

Who controls the curriculum? Notes on disciplinary communities from Ivor Goodson

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Abstract

The present study investigates the devaluation of specialised teaching knowledge and the prioritisation of general education based on competencies and skills at the secondary level in Brazil. The dissolution of the curricular disciplinary organisation poses a risk to teaching identities, and understanding how teachers constitute epistemic and disciplinary communities is crucial. Public imposed policies that are distant from the reality of schools tend to be rejected by the agents involved in the school process. In Brazil, the *National Curriculum Basis*, a high school common core, is an example of a legal document that does not engage in dialogue with the cultural diversity in Brazil, while discredit the specific formation of teachers. From a historical approach, this research analyses the polysemy of school subjects towards the teacher's specialised identities. The methodological dispositive comprises narratives from specialist high school teachers in Biology, Physics, and Chemistry. Understanding how professionals organise themselves provides insight into the mechanisms of control and mediation in producing curriculum as socio-historical artifacts from power relationships and disputes. The struggle for control highlights the importance of teachers' agency in confrontation with neoliberal ideals for education and organising in subject or epistemic communities.

Keywords

Epistemic communities, disciplinary communities, curriculum, historical approach

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Introduction

This article aims to debate the concepts of disciplinary and epistemic communities by exploring curricular dynamics through Ivor F. Goodson's historical perspective. The authors' decision to adopt this epistemological approach is not only influenced by Goodson's reputation for expertise in the History of School Subjects (HSS) but also reflects a theoretical and political stance in response to the present era's uncertainty and erasure of the past. We live in the 'age of small narratives', where individualised life policies are disconnected from social meanings (Goodson, 2013).

This study defines curriculum as 'the complete set of discourses, documents, narratives, and practices that shape the identities of those involved in the schooling process' (Petrucci-Rosa, 2018: 26). The investigation of curricular practices requires an empirical field that encompasses both macro and micro dimensions. The macro dimensions are generally more visible in documents and public policies, while the micro dimensions are more subjective and connected with the individuals directly involved in the process. These dimensions are called systemic and professional life narratives by Goodson (2013). They are distinct from the small narratives in the media and political sectors. The latter narratives are more closely linked to specific social contexts and intertwined with the research questions addressed in this article.

Our research focuses on the organisation of school subjects in the curriculum, which has been thoroughly studied and emerged from a comparatively recent process of differentiating studies within educational institutions. Consequently, school subjects are not realistic replicas of what is studied and produced in universities; instead, they are social-historical constructions arranged to convey a distinct type of knowledge with distinct aims and objectives from academic knowledge. Scrutinising the processes of creation, reorganisation and dismantling that underlie the disciplinary organisation can help to unveil the processes of curricular control.

Goodson (2020) argues that taking a socio-constructivist perspective in curriculum research expands our understanding of the subject matter, particularly by exploring the life stories and career perspectives of the professionals involved, the associated collective categories, and the relationships that emerge among individuals and groups. Such investigations consider school subjects as microcosms of curriculum prescription and schooling patterns.

As highlighted by Goodson and Petrucci-Rosa (2020), the curricular disciplinary organisation has been undergoing a dissolution process in Brazil. The authors point out several documents as signs of this secondary education reform process, such as the National Curriculum Parameters for High School (2000), the Curricular Guidelines for High School Education (2006) and the National Curriculum Guidelines for High School Education (1998;2012). The systemic narratives in such documents evidence the prioritisation of generalist skills to the detriment of disciplinary school knowledge. Goodson (2019) discusses how externally regulated processes tend to take on similar trends, leading to a loss of prestige for specialised knowledge and the professionals directly involved in this specialisation.

In December 2018, the approval of the National Common Curricular Base for Secondary Education by the National Education Council radically modified the Brazilian curriculum, breaking with the specialised disciplinary structure and definitively systematising the curriculum in knowledge areas.

As highlighted earlier, curriculum development processes involve at least two dimensions of production: macro, manifested in systemic narratives, and micro, in practices communicated through life story narratives.

Rudd and Goodson (2016) demonstrate that topdown policies typically undergo refraction throughout these dimensions. Analogous to the physical refraction of light, public curricular

policies are subject to changes during this process, and both systemic narratives and professional micro-narratives can expose these refractory episodes, and indirectly, power struggles.

The concept of refraction highlights the intricate relationship between structure and agency, as proposed by Bourdieu's theory of practice. How policies refract through the professional micro-narratives of curriculum actors reflects how the agents interpret and negotiate the structures imposed on them, ultimately shaping the curriculum development process. Thus, the notion of refraction sheds light on the power dynamics and struggles between the different actors involved in the process, revealing the agency of the professionals in the face of the systemic structures.

Analysing teachers' life narratives allows for the composition of an empirical field that situates this process historically while acknowledging its subjectivities. Through this re-signification process, teachers tend to understand their disciplinary teaching more autonomously, thereby re-inventing prescriptions imposed on them by circulating systemic narratives. Additionally, it is essential to note that the forms of collective organisation among these professionals are as crucial as the analysis of individual narratives.

Given such premises, it is necessary to highlight the context through which this investigation goes on. The Brazilian education system comprises two levels of Education: Basic Education and Higher Education. Basic Education is mandatory and configured into two stages: Elementary Education, which lasts for 9 years, and Secondary Education (high school), which lasts 3 years. Higher education comprises undergraduate and graduate courses.

