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ARTICLE

Disciplinary integration in the students' conception of integrated high school

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ABSTRACT

Integrated High School has three basic concepts: inseparability between basic and professional education, integral human formation and integration of general and specific knowledge in the perspective of the social totality, allowing the student to understand that the different fields of knowledge are not independent. This research aimed to analyze the students' conceptions regarding the integration of the History and Food Conservation disciplines present in the curriculum of the Integrated Technical Course in Food, at Federal Institute of Mato Grosso do Sul (*Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso do Sul*). For the planning of the classes, the methodology of the Pedagogical Moments of Historical-Critical Pedagogy was used and the conceptions of 40 students were assessed using an open questionnaire. 30 students evaluated the proposal positively, 37 reported that it contributed to their learning, 28 said that it facilitated understanding and 37 would like it to be replicated in other disciplines.

KEYWORDS

professional and technological education; high school; federal institutes; pedagogical practices; historical-critical pedagogy.

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A INTEGRAÇÃO DISCIPLINAR NA CONCEPÇÃO DOS DISCENTES DO ENSINO MÉDIO INTEGRADO

RESUMO

O ensino médio integrado possui três conceitos basilares: indissociabilidade entre educação básica e profissional, formação humana integral e integração de conhecimentos gerais e específicos na perspectiva da totalidade social, permitindo ao discente compreender que os diferentes campos do saber não são independentes. A presente pesquisa teve como objetivo analisar as concepções dos discentes em relação à integração das disciplinas de história e conservação de alimentos presentes no currículo do curso técnico integrado em Alimentos do Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso do Sul. Para o planejamento das aulas, foi utilizada a metodologia dos momentos pedagógicos da pedagogia histórico-crítica, e as concepções de 40 discentes foram avaliadas por meio de questionário aberto. Do total, 30 discentes avaliaram positivamente a proposta, 37 relataram que ela contribuiu para sua aprendizagem, 28 disseram que facilitou o entendimento e 37 gostariam que fosse replicada em outras disciplinas.

PALAVRAS-CHAVE

educação profissional e tecnológica; ensino médio; institutos federais; práticas pedagógicas; pedagogia histórico-crítica.

LA INTEGRACIÓN DISCIPLINAR EN LA CONCEPCIÓN DE LOS DISCENTES DE LA ENSEÑANZA SECUNDARIA INTEGRADA

RESUMEN

La Enseñanza Secundaria Integrada posee tres conceptos básicos: indisociabilidad entre educación básica y profesional, formación humana integral e integración de conocimientos generales y específicos desde la perspectiva de la totalidad social, permitiendo al discente comprender que los diferentes campos del saber no son independientes. La presente pesquisa tuvo como objetivo examinar las concepciones de los discentes en relación a la integración de las disciplinas de Historia y Conservación de Alimentos presentes en el currículo del Curso Técnico Integrado en Alimentos del Instituto Federal de Educación, Ciencia y Tecnologia de Mato Grosso do Sul (*Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso do Sul*). Para la planificación de las clases fue utilizada la metodología de los Momentos Pedagógicos de la Pedagogía Histórico-Crítica y se evaluaron las concepciones de 40 estudiantes mediante un cuestionario abierto. 30 estudiantes evaluaron positivamente la propuesta, 37 informaron que contribuyó a su aprendizaje, 28 dijeron que facilitó la comprensión y 37 quisieran que se replicara en otras disciplinas.

PALABRAS CLAVE

educación profesional y tecnológica; enseñanza secundaria; institutos federales; prácticas pedagógicas; pedagogía histórico-crítica.

INTRODUCTION

Education in Brazil has historically been characterized by duality, marked by the separation between propaedeutic education for the dominant class and professional training for the less fortunate (Ramos, 2014). In high school, the duality is more evident, when verifying that the education provided to the working class had an operational and technical character and, in contrast, scientific and cultural knowledge was directed to the elite (Frigotto, Ciavatta and Ramos, 2005; Moura, 2007; Lopes, Bortoloto and Almeida, 2016).

