is clear that the assessment is little studied by undergraduates, future teachers. According to the authors, teaching-learning-assessment are treated in a disjointed way and, thus, the construction of innovative practices is compromised, since these future teachers are not engaged in debates about criteria, methodologies, and critical conceptions of assessment. As for the levels of educational assessment, the authors state that:

Teachers, in general, are still stuck with learning assessment. The other two levels of assessment (institutional and large-scale) are not usually subject of reflection, even existing within the school. It seems that their existence is not perceived. The authoritarianism that has always accompanied the assessment of learning stands out, causing the other two levels to be disregarded. Hence the treatment given to assessment in undergraduate courses. (Villas Boas and Soares, 2016, p. 245)⁴

Thus, addressing educational assessment in undergraduate teaching courses, contemplating its different levels, means debating the theme in a broad sense, taking into account technical aspects intertwined with the political ones, objective and subjective aspects.

The discussion about the classroom learning assessment, for example, cannot be limited to formal assessment, that is, to explicit evaluative moments, in which the instruments (tests, homework, etc.) are present. Informal assessment — that is, the teacher's value judgments in relation to students that end up having repercussions on their actions and decisions — needs to be on the agenda of debates, since it involves all learning situations (Villas Boas, 2011). In this sense, Freitas (2003, p. 45) points out that “[...] when formal assessment comes into play, informal assessment has already acted on the learning level, in a way that the former tends only to confirm the results of the latter”.⁵

There is also no way to discuss classroom learning assessment without considering its relationship with large-scale external assessment, another level of educational assessment that has proliferated in recent decades. Currently, in addition to national assessments, many states and municipalities have their own assessment systems (Bauer *et al.*, 2015). As Dias Sobrinho (2010, p. 195) states, “[...] assessment is the main tool for the organization and implementation of educational reforms”.⁶ Research in the area has indicated the repercussions of large-scale external assessment policies in the organization of pedagogical work, such as the action of school management focused on quantitative goals; the narrowing of curricula and teaching for skills and abilities; training for standardized tests; monitoring of teaching work and its accountability for results, among others (Ravitch, 2011; Menegão, 2016).

4 *Os professores, de modo geral, ainda estão presos à avaliação da aprendizagem. Os outros dois níveis da avaliação (institucional e em larga escala), mesmo existindo dentro da escola, não costumam ser objeto de reflexão. Parece que sua existência não é percebida. O autoritarismo que sempre acompanhou a avaliação das aprendizagens sobressai, fazendo com que se desprezem os outros dois níveis. Daí o tratamento conferido à avaliação nos cursos de licenciatura.*

5 *[...] quando a avaliação formal entra em cena, a avaliação informal já atuou no plano da aprendizagem, de maneira que aquela tende apenas a confirmar os resultados desta”.*

6 *[...] a avaliação é a ferramenta principal da organização e implementação das reformas educacionais”.*

As a propositional response to this scenario, some researchers argue that the school should develop participatory institutional assessment processes (Sordi, 2010). Through it, the school community looks at itself, identifying weaknesses and potentialities (Betini, 2009). In this process, there may be an articulation between the data from the classroom assessment and the large-scale external assessment in order to problematize and contextualize the data obtained in the standardized tests. It is about the reflection and collective construction of the uses of this information, so that alternative paths, that differ from those that tend to narrow the formative processes, are identified.

In view of the above, the necessary awareness of the assessment processes is perceived, as argued by Freitas *et al.* (2009). To this end, teacher education courses need to take on such a discussion in their pedagogical projects. This is a relevant moment in teacher professional education that can contribute to the (de)construction of traditional conceptions and practices and the (re) construction of new, more critical ones, focused on the expanded human formation of those involved in the process.

Without this possibility of reflection, the tendency is for the reproduction of what they experienced in both basic and higher education to occur. From authors such as Catani, Bueno and Sousa (2000) and Tardif (2002), we know that the experiences and practices experienced as students have an impact on the formative journey and tend to be repeated by students when teaching, especially when they are in moments of tension, pressure or that require rapid decision-making.

In the same direction, Garcia *et al.* (2018) argue that the meanings and representations that are constructed throughout the educational process echo in the pedagogical practice of future teachers. Therefore, traditional experiences and uncritical educational processes with little theoretical depth can contribute to perpetuate classificatory and exclusionary assessment practices in Brazilian basic education classrooms, producing a tragic scenario of failure and exclusion.

Thus, educational assessment in the teacher education process cannot occupy a secondary place. As the main category of the pedagogical work organization, this should also be understood in undergraduate courses, starting with their CPP. Without such visibility and prominence, as already stated, assessment conceptions and practices linked to classification and exclusion will hardly make room for inclusive and emancipatory assessment conceptions and practices.