In the recent past, the Brazilian curriculum had its foundation in a disciplinary structure, where school subjects represented different kinds of knowledge and practices in a specific and hierarchical way. This organisation aimed to provide specialised knowledge in each field, promoting deep learning and developing specific skills. This structure was present in Elementary and Secondary Education, with subjects such as Mathematics, Biology, History and Geography, among others. Teachers were required to have expertise.

The Brazilian curriculum structure underwent a radical modification in December 2018, with the approval of the National Curricular Basis. This change broke with the specialised disciplinary structure and systematised the curriculum into knowledge areas, comprehending certain curricular compounds. According to this act, instead of 12 disciplines, the high school curricula throughout the country have to be organised into four areas: Natural Sciences, Social Sciences, Mathematics and Languages, maintaining the mandatory teaching of Portuguese, Mathematics and English as a foreign language throughout the 3 years of high school and demoting the other disciplines to curricular components within the established areas.

One of the priority areas of government policies is Natural Sciences and Technologies. Focussing on the area of Natural Sciences, comprising the curricular components of Biology, Physics and Chemistry, this investigation scrutinises the concepts of disciplinary and epistemic communities for understanding the impacts of a National Curriculum that dissolves disciplinary organisation and imposes a unified structure. Methodologically, the narrative approach provides data to confront curricular policies' micro and macro dimensions.

Based on these premises, this paper reports the research in the following sections. The first section, 'Epistemic and Disciplinary Communities', presents the theoretical framework that supports the argumentation. The second section, 'Life Narratives - Expression of Teaching Agency in the Constitution of Disciplinary Communities', details the methodology and empirical field. The following three sections are devoted to the analysis of power struggles exposed through systemic and life narratives: 'Disciplinary Communities and their Traditions', 'Communities and their Narrative Capitals', and 'Conclusions'.

As such, the next section will explore the main theoretical concepts that support the historical approach presented here, namely epistemic and disciplinary communities.

Epistemic and disciplinary communities

The allocation of subjects in school schedules reflects the prioritisation and decision-making *about the teaching content*.

The pedagogic practices in everyday life at school take on public policies and curricular documents that form the systemic narratives of a particular period. Therefore, studying subjects in a historical context is crucial to understanding broader contexts beyond discourse analysis.

Goodson (2019, p. 18–19) highlights how sociopolitical processes lead to the emergence of ‘traditional disciplines’. A school subject emerges based on the interest of teachers and students; however, its stabilisation and fixation on timetables depend on the acceptance of power groups. On the other hand, there is resistance and struggle. After a period of domination, a period of mediation follows, and, at the end of the day, the ‘rules of the game’ are established. Discursive analyses, disconnected from historical periodisation, take the risk of providing both pessimistic and negative prospects about the school’s reality, as well as naive interpretations and pure acceptance of the proposed changes. Both scenarios can favour the status quo, either through permissiveness or passivity.

Teachers are professionals who experience such historical periods, crossing the boundaries of academic knowledge to school knowledge. They are the curricular practitioners, those who inhabit disciplinary subdivisions. Scrutinising how the school subjects behave over time just observing the systemic narratives provides a point of view about structural mechanisms. It is also necessary to investigate the agency involved and their forms of collective organisation.

First, it is necessary to differentiate the main types of communities regarding public policies: epistemic communities, advocacy coalitions and instrument constituencies. The last two are derived from the first, as they are all considered collectives that share common conceptions. However, while epistemic communities focus on the problems themselves, coalitions and advocacy groups are more solution oriented. (Howlett et al., 2018).

The concept of epistemic community is central in this case. Derived from the concepts of the scientific community by Thomas Kuhn, collective thought by Ludwik Fleck and *epistémé* by Foucault, it emerged in sociology in 1972, with Burkart Holzner, undergoing several changes, with emphasis on the concept proposed by political scientist Peter Haas in 1992. (Melo, 2019: 893).

The hegemonic mention of Haas’ concept is evident. Investigations related to different topics, such as acceptance of external assessments, UN speeches, Brazilian health reform, teacher training, environmental and financial policies and accounting reforms, are examples of Haas’s concept of an epistemic community. (Addey, 2016; Costa, 2014; De Oliveira and Calderón, 2014; Dias, 2008; Gama and Lopes, 2009; Inoue, 2005; Neves and Gómez-Villegas, 2020; Oliveira and Bichir, 2021; Pinho, 2021; Tomazini and Leite, 2016; Tostes, 2006).

According to Haas (1992)

Although an epistemic community may consist of professionals from a variety of disciplines and backgrounds, they have (1) a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members; (2) shared causal beliefs, derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired

outcomes; (3) shared notions of validity—that is, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and (4) a standard policy enterprise—that is, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence. (p. 3)

In the 1960s and 1970s, patterns of curriculum change involved, according to Goodson (2019, p. 31–33), four stages in a simplified way: invention, promotion, legislation and mythologisation. The author also highlights how invention and legitimation were mobilised internally, starting from the initiative of teachers and educators, who finally constituted an epistemic community.

However, this concept is insufficient when confronted with the previously highlighted ‘allotment’ school curriculum (Petrucci-Rosa, 2007). Also, according to Haas (1992, p. 19), there are differences between epistemic and professional communities. Although both share causalities and conceptual bases, there are divergences regarding the commitment of their members. In an epistemic community, the ethical standard comes from the principles and ideals that emerge from the central problems, not professional codes. There is a commonality of beliefs and identification with social groups that dialogue, including professional communities Figure 1.