Thus, in the search for a qualitative evolution of basic education in Brazil, which would overcome the dual model, the implementation of polytechnics was conducted in a universal and unitary way. However, due to the characteristics of Brazilian society, including the extreme social and economic inequality, among several aspects, led to the understanding that a transitory solution should be applied, and a viable solution is a type of secondary education that guarantees the integrality of basic education (Moura, 2007).

Integrated High School (IHS) proposes professional training articulated with basic training, from the perspective of polytechnics, with work as an educational principle and its curricular organization based on the integration between science, technology and culture, and the oriented teaching-learning process by the inseparability of theory and practice, interdisciplinarity and contextualization (Brasil, 2012). Therefore, integrated teaching requires integrative and interdisciplinary pedagogical practices, in contrast to the fragmented conceptions of knowledge (Ramos, 2008).

The fragmentation of school knowledge translates into the separation between subjects, in which their contents are often worked in a decontextualized and disconnected way, generating great consequences for school education. With this, there is a loss of the meaning of learning, manifested by the rejection that many students express for certain subjects, often causing difficulties in establishing relationships between different areas of knowledge (Gerhard and Rocha Filho, 2012).

In this sense, the integration between subjects allows re-establishing these relationships, by enabling the student to understand that the different areas of knowledge are not isolated and providing a broad and less segmented view of reality (Andrade *et al*., 2015). This perspective seeks to break with the merely technicist and utilitarian approach to content, considering that human activities have a historical and broader origin, involving economic, social, scientific and cultural aspects (Pacheco, 2012).

In the set of subjects that make up the IHS curriculum, the History curricular unit constitutes a set of knowledge that, integrated to the subjects of professional training, are capable of providing a more complete reading of reality, contributing to the integral formation of students. By historicizing the different techniques and technologies used by men, it is possible to understand the great capacity of human beings to evolve and develop knowledge (Ramos, 2008).

Allied to this, according to Fábio Pestana Ramos (2010), working on themes related to food in History classes, making thematic cuts applied to its object of study,

allow making its contents closer to the student reality, helping them to understand the relationships between the past and contemporaneity.

In this perspective, the aim of this study was to analyze the conceptions of students from two classes of the 4th semester of the Integrated Technical Course in Food, at the Federal Institute of Mato Grosso do Sul (*Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso do Sul* – IFMS), Coxim *campus*, in relation to the application of integrated classes between the subjects of History 2 and Food Preservation.

INTEGRATED HIGH SCHOOL AND INTEGRATION AS A PEDAGOGICAL PRACTICE

According to Ciavatta (2005), in the context of education, integrating has the sense of completeness, of understanding the parts as a whole, conceiving teaching as a practice mediated by social and historical processes. The idea of an integrated training aims to break with the division historically constituted between manual work and intellectual work and the reduction of technical knowledge to its operational aspects demanded by the labor market, according to the technicist model.

The first initiatives to propose IHS in Brazil have as their historical context the discussions for the elaboration of the Law of Guidelines and Bases of Education, in the 1980s, in which Brazilian educators were committed to offering an alternative that would overcome the educational duality that prevailed until that moment, while meeting the aspirations of the working classes (Ramos, 2017).

In a society of peripheral capitalism, whose conditions lead young people from the working classes to enter the labor market early, education should enable the student to acquire training for the exercise of a profession, without, however, giving up general training, which would allow the elevation of the intellectual level (Moura, Lima Filho and Silva, 2015).

Thus, the IHS proposal meant the answer to these needs, as it brings professional education articulated to high school, that is, in its curriculum both technical and basic subjects are established, joining the scientific, technological and cultural knowledge, with a view to apprehending and transforming social reality (Regattieri and Castro, 2010).