THE PATH TAKEN

To contemplate the objective of the research — that is, to analyze the place that the educational assessment occupies in the CPP of the Mathematics degrees courses of the researched public institution, in order to identify how they understand and address the contents related to the educational assessment —, the analysis of the CPP of all the Mathematics degree courses existing in the institution was carried out. Thus, 12 documents were analyzed.

According to Gil (2008, p. 51), documents are “[...] materials that have not yet received an analytical treatment, or that can still be reworked according to the research objectives”.⁷ As Cellard (2012) explains, with the documentary analysis, it is possible to identify the features of a document, as well as to establish a relation with the research object. It is also possible, according to the author, from a longitudinal approach, to observe the processes in which individuals and groups are involved, knowing the possible modifications.

When analyzing these documents, the content analysis technique was employed. It is a “[...] set of communication analysis techniques that uses systematic and objective procedures

7 “[...] são materiais que não receberam ainda um tratamento analítico, ou que ainda podem ser reelaborados de acordo com os objetivos da pesquisa”.

to describe the content of messages” (Bardin, 2011, p. 37).⁸ Three chronological axes constitute the content analysis, namely: the pre-analysis; the exploration of the material and, finally, the treatment of the results.

In the pre-analysis phase, the first reading of the materials was made in order to identify their general characteristics. Subsequently, that is, for the exploration of the material, two tables were prepared for each CPP with the intention of organizing the data and assisting in the analyses. In Chart 1, we gathered data related to the curricular components, such as the contents related to assessment, the levels of the educational assessment that are (or are not) contemplated, the course load and the references indicated.

Chart 2 was elaborated from the assessment conceptions identified in the CPP, which were in other sections of the document, such as in the description of the learning assessment process developed in the course.

Chart 1 – Fragment of the table of analysis of the general data of course pedagogical project A

CPP (Campus name and CPP year)	Curricular component	Assessment content	Assessment levels considered	Course load of the curricular component	References
Specific component on assessment	—	—	—	—	—
Component articulates the assessment to another area	Organization of Pedagogical Work, Assessment and School Management	Construction of the Pedagogical Political Project and its articulation with the three levels of educational assessment	Classroom assessment, external assessment and institutional assessment	95h	FREITAS, Luiz Carlos de. <i>Avaliação educacional: caminhando pela contramão</i> . 6a ed. Petrópolis: Vozes, 2014.
Assessment as a topic in a component	Didactics	Educational assessment: concept; conceptions; functions, diagnostic, formative, summative assessment; articulation of classroom assessment with the other levels (external and institutional)	Classroom assessment, external assessment and institutional assessment	63.3h	—

CPP: course pedagogical project.

Source: Elaborated by the authors.

⁸ “[...] conjunto de técnicas de análise das comunicações que utiliza procedimentos sistemáticos e objetivos de descrição do conteúdo das mensagens”.

Chart 2 – Assessment concepts present in course pedagogical projects

<p>How the assessment appears in the CPP in addition to the curricular components</p>	<p>CPP item: Learning assessment - “The assessment of the students’ learning process must be continuous and cumulative, with qualitative aspects prevailing over quantitative aspects and results throughout the period prevailing over those of any final exams” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus A</i>, 2019, p. 71).</p>
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CPP: course pedagogical project.

Source: Elaborated by the authors.

In total, 24 tables were elaborated with the raw data taken from these documents. This organization facilitated the visualization of the main aspects that compose these documents regarding educational assessment. Therefore, it favored the interpretation and reflection on the place occupied by the educational assessment in the CPP of the Mathematics degree courses of the researched public institution, as well as the construction of the categories. In the next topic, we present the categories obtained from the analyzed CPP, as well as the analyses carried out, exploring and interrelating the data.

EDUCATIONAL ASSESSMENT IN THE CURRICULAR COMPONENTS THAT COMPOSE THE COURSE PEDAGOGICAL PROJECTS

To favor the presentation of data related to this category, we present Chart 3 with general data of the 12 documents analyzed, especially regarding the description of the curricular components that compose such documents. In this chart, there are the campuses of the institution that offer the Mathematics degree course, without their identification to maintain the confidentiality of the information, the year of publication of the last version of the CPP available on the website of each campus, as well as the presence/absence of the educational assessment in the curricular components of these courses.

Only three of the documents analyzed have a specific curricular component dedicated to assessment, and in one of them such component appears as an elective subject, that is, it does not have a mandatory character within the curriculum of the Mathematics degree course. According to what is described in the CPP of campus D, the curricular component (elective), called Educational assessment, with a course load of 33.3 hours, includes the three levels of educational assessment, based on the following contents: the logic of assessment: beyond classification and exclusion; assessment of teaching and learning; participatory institutional assessment; assessment of networks; and external assessment and humanized education.