Considering the context under analysis, it is necessary to anchor the relationship between professional communities and school culture. Based on the theories proposed by David Layton (1974) in *Science for the People*, Goodson discusses how school subjects emerge and stabilise in the curricula from three stages:

Given the curricular organisation in subjects, it is possible to affirm that each school subject has a correlated professional grouping: a disciplinary community. New conceptual disambiguation is necessary, as the term disciplinary community can represent the concept of discursive community, generally associated with David Russell’s studies on writing through the curriculum (Carlino, 2005; Chois-Lenis et al., 2020; Martinez et al., 2021; Molina-Natera, 2012; Ochoa-Villanueva and Rengifo-Mattos, 2021; Russell, 1990) and the writings of John M. Swales (Costa, 2012; Navarro, 2013; Pacheco and Bernardino, 2017; Padilla, 2018; Riffo, 2021; Swales, 2016; Ulloa, 2020).

Vilela and Da Silva (2021) propose two different approaches to the concept of disciplinary community: rhetoric and invented tradition. They argue that temporality is the key characteristic that

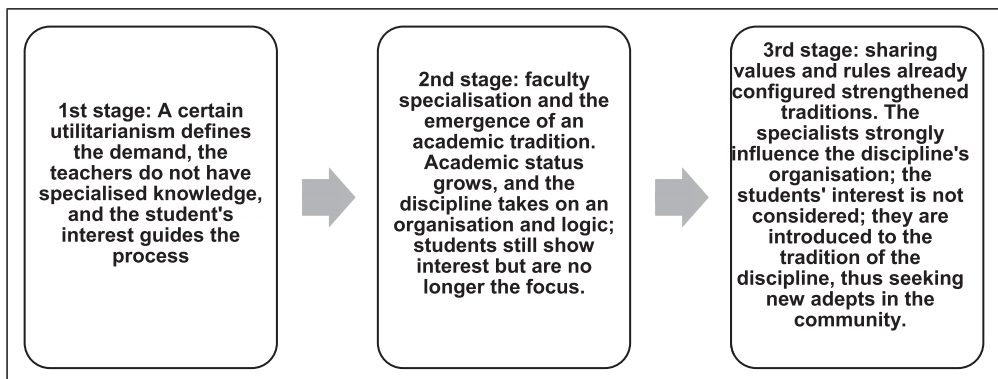


Figure 1. Emergence and stabilisation of a school subject. Source: The authors based on Goodson (2007, 2019).

sets them apart, as the rhetorical approach focuses on the present, while the invented tradition approach looks to the past.

Among works supported by the rhetorical concept of the disciplinary community, the highlight is on productions that develop their arguments in a post-structuralist perspective, oriented from a post-Marxist theoretical framework, with an argumentative basis built from the *theory of discourse*, by Ernesto Laclau and Chantal Mouffe (Busnardo and Lopes, 2010; Costa RLS, 2012; Costa and AC Lopes, 2016; Costa and ARC Lopes, 2016; Oliveira, 2012).

Vilela and Da Silva (2021) argue that rhetoric and invented traditional approaches to disciplinary communities are complementary. However, productions that negotiate moral, ideal, and material factors with the prevailing sociocultural conditions dialogue with Haas' (1992) concept of epistemic communities or, in some cases, with *defence coalition communities*¹ and *public policy instrument advocacy groups*.²

In this article, we operate with the concept of a disciplinary community as a professional community, where school subjects are treated as inventions with traditions. In other words, from a historical perspective.

Also supported by Goodson, Abreu (2012) shows how the life stories of the professionals involved influence processes of change in the curricular field. According to the author, the legitimacy of the Chemistry discipline as a cultural product occurs from the 'discourses, values, norms, symbols, traditions of the teaching field' (p. 32). The concept of disciplinary community supported by Goodson is a concept that considers not only the structure but the agency of professionals and the refraction of policies imposed throughout the process. On the contrary, rhetorical approaches usually focus their studies on the discourses circulating in systemic narratives, disregarding the micronarratives that make up these particular forms of professional communities.

Waiandt and Fischer (2013), when discussing the teaching of organisational studies in administration, emphasise that disciplinary communities seek self-affirmation not only in ideas but also in resources and material conditions to support the views their members share about the disciplines. They defend, just as Ferreira and Moreira (2001), based on Goodson, that disciplinary communities be analysed in perspectives that consider both external factors, such as educational policies and socioeconomic contexts, and internal factors related to working conditions, such as the emergence of leaders, prestigious academic centres, and professional associations. In this way, we reiterate that the works supported by the disciplinary community concept proposed by Goodson consider not only the past that sustains the traditions of the disciplines but also the struggles faced by professionals in the present time.

Silva and Valente (2022) investigated from this perspective, therefore, the importance of academic prestige, explicitly examining the pivotal role played by Prof. Milton Rodrigues³ In elevating the status of statistics to that of an academic discipline, thereby conferring proper specialised knowledge with a distinct corpus, overcoming the idea of a mere methodology or tool. They emphasise all the dynamics involving associated advantages, such as salary increases and better career prospects, as well as the fact that these conditions are beside disputes and conflicts, which is consistent with another fundamental argument by Goodson (2001): 'Disciplines are not monolithic entities but rather fluctuating amalgams of subgroups and traditions that, through contestation and compromise, influence the course of change'.

Tavano and Almeida (2018) state the coexistence of disciplinary and epistemic communities, differentiating them mainly from the power of influence that curricular changes and resource allocation exert on the former, leading to the emergence of identity patterns. In this work, the importance given to disciplinary traditions is evident, proposed by Hobsbawm (1994) and incorporated by Goodson. Despite the search for cohesion and stability, there are divergences, as the

groups comprising these communities operate with their agendas. The existence of an academic component corresponding to that of school discipline favours the strengthening of the community, as it leads, in a way, to a convergence of these agendas from establishing these traditions.