This proposal brought work as an educational principle, with the role of high school being to resume the relationship between the production of knowledge and the practice of work, demonstrating how the sciences are inscribed in production processes. In addition, it is linked to the concept of Polytechnics, fundamental to IHS, which, unlike the semantic meaning of the word, means "specialization as a domain of the scientific foundations of the different techniques used in modern production" (Saviani, 2007, p. 161), therefore, Polytechnic education is not simply the learning of various techniques, but the appropriation of different scientific knowledge that support the various techniques present in the productive processes of our society.

A unitary education was also defended, in opposition to the dual model, which separated training for work for the masses and propaedeutic education for the elite, in the sense of omnilaterality, that is, of integral human training, capable of developing individuals in all potential regarding physical, mental, cultural, scientific and technological aspects (Ciavatta, 2005).

Its origin is in socialist education, mainly in the Gramscian unitary school and in the polytechnic education of Marx and Engels, but it is not the same formation, since for these thinkers a truly unitary and polytechnic education could only be developed from the overcoming of the capitalist mode of production. However, IHS uses its bases, which will enable its development (Moura, 2013).

Ramos (2017) formulated the "meanings of integration", conceptualizing it in:

- philosophical: it is in the understanding of the human being and society, as historical-social processes, with the role of production being to lead the individual to apprehend, criticize and transform;
- political: resides in the inseparability between Professional and Basic Education, understanding that professionals cannot be trained just to reproduce technical procedures, but it is necessary that they dominate the scientific foundations that support modern production processes;
- epistemological: it is based on the idea that reality is a dialectical totality mediated by processes, thus knowledge must be taught, both in its original scientific field and as part of a system of relationships that express the social whole;
- pedagogical: concerns the ways to select, organize and teach the contents. Its curriculum must be organized in an integrated way from the problematization of productive processes in historical, social, economic, cultural, technological dimensions, etc., inserted in their respective areas of knowledge, using interdisciplinarity for the integration between different types of knowledge.

Therefore, IHS is configured not only as a form of educational provision, but as a transforming ethical-political position, committed to comprehensive training and the emancipation of human beings, "who are not satisfied with socialization fragments of systematized culture, which include the right of everyone to access a training process, including school, that promotes the development of their broad physical and intellectual faculties" (Araújo *et al.*, 2015, p. 62).

As a practice, integration should enable the establishment of relationships between subjects, not as a summation, superposition or subordination of one knowledge to another, but from the perspective of totality, enabling the understanding of reality beyond its phenomenal occurrence. Thus, teaching contents are concepts and theories that constitute the synthesis of the historical appropriation of material and social reality by man (Ramos, 2008).

The separation of knowledge into subjects and the lack of articulation regarding school knowledge hinders a broader view of knowledge by students. Consequently, "in general, few students are able to envision something that allows

them to unite or integrate content or work of the different subjects" (Santomé, 1998, p. 25). Thus, "the disciplinary characteristic of the school curriculum ends up harming the students' comprehensive education and scientific knowledge, as it robs them of the really useful results of knowledge, such as the ability to think about a certain problem globally" (Gerhard and Rocha Filho, 2012, p. 127). Thus,

> if the existing reality is an integrated totality, it cannot but be the system of knowledge produced by man from it, in order to act in it and transform it. Such a vision of totality is also expressed in the praxis of teaching and learning. For didactic reasons, what is united is divided and separated. For didactic reasons, it is also possible to seek the recomposition of the whole. (Machado, 2010, p. 81)

Thus, the integration between subjects must be based on the "principle of the interdisciplinary nature of collective pedagogical work." with interdisciplinarity being an action of teachers in terms of a polytechnic and emancipatory education that transforms society, and not as a pedagogical practice that aims only at the relationship between subjects with the juxtaposition of knowledge (Maciel, Jacomeli and Brasileiro, 2017). In this sense:

> Interdisciplinarity, as a method, is the reconstitution of the totality through the relationship between concepts originated from different aspects of reality; that is, from the various fields of science represented in subjects. This aims to enable the understanding of the meaning of the concepts, reasons and methods by which reality can be known and appropriated in its potential for human beings. (Ramos, 2008, p. 22)

Likewise, Lück (1994, p. 64) emphasizes that interdisciplinarity involves integration, in the search for interaction between the subjects of the school curriculum, and these with the social reality, "in order to overcome the fragmentation of teaching, aiming at the integral formation of students, so that they can critically exercise citizenship through a global vision of the world".