In the CPP of campus E, the curricular component that is exclusively dedicated to studying assessment is called the Learning assessment. When analyzing the covered contents, we noticed, despite the title, the presence of the three levels of educational assessment, although it is a curricular component with a course load of only 31.8 hours. Among the contents described as part of this component are concepts and functions of assessment; assessment as a component of the teaching and learning process; diagnostic, mediating, formative, continuous, participatory, and regulatory assessment; assessment criteria and instruments; international and national educational policies and assessment; institutional assessment; performance assessment; assessment and emancipation; etc.

In the CPP of campus M, the specific curricular component is entitled Assessment and has a course load of 57 hours. This is a good amount of time dedicated to the topic, especially when compared to other campuses. Regarding the contents explored in classes, according to the CPP,

Chart 3 – Analysis of the presence of educational assessment in the course pedagogical projects of the Mathematics Degrees of the researched institution

CPP (year of latest version)	Specific component on assessment	Component articulates the assessment to another area	Assessment as a topic of a curricular component
campus A (2019)		X	X
campus B (2020)			X
campus C (2017)			X
campus D (2017)	X (elective)		X
campus E (2017)	X		X
campus F (2017)			X
campus G (2018)		X	X
campus H (2019)			X
campus I (2018)			X
campus J (2021)		X	
campus L (2018)			X
campus M (2018)	X		X

CPP: course pedagogical project.

Source: Elaborated by the authors.

this component does not address institutional assessment, placing great emphasis on learning assessment and large-scale external assessment. In addition, the component includes classical test theory and item response theory.

It is worth mentioning that, in these three courses, assessment still appears as a topic in some curricular components. In the CPP of campus D, the curricular components are Didactics, with the teaching-learning classroom assessment; Mathematics teaching practices I, based on the planning of lesson plans, teaching plans and assessments; and Mathematics teaching practices II, with the definition of assessment, its types and relationships with teaching theories.

The CPP of campus E has the following curricular components in which assessment appears as a topic: Dialogues between didactics and curriculum, based on the organization of pedagogical work, curriculum and assessment, and contemporary debates; Brazilian educational political organization, considering the assessments of the Brazilian educational system and education in the state of São Paulo; Teaching practice 1, which includes the assessment of the school system; Teaching practice 3, with didactic sequences and assessment practices in the final years of elementary school and in the education for youth and adults (EJA); Mathematics teaching laboratory 2, based on forms of assessment in mathematics using concrete materials; and, finally, Teaching practice 4, with didactic sequences and assessment practices in high school.

In the CPP of campus M, the theme of assessment is present as a topic in the following curricular components: Mathematics for teaching: complex numbers and polynomials, with the elaboration of different assessment activities related to the contents of the discipline; Statistics 2, from the critical reading of external assessment indexes; and in Statistics applied to science and education (optional discipline), which seeks to discuss and confront scientific and educational statistical procedures, questioning the use of assessment parameters in the teaching-learning process.

We also identified three courses that have, in their CPPs, curricular components in which the assessment appears articulated to another area, namely: campus A, campus G and campus J. In the CPP of campus A, it is the curricular component Organization of pedagogical work, assessment, and school management, with a course load of 95 hours. According to the document, the curricular component addresses the construction of the pedagogical political project and its articulation with the three levels of educational assessment.

Also, in the CPP of campus A, there are six curricular components in which assessment appears as a topic:

1. Didactics, contemplating concepts, conceptions and functions of educational assessment, diagnostic, formative, summative assessment and the articulation of the classroom assessment with the other levels (external and institutional);
2. Methodology of research in mathematics education, based on the thematic trends of research in mathematics education, such as assessment practices;
3. Computational resources in mathematics teaching, considering the methodology and assessment of distance education as a new educational process;
4. Organization and educational policy that addresses large-scale assessment systems;
5. Mathematics teaching in the early years, with the analysis of the content blocks, objectives, contents and assessment of the Brazilian National Mathematics Curricular Parameters (NCP);
6. Mathematics teaching in the final years, which also proposes to work on the assessment from the NCP.

On campus G, the assessment appears articulated to the curriculum in Curriculum, planning and assessment in mathematics teaching. This curricular component has a course load of 57 hours and proposes to discuss the three levels of assessment, conceptions and functions of assessment and their relationship with the curriculum and teaching planning. Also, on this campus, assessment is considered as a topic in the following curricular components: Didactics of mathematics, with the study of the function, instruments and techniques of assessment, diagnostic, formative, summative assessment, what should be evaluated and the concepts of assessment; Culture and mathematics education — from the search for assessment alternatives related to diversities; Integrative studies I, which contemplates large-scale external assessment as a guide for the creation of didactic materials; and Advanced topics in innovative pedagogies, addressing new assessment strategies and techniques in the teaching and learning process.