The authors underline that epistemic communities bring together members to influence curricular policies, drawing upon the prestige and legitimacy of the established knowledge held by disciplinary community members to exert their influence. Moreover, they conceive epistemic communities to have a more ephemeral character than disciplinary ones, given the rapid obsolescence of knowledge in current times, inserted in more ambivalent and inconstant discursive formations. Assuming these positions, the *rhetorical* concept of a disciplinary community again presents more approximations to the concept of epistemic community than to the *disciplinary* community itself.

Based on empirical data gathered through semi-structured interviews, [Vilela and Da Silva \(2021\)](#) argue that Sociology's disciplinary community is in motion, demonstrating how professional life narratives interacted with curricular changes, which made Sociology a mandatory subject in Rio de Janeiro schools in 2008. Nonetheless, the narratives reveal the duality of the process, which reinforced the disciplinary community of Sociology but subjected teachers to more precarious working conditions, given the increase in external control. The authors also analyse how exchange relationships between Sociology and Philosophy communities foster the growth of both communities. This finding aligns with developing an epistemic community among disciplinary members, as discussed by [Tavano and Almeida \(2018\)](#).

[Ralejo et al. \(2021\)](#) discuss how the National⁴s can exert changes, regardless of its acceptance or not, in the disciplinary communities of History. Regarding the production conditions of the act, they discuss the debate between the school disciplinary community of History and historians, focussing on the disputes within the community about which knowledge is legitimate in the curriculum. Although they identified a tendency to preserve curricular contents in a Eurocentric perspective, they point to the emergence of a 'historical attitude' in the final document, focussed on processes of identification, comparison, contextualisation, interpretation, and analysis of historical sources. The authors conclude that monitoring how the disciplinary community of History will relate to such a perspective over the next few years will be necessary.

Aligned with previous works that examine external influences on disciplinary communities, [Goodson \(2019\)](#) discusses how the power of teachers regarding curricular restructuring lost momentum after the 1970s, particularly after the 'triumph of Western corporatism in 1989' (p. 34). Goodson proposes a modification to his discussions about the sequence of invention, promotion, legislation and mythologisation involved in the history of school subjects, with invention migrating from the teacher's perspective to formulation of change by external agents and mythologisation becoming a process of institutionalisation of that change. Again, it is crucial to understand broader contexts and to situate them in historical periodisation.

Analysing how professionals organise and mobilise themselves more resistively or purposefully can reveal who controls or seeks to control curricula. Understanding power relations involves analysing how subjects position, organise or isolate themselves. [Kan et al. \(2007\)](#) reveal how the teaching of Chinese history in the province of Hong Kong was influenced by the relationship between the corresponding disciplinary community and the surrounding colonialism, limiting the extent of the current administrative power over the curriculum, unlike what occurred with other disciplines, which did not have specific communities established.

[Jephcote and Davies \(2007\)](#) argue that school subject studies participate in historical curriculum studies. When investigating the teaching of economics in British schools, they discuss the development of disciplinary communities, showing how socialisation processes within these collectives underlie the tendencies of loyalty to the discipline, self-perpetuating and strengthening

identities, especially when there is a need to defend careers. They emphasise, supported by the theories of Stephen J. Ball and Basil Bernstein, that the State needs to be more robust to institutionalise the proposed changes. They argue that the nature of the disciplines reveals the existence of ‘academic tribes’, which have their language and culture, in addition to establishing borders in defence of possible invaders. This analysis dialogues with the idea of curriculum allotment and the concept of curriculum diaspora, related to the challenges faced by specialist professors who assume interdisciplinary perspectives of teaching activity, as [Petrucci-Rosa \(2018\)](#) discussed.

In the next section, we will explore narrative portraits of specialist teachers to express teacher agency. These teachers are members of Biology, Physics and Chemistry disciplinary communities, which have traditions and whose socialisation processes underlie their loyalty to the discipline. This section has highlighted the importance of understanding power relations and external influences on disciplinary communities and the challenges faced by specialist professors who assume interdisciplinary perspectives in their teaching activities. These themes are relevant to our discussion of professional life narratives as they shed light on the complex dynamics involved in the development of teacher agency and how disciplinary communities shape it.

Life narratives – an expression of teaching agency in the constitution of disciplinary communities

[Lindblad and Goodson \(2011\)](#) proposed that, when examining curricular studies from a historical perspective, two types of narratives are prominent in the empirical field: systemic macro-narratives and micro-narratives in the form of professional life stories. By drawing on this framework, we can begin by exploring the systemic narratives that underlie the National Curricular Basis and compare them to those that emerge from the subject-specialised Natural Science teachers.

Based on Goodson’s premise, we aimed to include specialist teachers with varying experience levels in our study, all of whom had been teaching for at least 5 years. In addition, we conducted unstructured interviews with five teachers, including two biology teachers, one physics teacher, and two chemistry teachers, inviting them to share their life stories as educators.

The adopted methodology considers narrative as an analytical tool since it is not an investigation of teachers’ conceptions of specialised teaching or their opinions on the National Curriculum Basis, but rather a biographical perspective where life stories situated in broader contexts, such as historical periodisation and sociocultural dimensions, make it possible to transform stories into life stories, and policies of life. In addition, the authors selected teachers for interviews based on their professional career, that is, only teachers trained in Biology, Physics or Chemistry who have taught or currently teach these subjects in high school.