However, from the perspective of IHS, the integration between knowledge also requires a change in the attitude of teachers, in which they begin to see their performance not only as teachers of the common core subjects, but also involved in the professional formation of the individual (Ramos, 2008), since the knowledge of general education and professional training must be united, as both originate from the "human social activity of transforming nature and social organization; all of them represent the development of domain and control that human beings have progressively acquired over nature, through their historical praxis" (Machado, 2010, p. 83).

METHODOLOGY

The research was carried out at the IFMS, Coxim *campus*, which began its activities in August 2010, initially offering distance technical courses in partnership

with the Federal Institute of Paraná (*Instituto Federal de Educação, Ciência e Tecnologia do Paraná* – IFPR). In 2011, the first groups of the Integrated Technical Course in Food, Computing and Maintenance and Computing Support began, this one in the vocational education program named PROEJA[1] (IFMS, 2014).

The Coxim *campus* is part of the ten IFMS campuses, created from the enactment of Law 11,892, of December 29, 2008, which established the Federal Network of Science and Technology (*Rede Federal de Educação Profissional, Científica e Tecnológica* – REFECT), with the integration between the Federal Technical School of Mato Grosso do Sul (*Escola Técnica Federal de Mato Grosso do Sul*), located in the municipality of Campo Grande, and the Federal Agrotechnical School of Nova Andradina (Brasil, 2008).

Currently, the IFMS Coxim *campus* offers professional qualification courses, languages, distance education, high school integrated technicians, undergraduate and graduate programs (1 to 5 years) to complete higher education, thus covering an extensive target audience (IFMS, 2021).

Regarding the characteristics of its students, according to the document *IFMS Student Profile – historical series (2017-2019)*, the following is verified: in relation to gender, 57.53% of the students at the Coxim *campus* were male, with regard to color/race, 57.21% declared themselves brown, referring to the age group, 49% students are over 21 years of age and 85.84% had an income of up to 1.5 minimum wage *per capita* (IFMS, 2020).

For the research, a preliminary meeting was held with the manager responsible for the institution to authorize the development of the proposal. At the time, the objectives of the project, the target audience and the activities that comprised it were explained. After authorization, the research was submitted and approved by the Research Ethics Committee of Universidade Anhanguera (UNIDERP), under number CAAE 12461719.0.0000.5161.

The research involved students from classes 2088 A, composed of 26 students, and 2088 B, with 24 enrolled students, both from the 4th semester of the Integrated Technical Course in Food, in the afternoon shift, and the teachers of the curricular units of History 2 and Food Preservation. The choice to work with these groups is due to the fact that they are located in the semester in which the subjects involved in the project are offered, which have great relevance in the production of these individuals.

A meeting was held with teachers of the relevant curricular units, in order to present the research proposal to them and invite them to participate in the study. With the acceptance of the proposal by the teachers, the Consent Documents were made available and signed.

1 Established by Decree no 5,840/2006, the National Program for the Integration of Professional Education with Basic Education in the Youth and Adult Education Modality (*Programa Nacional de Integração da Educação Profissional com a Educação Básica na Modalidade de Educação de Jovens e Adultos* – PROEJA) was created to provide young people and adults with technical professional education at high school level, from which they are generally excluded, including from high school itself (Brasil, 2007).

The research project was also presented and the students of the two chosen classes were invited to apply for the classes, at which time all the steps in which they would participate were explained and the Consent Documents were made available for a declaration of acceptance of the students, as the case may be, and the Consent Documents, for authorization by those responsible for any underage students.