The CPP of campus J has a curricular component with a name similar to the one on campus G (Curriculum, planning and assessment) and with a very similar course load (60 hours). However, the analysis of the syllabus allows us to affirm that the emphasis is on the curriculum. There is no indication that the three levels of assessment will be addressed. The topics aimed at working with assessment are:

1. Conceptions and types of assessment;
2. Curricular proposals and assessment systems in education; and
3. The teaching-learning and assessment process in teaching work.

In addition, on this campus, assessment appears as a topic in four curricular components, namely: Pedagogical practice II, III and IV, discussing teaching practice taking into account assessment (among other aspects) and Education for youth and adults (EJA), based on Paulo Freire's contributions to assessment in this level of education.

As for the CPP of the other campuses, as shown in Chart 3, they have curricular components that contemplate assessment in one of the topics of contents. In Chart 4, we systematize the information regarding the referred curricular components.

Regarding the levels of educational assessment, from the data obtained, we noticed that the articulation between them — classroom learning assessment, large-scale external assessment, and institutional assessment — appears in curricular components of the CPP of four campuses: A, D, E, and G. The classroom learning assessment is the level most contemplated by the curricular components of the 12 CPP analyzed, appearing as a content in all undergraduate courses. Something that is also included in all CPP is the assessment as a theme in the curricular component of Didactics. It is also worth mentioning that large-scale external assessment appears in CPP' curricular components of

Chart 4 – Curricular components in which assessment appears only as a topic

	Curricular component	Excerpts taken from the PPCs
campus B	Didactics	“Critical questions of didactics: discipline and assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus B</i> , 2020, p. 113).
	Didactics of Mathematics	“Potentialities and challenges [...] of Mathematics assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus B</i> , 2020, p. 120).
	Probability and Statistics II	“Notions of Item Response Theory in educational assessments” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus B</i> , 2020, p. 133).
	Educational Policy and Management	“Planning, monitoring and assessment of pedagogical work” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus B</i> , 2020, p. 166).
campus C	Didactics	“Learning assessment and diversified assessment tools” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 68).
	Pedagogical Practice	“Necessary articulation in the preparation and development of classes, [...] lesson plan, learning assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 81).
	Mathematics Education Laboratory	“Planning, elaboration and assessment of pedagogical practice in basic education with concrete material” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 121).
	Mathematics Teaching Practice III	“[...] articulation between assessment and lesson planning” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 125).
	Mathematical Literacy	“Propose, present or evaluate situations or teaching materials, [...] for the teaching-learning of mathematical concepts in the early years” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 125).
	School, Curriculum and Management	“[...] planning, execution, monitoring and assessment of educational policies, projects and programs” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus C</i> , 2017, p. 112).

Continue...

Chart 4 – Continuation.

	Curricular component	Excerpts taken from the PPCs
campus F	Flat Geometry 1	“[...] the geometry contents and the learning assessment process” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 62).
	Didactics	“Critical questions of didactics: discipline and assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 104).
	Mathematics Teaching Practice: Mathematical Modeling	“Develop, apply and evaluate Mathematical Modeling activities aimed at the Basic Education students” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 133).
	Public Policies and Management of Basic Education	“[...] implementation of management, curriculum, assessment, democratization and quality policies in education [...]” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 135).
	Mathematics Teaching Practice: Didactics for Mathematics Teaching	“Analyze and discuss planning and assessment from the perspective of Mathematics Didactics” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 142).
	Mathematics Teaching Practice: Problem Solving	“Recognize, analyze, evaluate and apply didactic resources such as games and technologies and discuss assessment in this methodological perspective” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus F</i> , 2017, p. 160).
campus H	Didactics	“Assessment of learning and organization of pedagogical work, (emphasis on objectives, contents, methods, resources and assessments)” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus H</i> , 2019, p. 121).
	Education for Inclusion	“Assessment, methodological strategies, satisfactory pedagogical practices (successful experiences) and assessment aimed at the specific needs of students” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus H</i> , 2019, p. 133).
	Teaching Practice IV	“Assessment tools, external assessments and formative assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus H</i> , 2019, p. 193).
campus I	General Didactics	“Organization of the didactic process, including the assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus I</i> , 2018, p. 127).
	Didactics of Mathematics	“Summative, formative and self-assessment, [...] critical didactic issues (including assessment), institutional and external assessment aimed at promoting learning” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus I</i> , 2018, p. 142).
	Public Policies and Organization of Brazilian Education	“Educational assessment” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus I</i> , 2018, p. 178).