Following the premise of [Goodson \(2019\)](#), social space and time contextualise narratives as teachers have unique life experiences and teaching backgrounds characterised by periods discerned through the analysis of historical documents and personal histories. From this approach, a teacher with 30 years of experience brings different insights than a teacher with just over 5 years in his career. This methodological decision is due to the number of years of experience and the specific elements that characterised the historical teaching practice period.

The teachers told their life stories as educators in their licensed subjects, their teaching experiences, and their interactions with teachers of other disciplines corresponding to the Natural Sciences area.

In order to present teachers’ narratives, a methodological tool inspired by Walter Benjamin’s concepts ([Petrucci-Rosa, 2017](#); [Petrucci-Rosa, 2011](#)) provide a meaningful way to scrutinise these

data. From this approach, narrative pieces (named monads) provide portraits from the histories heard during the interviews. This process is more than just segmenting the narrative into fragments, as Goodson (2019) notes, as that would only select stories. The selected narratives are not explanations or opinions but remembrances reinterpreted during the narration and contextualisation by the researcher. The focus is on capturing the experience rather than the story's individuality, so each monad is given a title. The narrative portrait collects monads from a unique narrator as a collection of narrative fragments that reunited show a memoiristic landscape.

We will present here some selected monads from several experienced teachers: Sofia, a Biology teacher with 41 years of experience; Maria, a Chemistry teacher with 27 years of experience; Ana, a Biology teacher with 13 years of experience; Liz, a Chemistry teacher with 13 years of experience, and João, a younger Physics teacher with 7 years of experience.

Narrative portrait of Ana, a biology teacher with 13 years of teaching experience

Disputes. Among biologists, it is easier to work collaboratively. Science⁵ My colleague and I, a biologist, always talk and want to work joining the high school Biology teacher, even though we work in different buildings. The Physics teacher looks like the biggest blockage. If I ask him something, he visualises the answer mathematically, which is different from my thinking. It is more challenging to make this approximation. Moreover, what about when someone uses the expression 'how do you not know that? It is even scary to ask something because he looks to me like: "This is obvious, and you should not be asking!"'. There is a greater approximation with Chemistry teachers, but it also depends. With one teacher, I used to converse very openly so we could plan together. However, I saw problems experienced by my colleagues in a shared class between the Biology teacher and the Chemistry teacher. While the biologist explained cellular respiration, the chemist retorted with specific points. A clash occurred in understanding the same process within the same class. Sometimes you end up having this dispute overpower knowledge.

Even in science, I dedicate myself to biology. I realise that even in Science, I emphasise the contents related to Biology because that is where I feel safe. If we are going to do a project, I usually choose one that addresses biology topics and not a physics or chemistry project. Even when initially, it was not the proposal, as the 'Acids in Nature' project. As time passed, the project focused more on studying soil and bacteria. I work with storytelling and characters. I remember that in our story, the brothers Hansel and Gretel had gone out to dive and found corroded shells. Of course, we were working on the Chemistry of pH, but with a backstory of Biology. When working with mineral salts, we analysed how plant nutrients affected growth. We had a plant growth simulator, where we offered various mineral salts. Although we analysed the chemical function of salts, the focus was biological. It is where I felt safe.

Sofia's narrative portrait, biology teacher for 41 years

Solid base. I graduated as a biologist in 1975 at the University of São Paulo. At that time, studying genetics was something more associated with bees, with the Dobzhansky studies.⁶ Some teachers at that time studied in other schools here in the region and did not even study genetics in the course. I had these incipient genetics because it was the genetics you could see at the time, from crossings, from drosophila. Even so, as a Biology teacher, it was what I most enjoyed working with students! Reading the published texts and articles, I could work with them on more advanced genetics, which I didn't have. What is essential is the existence of a solid foundation. You can go further with

well-defined basic concepts based on specific training at a good college. There are changes every day, but the basics remain. Many times a student asked me about the news that had been broadcast on television, and I was able to explain because I had the basis. I was able to develop this reasoning on that basis. A generalist professional will not make it. Without solid foundations, they may not perceive the implicit or false absurdities in a news item. When a student was going to take ENEM⁷ or vestibular⁸ they found it much easier because I didn't get stuck in textbooks; I went further. How did I manage, even though I graduated so long ago? Because I have a rock-solid foundation.

The Higgs boson. A student was interested in a report by Fapesp⁹ magazine about the *Higgs boson*,¹⁰ but I had no basis for talking to him on that topic. I couldn't extrapolate. This subject was very advanced, but I didn't want to discourage him. I could even say something wrong, and no one would know, but that would be bad for the boy's learning. It is challenging to construct or, in this case, deconstruct correct concepts from the wrong ones. So, I guided him to search for a Physics teacher with the basis I lacked. Despite the complexity of the topic, with little explanation from the teacher, the boy managed to present the report to the class. This situation demonstrates the importance of having specialist teachers.

João's narrative portrait, physics teacher for 7 years

Physics is great! Natural Science teachers look at phenomena differently, always from other angles. It is an investigative profile of curiosity. Physicists are even more eccentric; not only do we look at Science differently, but we also look for patterns. Physicists have a mastery of mathematics that biologists and chemists may not have, although we cannot generalise. This tool is fantastic! Those in the domain of mathematics have great power to solve numerous problems. I hope mathematicians are not offended, but I see physicists as different. Physics is great! Biologists are differentiated in the way they think about nature and life, and chemists are differentiated in how they analyse matter transformations. We are all different, each with a specific look! We are all on the same level, each with a different look. Physics is not the best Science; maybe I am sure about it. I am just kidding.