Continue...

Chart 4 – Continuation.

	Curricular component	Excerpts taken from the PPCs
campus L	Didactics	“Assessment as a teaching process” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus L</i> , 2018, p. 35).
	Pedagogical Practice V	“Reflect on assessment in educational practices” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus L</i> , 2018, p. 207).
	Pedagogical Practice VI	“Assessment in the context of new teaching methodologies” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — <i>Campus L</i> , 2018, p. 207).

Source: Elaborated by the authors.

campuses A, B, E, and G. In the CPP of campuses A and E, this appears in addition to the articulation with the other levels of educational assessment.

We note, therefore, that the CPP analyzed in this investigation follow the trend pointed out by the literature on the predominance of studies aimed at classroom learning assessment, as found in the research developed by Villas Boas and Soares (2016). However, in none of them we perceived that the informal side of the assessment appears as a possibility for study and discussion. In general, the contents related to the classroom learning assessment deal with its relationship with lesson planning and student learning. Like Freitas *et al.* (2009), we believe it is necessary for teachers to be aware of the assessment processes and their repercussions on students’ self-esteem and the definition of their destiny. And this implies reflection on informal assessment that is not detached from formal assessment. Such reflection could have its genesis in initial teacher education courses, contributing to awareness, as the authors argue.

We also noticed that there are few CPP that propose, in their courses, the articulated discussion between the levels of educational assessment. It is noteworthy that, although some of them present the possibility of working with two of the three levels of assessment — classroom learning assessment and large-scale external assessment —, there seems to be no room for reflection on them, based on institutional assessment. Thus, institutional assessment ends up being the level with the least attention in the CPP analyzed.

We advocate that institutional assessment must be included, as a content, in teacher education undergraduate courses. It is through institutional assessment that the school collective can look at itself, locating its strengths and vulnerabilities, establishing pacts that favor practices that are in line with the integral formation of students. To this end, multiple pieces of information about the school reality need to be considered, including data from the classroom learning assessment and large-scale external assessment. Thus, it is about a level of educational assessment mediating with the others. As explained by Freitas *et al.* (2009, p. 42), “[...] institutional assessment, even recognizing the ownership of school actors, does not disregard the richness of the external view that adds new ingredients and new flavors to the process of institutional self-knowledge”.⁹

In this sense, the debates created by the meeting of plural voices that constitute the school community can contribute to the construction of actions that go against those that, as several studies

9 “[...] a avaliação institucional, mesmo reconhecendo a titularidade dos atores da escola, não desconsidera a riqueza do olhar externo que acrescenta ao processo de autoconhecimento institucional novos ingredientes e novos sabores”.

indicate, are supported by the logic of large-scale external assessment, inducing to practices and to classroom learning assessments and leading to curricular narrowing and training students to answer standardized tests (Menegão, 2016).

We also need to mention that we view with concern the fact that the theme of assessment appears only as a topic of some curricular components. We know that the teaching plans contained in the CPP are subject to changes based on the demands of each class, as well as their characteristics. Thus, there is a planning that may or may not be carried out in its entirety and as established in the document. Therefore, we are not defending inflexibility in the implementation of plans, on the contrary, it is up to the teacher to create the necessary adjustments that arise in the pedagogical practice. However, this can also lead to the absence of an in-depth debate on the topic, or it may not even be carried out, for lack of time or other reasons.

Considering that assessment is a central category in the organization of pedagogical work, we argue that it must have a privileged space in teaching education undergraduate courses, without losing sight of the interconnection between its three levels. We believe that this is the way to awaken reflection and promote awareness of the assessment processes, enabling the construction of more emancipatory practices.

ASSESSMENT CONCEPTIONS IDENTIFIED IN THE COURSE PEDAGOGICAL PROJECTS: CONVERGING AND DIVERGING POINTS

In addition to considering the curricular components, we analyzed how the assessment appeared in the CPP in different sections. Thus, in this category, we seek to observe the concept of assessment present in the Mathematics degree courses of the researched institution, at least the one described in its CPP.

In all CPP, there is a section dedicated to learning assessment that reports on how the student assessment process should take place. This part is very similar among the documents analyzed and this is due to the CPP following what is proposed in the didactic organization of the institution, which points out, among other things, that the assessment must be formative, procedural and continuous, with a preponderance of qualitative aspects over quantitative ones, aiming at a diagnosis of the teaching and learning process that allows teachers to analyze their practice and students to commit to their intellectual development and autonomy. Still, this document requires the teacher to report at least two assessment instruments in the class diary, an aspect always present in the analyzed CPP.

However, even with this common part, we identified on a campus a description of the support given to the student based on data obtained from the diagnostic assessment, in order to reduce dropout from the course.

[...] an individualized diagnosis of the students entering the course is carried out regarding the knowledge of basic school Mathematics that they bring from their previous student experiences. To this end, a diagnostic test is applied on the Moodle platform and an individual report is prepared presenting the mathematical skills that need to be developed by each student to favor the achievement of better learning outcomes in the specific subjects of the course. [...] in the latest diagnostic tests applied and through the contact with teachers of the various specific disciplines are pointed out as those in which students have learning lags. In such modules, theoretical summaries of the chosen topics, exercise proposals, application problems, and video classes are made available. It is intended that, guided by the diagnosis provided, each student can visit the content modules and do the activities proposed therein in order to create an individualized itinerary for

their catch-up. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus E*, 2017, p. 221-222)¹⁰

It is worth remembering that the CPP of campus E has a specific curricular component for assessment, in which, considering the contents, it seems to us that there is a work that contemplates the three levels of educational assessment and, also, assessment is a topic of six other disciplines. We believe that experiencing the diagnostic assessment in the course also teaches about assessment and this can be enhanced in the discussions promoted on the subject in the different curricular components that compose the CPP, especially in the specific assessment component. The section on learning assessment, in the CPP of campus E, also mentions Luckesi (1991) and mentions the collection and analysis of cognitive and affective data to “[...] make a decision about the conduct of teachers and students based on this information [...]” (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus E*, 2017, p. 204-205).¹¹

We highlight another element, present in the CPP, based on the institution’s didactic organization: the variety of assessment instruments, as well as the need for the criteria and instruments applied by the teacher to be explained to students at the beginning of the school term, when presenting the component’s lesson plan. We believe that, if in fact implemented, such action can favor the student’s understanding of the assessment procedures that will be applied throughout the semester, fostering learning about the possibility of discussing with the class the directions to be taken regarding the assessment.

It is also interesting to note the importance that the CPP J places on conducting students’ self-assessment. According to the document, the assessment must contribute to the intellectual autonomy of the student, since self-assessment is a fundamental process to achieve this purpose. Villas Boas (2011) states that, unfortunately, the promotion of self-assessment is not a common practice among teachers and argues about its essentiality, since reflection on their own learning process helps students to understand their advances and gaps, making them aware of the need for actions that help them to move forward.

In addition to the part on learning assessment, we identified, common to all CPP, in them, other messages that helped us to understand the conceptions of assessment in practice. We note that, in the section intended for the course assessment, some CPP signal to carry out self-assessment processes, based on dialogue and context analysis, which can contribute to the construction of knowledge about institutional assessment. The following excerpts, taken from the CPP of campuses A, D, and H, exemplify what we affirm.

It is, therefore, a broad process of discussion about assessment within the scope of the course, which aims not only to point out problems, but also to indicate solutions to face the difficulties encountered and to provide future teachers with reflection

10 [...] é realizado um diagnóstico individualizado dos alunos ingressantes no curso quanto aos conhecimentos da matemática escolar básica que trazem das suas experiências discentes anteriores. Para tal é aplicada uma prova diagnóstica na plataforma Moodle e elaborado relatório individual apresentando as competências matemáticas que precisam ser desenvolvidas por cada discente para favorecer a obtenção de melhores resultados de aprendizagem nas disciplinas específicas do curso. [...] nas últimas provas diagnósticas aplicadas e nos contatos com os professores das diversas disciplinas específicas são apontados como aqueles nos quais os alunos apresentam defasagens de aprendizagem. Em tais módulos são disponibilizados resumos teóricos dos tópicos escolhidos, propostas de exercícios, problemas de aplicação e vídeo aulas. Pretende-se, que orientados pelo diagnóstico fornecido, cada estudante possa visitar os módulos de conteúdos realizando as atividades neles propostas a fim de criar um itinerário individualizado para a realização da sua recuperação.

11 “[...] tomar uma decisão sobre as condutas docentes e discentes com base nessas informações”.

on a fundamental theme for their practice. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus A*, 2019, p. 96)¹²

In preparing this proposal, all discussions and consultations with students and teachers of the course were considered, carried out in different stages of the course assessment and preparation of the reformulation proposal. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus D*, 2017, p. 21)¹³

There are two internal assessments. The first, the Own Course Assessment (*Avaliação Própria do Curso* — APC), is permanent, with specific moments for discussion, observing the global and integrated analysis of the different dimensions, structures, relations, social commitment, activities, and purposes of the institution and the course. The second of them [...] is the Own Assessment Committee (*Comissão Própria de Avaliação* — CPA). The course undergoes these various internal and external assessments to promote a moment of self-assessment [...] allowing the construction of a CPP in permanent change over time. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus H*, 2019, p. 58)¹⁴

However, we also find descriptions that, although referring to self-assessment, leave us in doubt as to its effective practice, considering its relevance for the improvement of the CPP, the educational processes and the learning about the institutional assessment, or if it is only carried out to comply with normative aspects. The following excerpt was found on campus C and G CPP.