Physics for life. Our daily life has physics. I like to cook. The student who also likes it and knows a little physics makes fewer mistakes, as there are materials that transmit heat better. They will not cook with a metal fork. They will use a spoon made of a non-conductive material. Our cars have a whole system of movement, and the student who knows a little physics knows basic principles so as not to make mistakes. When changing the car's tyre, if they cannot turn the wheel bolt to remove it, they will know how to use a simple lever, generating more torque, if they have a long arm. Teaching physics is training for life so students avoid making grotesque mistakes. In addition, there is the vestibular exam. The curriculum looks the same in higher education. I started to discuss waves with high school second-year students. I brought two texts, one talking about the importance of protecting ourselves from ultraviolet radiation concerning cancer and another about the impacts of noise pollution on our health. I worked on texts that transcend physics to enable this new look at mechanical and electromagnetic waves. I bring this information, something that is everyday knowledge, to life.

Maria's narrative portrait, a chemistry teacher for 27 years

Who is good at Chemistry, is good at everything. I used to joke a lot with my students, talking about a Chemistry teacher I had in my college days who said: who knows Chemistry is good at everything. I always said this to students: Are you good at chemistry? So, you are good at everything! This speech occurred because I wanted to bring the student to my side, and I noticed that the Biology teacher had an easier time making this move. Because Biology is life, you have it all there, don't you?

Biology is very different. I think the Biology teacher interacts more with the student. I saw this when I was teaching Science. Physics and Chemistry teachers are most proud of their subjects. I saw the Biology teacher with more resources to bring the content closer to the student. I do not know anything about biology. I taught Science, but I was too distant from biology. When I took a course at the university, a professor started to argue about the cardiorespiratory system. I was speechless. I did not know how to talk like that, and it was a high school Biology class. I need that resourcefulness. Physics and chemistry are relatively close, including mathematics, but biology? It is very different. You can try to deceive the student, I know professors who pretend to know, but students find out.

Narrative portrait of Liz, a chemistry teacher for 13 years

Can babies use fluoride? I worked with the students on drugs because we studied organic functions. If I had only worked on pure chemistry without bringing it into everyday life, I would not have had the opportunity to reach them as I did in that case. Some had never spoken to me but felt free to share personal experiences. At another time, we were studying concentration and parts per million, and instead of simply passing on the content, I suggested that they research the topic more freely. They brought up situations that surprised me, such as environmental problems. Seeing them speak with authority about their oral health was incredible. Before, they did not relate concentration to toothpaste. I remember them asking at the beginning: Teacher, why does toothpaste have fluoride? Can babies use fluoride or not? Games also attract them. Anyway, works that bring more everyday issues have always been of great value to me. I learned, and I am shocked by the positions with their talks. In another year, I allowed for a free choice presentation, and one of the groups made a song. I had no idea they were so creative. We often do not explore these facets; we get stuck in certain patterns. So when we allow them to propose activities instead of just following specifications, they surprise us.

No time for exchanges. Chemistry and Biology teachers are closer to each other than Chemistry and Physics teachers. There is much more exchange of information and even openness to dialogue. Physicists are more in their 'small world'. Because of this, it is much easier to relate content between chemistry and biology. This exchange is a challenge for physics teachers. It was not an isolated case. I worked in many schools, and I always had this feeling. Although I studied Physics as an undergraduate and did not take Biology, I feel more comfortable doing integrated work with a biologist than a physicist. I do not know if it is due to lack of time for the conversation because even the integrations between chemistry and biology teachers, in my case, occur in hallway conversations; *WhatsApp*,¹¹ or through a blackboard from the previous class with related content. There is no specific time to bring together the teachers of the three components. I have already worked with a Physics teacher who is more dynamic and open to conversations, but even so, the identification is greater with Biology teachers.

This section explored the different disciplinary traditions and identities in the teachers' narrative portraits, highlighting how their experiences and perspectives shape their teaching practices. Now, we can explore how these individual narratives relate to the larger systemic narratives in the national curriculum. Specifically, we can look at possible articulations between the narrative portraits and the national curriculum, representing a broader understanding of what should be taught and learned in schools. Finally, by examining these possible connections, we can better understand how individual teachers' agencies and disciplinary traditions interact with larger educational frameworks.

Disciplinary communities and their traditions

Goodson (2001) highlights the process of emergence and stabilisation of disciplines in search of legitimacy and the status conferred by their academic counterparts. The disciplines with an equivalent university degree strengthen because they have access to new professionals and conditions to fight behind the scenes. When analysing the disciplines of Geography and Biology, based on Hobsbawm's concept of invented tradition, Goodson discussed how utilitarianism relates to the process of emergence and academicism to stabilisation. The monads presented in the previous section allow some conjectures about this process. Thus, the teachers' life histories provide insights into the emergence and stabilisation of disciplinary communities, shedding light on the relationship between utilitarianism and academicism in this process.

Sofia, from the *Solid Base* monad, places great importance on achieving excellence in higher education. Despite graduating many years ago, she demonstrates that she has been able to stay current with contemporary research due to her specific academic theoretical background. This academic tradition is also evident in reports associated with evaluations, such as when João shares his experience in the *Physics for Life* monad. The narratives from teachers working in high schools revealed a specific validation of their subjects via the *vestibular*, where more prestigious or difficult subjects may receive more classes depending on material conditions and the interests of schools, particularly in the private network. Throughout these narratives, the specific knowledge of Biology, Physics, and Chemistry consistently emerged, consistent with the specific knowledge expected of members of a disciplinary community.