Such internal assessment will be constant, with specific moments for discussion, contemplating the global and integrated analysis of the different dimensions, structures, relationships, social commitment, activities, and purposes of the institution and the respective course in question. For this, we also count on the performance, [in the institution] and on campus, specifically, of the Permanent Assessment Committee, with autonomous performance and attributions to conduct the internal assessment processes of the institution, as well as to **systematize and provide the information requested by the Brazilian National Institute of Educational Studies and Research Anísio Teixeira (Inep)**. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus C*, 2017, p. 187-188; Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus G*, 2018, p. 57, emphasis added)¹⁵

The CPP of campus G still presents the idea of subordinating the CPP to the results of external assessments, stating that

12 *Trata-se, pois, de um processo amplo de discussão sobre a avaliação no âmbito do curso, que pretende não apenas apontar problemas, mas também indicar soluções para o enfrentamento das dificuldades encontradas e proporcionar aos futuros professores a reflexão sobre um tema fundamental para a sua prática.*

13 *Na elaboração da presente proposta, foram consideradas todas as discussões e consultas a alunos e docentes do curso, realizadas em diferentes etapas de avaliação do curso e de elaboração da proposta de reformulação.*

14 *São duas as avaliações internas. A primeira delas, a Avaliação Própria do Curso (APC), é de caráter permanente, com momentos específicos para discussão, contemplando a análise global e integrada das diferentes dimensões, estruturas, relações, compromisso social, atividades e finalidades da instituição e do curso. A segunda delas [...] trata-se da CPA — Comissão Própria de Avaliação. O curso se submete a estas diversas avaliações internas e externas para promover um momento de autoavaliação [...] permitindo a construção de um PPC em permanente mutação ao longo do tempo.*

15 *Tal avaliação interna será constante, com momentos específicos para discussão, contemplando a análise global e integrada das diferentes dimensões, estruturas, relações, compromisso social, atividades e finalidades da instituição e do respectivo curso em questão. Para isso, conta-se também com a atuação, [na instituição] e no câmpus, especificamente, da CPA — Comissão Permanente de Avaliação, com atuação autônoma e atribuições de conduzir os processos de avaliação internos da instituição, bem como de sistematizar e prestar as informações solicitadas pelo Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep).*

The results obtained by the students of the course in the Brazilian National Student Performance Examination (Enade) and the data presented by the Brazilian National Higher Education Assessment System (Sinaes) will be considered external assessments. **The result of these periodic assessments will point out the adequacy and effectiveness of the course project** and to foresee the necessary academic-administrative actions to be implemented. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus G*, 2018, p. 57, emphasis added)¹⁶

As indicated by the Brazilian National Higher Education Assessment System (SINAES), each institution must have its Own Assessment Committee, responsible for conducting the internal assessment processes. Through it, it is/would be possible to mediate between internal and external data, favoring institutional self-assessment. However, in its article 11, the Brazilian Law No. 10.861/2004 also relates the Own Assessment Committee to the “systematization and provision of the information requested by INEP [Brazilian National Institute of Educational Studies and Research Anísio Teixeira]” (Brasil, 2004, n. p.),¹⁷ a fact that may explain the presence of the passages earlier presented.

According to an analysis by Dias Sobrinho (2010), the lack of understanding of aspects present in SINAES leads to the bureaucratization of institutional self-assessment and diminishes the relevance of the Own Assessment Committee role. Thus, according to the author, Brazilian National Student Performance Examination (ENADE) is gaining prominence, becoming, for some institutions and for the general media, synonymous with assessment.

We are also concerned when the assessment appears in the Justification and market demand section for the course to be offered, based on the description of the results of large-scale external assessments aimed at basic education. In addition to presenting a simplistic analysis of these data, without considering the inequalities existing in our society, as well as the conditions of our public schools, the attention seems to be focused more on the results than on the formative processes.