Physics teacher João and Chemistry teacher Liz highlight the utilitarian and pedagogical traditions in the monads *Physics for Life* and *Can babies use fluoride?* Typically, the utilitarian tradition is associated with everyday life, common sense and *context-dependent knowledge*, concepts discussed by Michael Young (2007). As already highlighted, this tradition is usually associated with the emergence of new disciplines, but even in mythologised disciplines, it assumes a central role for many teachers. In both monads, teachers are concerned about attracting students' attention. There are also intentions of extrapolating everyday situations to larger generalising contexts.

On the other hand, the low status given to practical knowledge can be inferred from how João points out scientific knowledge as a way of preventing errors, which is considered characteristic of common sense. The narratives reveal that teachers agree that studying from a palpable, observable, but reflective perspective is essential regardless of the specific discipline. This apparent contradiction may represent how utilitarianism tends to 'downgrade' the status of a school subject. The search for academic acceptance strengthens the discipline and, therefore, the professional community to which it belongs.

The experienced narrators, who have many years of teaching experience and have already retired, discussed problems related to the need for more time to develop specific disciplinary content. At the same time, other teachers shared memories of situations of disrespect in the classroom and

discrediting of their careers. Younger teachers also explained how their methodological strategies changed over time, usually focussing more on everyday aspects rather than teaching linked to a certain academicism that they associated with the beginning of their careers. These narratives demonstrate the functioning of the pedagogical tradition in the practices and ideas of these disciplinary communities.

Furthermore, it was also possible to deepen analyses of the specificities of the disciplinary communities investigated, seeking which identities emerge in the face of specialised disciplinary teaching and which are shared between different groups. The following section will continue this discussion on how the subject communities feed and reinforce their traditions.

Communities and their narrative capitals

Other concepts discussed by [Goodson and Petrucci-Rosa \(2020\)](#) that deal with this issue are tribal learning and narrative capital. Tribal learning refers to how we conceive our reality before being exposed to formal schooling processes, more evident in the case of indigenous and aboriginal populations but present in a certain way in all communities, even urban ones. Narrative capital complements Pierre Bourdieu's social, cultural and symbolic capital ideas, representing how our life stories provide a spectrum of resources for dealing with change and conflict.

Disciplinary communities are heterogeneous and composed of teachers with their own tribal learning and narrative capitals ([Goodson and Petrucci-Rosa, 2020](#)) before being introduced to the traditions that surround such professional collectives. What makes a person choose to teach associated with Science? The monads *Physics is great* and *Who is good at Chemistry is good at everything*, bring up this question. It leads us to consider the possibility of an epistemic community for science education that encompasses the disciplinary communities of Biology, Physics, and Chemistry.

The monad 'Even in Science, I dedicate myself to Biology' reveals how a teacher, who teaches an interdisciplinary subject, brings a narrative capital from their community to their teaching, which provides a specific lens for understanding natural phenomena. Similarly, the monad '*Physics is great*' reflects the commonalities and differences among the Biology, Physics and Chemistry community members. While highlighting an investigative and curious profile associated with science teaching, this monad also underscores the boundaries and subdivisions within each community.

Specialisation is the mark of the community, in this case, and is treated with pride throughout the narratives, even when it generates a problem, as in the case of the monad, *The Higgs boson*. The *Solid Base* in biological knowledge needed to be more solid in physical knowledge. These monads reveal, however, respect between communities, pointing to conceptions favourable to the exchange of knowledge as opposed to an identity that 'takes care of everything'. Disciplinary communities feed the narrative capital of their members, who come to share traditions and problem-solving strategies.

The boundary of language adopted within and between communities is striking in the monad *Disputes*. Although she does not teach Biology, the teacher who narrates her belonging to the Biology community highlights more excellent proximity to colleagues with the same training and sees in the mathematical narrative capital of physicists a barrier in the crossing of borders. The monads *Biology is very different*, and *No Time for Exchanges* show how the perceptions of approximation and distance between communities are relative and heterogeneous, bringing to light the tribal learning of the members.

Unlike Liz, who has a degree in Chemistry, Maria graduated as a chemical engineer and taught Chemistry, Physics and Mathematics at the beginning of her career. However, throughout the interview, she clarified her preference for teaching Chemistry. This teacher brought the community a way of seeing Chemistry teaching as more connected to the mathematical language. The other teacher had a very different experience, bringing teaching in Chemistry that dialogues with the traditions shared by the most experienced teacher but with another narrative capital.

The monad *There is no time for exchanges* instigates reflections on the systemic narrative propositions that prioritise efficiency over collaboration. For example, teaching Natural Sciences in high school requires that disciplinary communities can share their narrative capitals and tribal, non-disciplinary knowledge, which can reveal commonalities and approximations. However, as discussed by the narrator, there are no necessary material conditions in a proper way that allows crossing borders.

Conclusions

Curriculum investigations that focus on the history of school subjects make it possible to explore past decisions and events that today sustain their traditions. However, given this perspective, there is no way to disassociate discipline and disciplinary teachers, giving the life narratives of these professionals an importance equivalent to those highlighted in historical documents and texts.

The article's central question is, *Who controls the curriculum?* is not quickly answered due to multiple controls and tensions between those in power; however, how individuals organise themselves reveals important agencies and trends. Neoliberalism has led to an accentuated struggle for curriculum control in many countries, with the National Curricular Basis serving as an example of a document embodying a systemic narrative that sells innovation and equality while delivering mediocrity and social injustice. [Biesta et al. \(2022\)](#) discuss the impact of liberal capitalism on public education, highlighting the Global Education Reform Movement (GERM) as a failed regime of truth that operates as a global orthodoxy in education policy. The GERM is composed of neoliberal policy dictates and a narrow version of educational Science framed as 'what works', disqualifying essential knowledge such as qualitative studies and the practical wisdom of teachers, according to Hattam and other authors.

Juxtaposing macro and micronarratives, we can address the importance of the teacher's agency in this dispute about curricular practice over prediction. Regarding the polysemy of the concepts of epistemic and disciplinary communities, it is essential to assume a theoretical position that considers broader contexts. It makes it possible to face the imposed prescriptions and not just acceptance. A disciplinary community represents much more than being graduated in an area of knowledge; it reveals ways of producing historically constructed knowledge through the emergence and stabilisation of school subjects that represent them professionally.

[Marek \(2021\)](#) suggests that we must find new stories, narratives, and ideas to move forward in education, as the current narrative is reactive and passive. Discuss how the pandemic times has allowed us to rethink our educational policies and systems and how we need to engage with our society, educational system, leaders, children, and families to reach a better educational future, encouraging us to engage in future studies thinking in our curriculum and pedagogies to reach the educational future we desire.

The monads presented in this article invite us to reflect on the positive impacts of methodologies that, in curriculum studies, are supported by perspectives centred on the primary agents of the process: teachers. Analyses centred on documents and circulating discourses can ignore not only points of tension but mainly those of resistance to the prescription being promoted. Life stories must

be contextualised in larger spectrums, dialogue with historical periods, and be conceptually grounded. Finally, the concepts of utilitarian, pedagogical and academic tradition broaden our perceptions about monads and that monads enhance the concepts of a disciplinary and epistemic community.

Papastephanou et al. (2020) invite us to think in educational research as a promoter of a new philosophy of education focused on pedagogy for justice. This new philosophy can be a tool for teaching and learning, as well as for inquiry and opposition to the currently dominant neoliberal program in education, exploring how global waves of high-profile protests worldwide call for a rethinking of ethical–political education. The authors argue that the philosophy of education should be both a practical tool for teaching and learning and a tool of inquiry for addressing educational policies and practices at a theoretical level, emphasising the importance of engaging with the public. In our work, the public is represented by specialised teachers who face a powerful movement against their academic formations and individual narratives in Brazil.

The perspective here defended recognises the subjectivities of the process and its structure. The current systemic narrative reveals a prioritisation of general education, based on competencies and skills, with a growing devaluation of specialised knowledge. The teaching identity of disciplinary teachers in high school has been attacked. It is expected that teachers belong to multiple communities, but unfortunately, there is a risk that, in this way, they will not feel that they belong to anyone. However, this does not represent the end-of-school subjects.

The communities of the Biology, Physics and Chemistry disciplines have clear boundaries, although there is room for crossing borders. One can think of the organisation of an epistemic community that gathers members from the three disciplinary communities as a form of resistance. Therefore, teachers can live together and share their narrative capitals, tribal learning and, at the end of the day, their life stories. Research on the curricular field that provides opportunities for sharing the narrative capital of these professionals and their communities can contribute to strengthening teaching identities and the confrontation of imposing policies generally unlinked to social justice. The life narratives of disciplinary teachers, as their stories reveal the importance of disciplinary communities in the emergence and stabilisation of school subjects.

Epistemic communities organised by the three subject communities may interlace their ideals related to the importance of Science teaching in these times of denialism to counterattack the individualised and compartmentalised ways promoted by neoliberalism. We believe in crossing borders as long the identities and live policies are respected and regarded. We hope that teachers and students may address their own lives as a purpose to regain control of the school and society.

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Notes

1. Defence coalition communities are groups formed by actors who aim to protect their interests and resources from external threats or challenges.
2. Public policy instrument advocacy groups advocate for implementing specific policy instruments, such as laws or regulations, to address societal issues or problems.
3. Prof. Milton Rodrigues was a professor of Educational Statistics at the College of Philosophy, Sciences and Languages of the University of São Paulo in the 1940s.
4. National Curriculum Basis.
5. Elementary school has no differentiation between Biology, Chemistry and Physics subjects. This distinction works in high school. When teachers refer to themselves as ‘Science teachers’, they refer to this generalist subject.
6. Theodosius Hryhorovych Dobzhansky – geneticist and evolutionary biologist.
7. The National High School Assessment is a standardised test for high school students in Brazil. It aims to evaluate their knowledge and skills in different areas, such as language, math, sciences, and humanities. The test is one of the requirements for admission to public universities in Brazil or financial support in private faculties. This assessment is acknowledged for its relevance and high competitiveness, as many students compete for limited spots in the most prestigious institutions.
8. ‘Vestibular’ is a term used in Brazil’s educational system to refer to the entrance exam taken by students seeking admission to some universities, in addition to ENEM, as explained above.
9. FAPESP (São Paulo Research Foundation) is a public foundation in São Paulo, Brazil that funds research projects and scholarships in various fields.
10. Higgs boson – elementary bosonic particle, predicted by physicist Peter Higgs.
11. WhatsApp – is an instant communication app that operates through written, oral and visual messages.

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