According to the Brazilian National Institute of Educational Studies and Research INEP/MEC and the National System of Basic Assessment-SAEB, there are few students graduating from elementary school who surpass the proficiency level of 325 (only 10%). According to Alves (2002), the low percentages of students who present the minimum expected performance in Mathematics, in the schooling stage in which they are, may be a consequence of the lags acquired in the initial years of Elementary School. [...] Taking only these 2015 data as a reference, and still considering that they refer to a reality that has been repeated in the last decade when it comes to the analysis of the performance of elementary and high school students in Mathematics, it is possible to infer that teacher education in this area of knowledge needs to be treated as an educational, academic and institutional priority, especially in public institutions of higher education, which have assumed a large part in the maintenance of graduates of undergraduate degrees, since most private institutions have limited or stopped

16 *Serão consideradas as avaliações externas, os resultados obtidos pelos alunos do curso no Exame Nacional de Desempenho de Estudantes (Enade) e os dados apresentados pelo Sistema Nacional de Avaliação da Educação Superior (Sinaes). O resultado dessas avaliações periódicas apontará a adequação e eficácia do projeto do curso e para que se preveja as ações acadêmico-administrativas necessárias a serem implementadas.*

17 *“sistematização e prestação das informações solicitadas pelo INEP [Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira]”.*

offering the course. (Instituto Federal de Educação, Ciência e Tecnologia de São Paulo — *Campus F*, 2017, p. 18)¹⁸

Attention to the results of large-scale external assessments in the CPP can lead, also in undergraduate courses, to actions aligned with them. As we have already presented, campus F has only curricular components in which classroom assessment appears as a topic. We have not identified contents that could generate a discussion on large-scale external assessments. Without reflecting on the interconnection between the levels of educational assessment, we believe that future teachers tend to follow more easily the logic of large-scale external assessments, already noticed by studies in the area, since the CPP itself highlights these assessments and their results in the analysis of mathematics teaching in the national context.

FINAL CONSIDERATIONS

In general, the analyses carried out in this research revealed that the CPP of the Mathematics degree courses of the researched institution do not have educational assessment as a priority. Only three of the 12 CPP analyzed have a specific curricular component to address the assessment and, in one of them, it is an elective class, not guaranteeing that the students of that campus effectively discuss the theme.

Furthermore, there is the fact that once present in the syllabus, it is of fundamental importance that the curricular component, specific or not, contemplates the three levels of assessment in an articulated way. What we noticed is that the classroom assessment is the level that appears as a content in all CPP, especially in Didactics, without mentioning its informal side. With the consolidation of large-scale external assessments in recent decades, we cannot fail to also address their repercussions on the organization of pedagogical work and educational processes. To this end, we see it as imperative that, in discussions on educational assessment, more emphasis must be put on institutional assessment, constituting a possibility of mediation, in order to favor the collective construction of the data uses obtained at the various levels of assessment.

We also understand that it is necessary to include, in the CPP, guiding documents of the courses, the assessment conceptions and how they will be developed. For this purpose, it is not enough to mention only what is contained in the institution's normative documents. Each campus has a reality, composed of different subjects. In this sense, each one has its identity, that must appear in the CPP. The same can be said about institutional assessment and the use of external assessment data. How have the campuses carried out the institutional assessment processes? How do they engage students? How are the results of external assessments articulated with contextual data? These are questions that, for us, should be included in the CPP of the courses, in addition to mentioning that the courses are evaluated and that there is Own Assessment Committees on campuses.

Debating and experiencing alternative assessment models throughout the course, including institutional assessment, can contribute to the awareness of the assessment processes, enabling the

18 *Segundo o Instituto Nacional de Estudos e Pesquisas Educacionais INEP/MEC e o Sistema Nacional de Avaliação Básica-SAEB, são poucos os alunos concluintes do Ensino Fundamental que chegam a ultrapassar o nível de proficiência 325 (apenas 10%). De acordo com Alves (2002), os baixos percentuais de alunos que apresentam o desempenho mínimo esperado em Matemática, na etapa de escolarização em que se encontram, podem ser consequência das defasagens adquiridas nos anos iniciais do Ensino Fundamental. [...] Tomando apenas tais dados de 2015 como referência, e ainda considerando que eles remetem a uma realidade que tem se repetido na última década quando se trata de análise de desempenho de alunos de ensino fundamental e médio em matemática, é possível inferir que a formação de professores nessa área de conhecimento precisa ser tratada como prioridade educativa, acadêmica e institucional, sobretudo nas instituições públicas de ensino superior, que têm assumido grande parte na manutenção de egressos das licenciaturas, de vez que a maioria das instituições privadas têm limitado, ou abandonado tal oferecimento.*

construction of practices committed to the emancipation of students, a fact that requires, therefore, this theme to occupy a privileged place in teacher education courses. Other studies need to be carried out to deepen our reflection on the education of mathematics teachers and the relation with assessment. We understand that new research needs to be developed contemplating the articulation between institutional documents, the practices of the educators and the voices of the undergraduates.

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