The planning of classes was carried out collectively by the researcher and the teachers of the subjects of Food Preservation and History 2, through study and work meetings that took place between June 6, 2019 and August 2, 2019.

At the first meeting, the research objectives were presented to the teachers by the researcher, at which time the outline of some elements that would make up the planning began. Further on, meetings were held to prepare the planning of the integrated classes.

The contents chosen to be worked on in the classes were selected based on the syllabus of the subjects of History 2 and Food Preservation, which make up the curriculum of the Integrated Technical Course in Food. After analyzing the syllabus, the time of the "European Maritime Expansion" was established as a historical period, making a thematic cut with the issue of "Great Navigations", due to the role that food preservation methods played in this context, allowing navigators to have food available for more time during the long journeys and the great economic interest in spices and products from the Indies, many of them used as preservatives.

The pedagogical procedures were elaborated following the methodology of Pedagogical Moments of Historical-Critical Pedagogy (PHC): initial social practice of the content, problematization, instrumentalization, catharsis and final social practice of the content (Saviani, 2012), using for this purpose the teaching methods developed by Gasparin (2012), whose steps are described below.

- initial social practice of the content: in this first stage, the Content Unit that would be worked on in classes was established, as well as its general objective. This general theme was organized into topics with the purpose of favoring its understanding and discussion of the historical importance and social uses of techniques for preserving food, with each topic having a corresponding specific objective. To work the "content experience" of students, questions were used as a way to encourage students to contextualize and identify the issues addressed in their daily lives, as well as enabling the teacher to know their interests about the themes;
- problematization: in this phase, the questions raised in the previous item were systematized. With this purpose, questions were created to stimulate discussion about the contents, so that the importance of what is being studied was highlighted. Still at that time, the contents described in the Initial Social Practice of Content were resumed in the form of questions in their conceptual/scientific, social, historical, economic, technological and geographic dimensions, in order to demonstrate to students the various aspects involving knowledge and provide them with a vision of the whole scenario;

- instrumentalization: at that time, the didactic-pedagogical actions were listed and the teaching techniques and the human and material resources necessary for placing the contents at the disposal of students and making their learning effective were described. In the instrumentation phase, slides, film excerpts, text readings and discussions and talking circles between groups of students were used to socialize historical travel reports from the period covered. In addition, practical dry and wet salting classes were developed with fish, due to its historical character, in relation to the period studied and because it represents a method of interest for the discipline of Food Preservation, as the study of its process, that is, osmosis, was included in its menu, which favored the integration between the subjects;
- catharsis: in catharsis, the moment when the realization or not of learning is expressed, the syntheses that the students were expected to achieve were listed in the planning, considering the dimensions elaborated in the Problematization, to verify the level of theoretical appropriation of what was studied in relation to the initial state. The plan was to carry out content evaluation through a logbook and a questionnaire with open questions about the dimensions worked;
- final social practice of the content: in order for students to express their Final Social Practice of the Content, the last question of the content assessment was supposed to be an action plan prepared by students, individually, which would explain their new practical postures after acquiring the new knowledge, containing their intentions and actions they planned to develop for effectiveness thereof. The objective of this final stage was to highlight the practice-theory-practice movement, since, for PHC, social practice is the starting and arrival point of pedagogical practice (Saviani, 2012).

According to the time available for the proposal, the application of the planned classes took place in two stages: in the first, the Pedagogical Moments Initial Social Practice of Content, Problematization and Instrumentalization in History 2 classes were developed, using four classes of 45 minutes each, in the classroom and in the Food laboratory, being taught by the teacher of this course, with guidance from the Food Preservation teacher in preparing the script and conducting practical classes. In the second stage, the Catharsis and Final Social Practice of the Content moments were developed, in two classes of 45 minutes each, in the subject of Food Conservation, which were conducted by the researcher with the support of the teacher of this curricular unit. This organization took place in both classes.

After applying the planned classes, the students answered an open questionnaire for their evaluation. The questions in the questionnaire dealt with the methodology adopted and the way in which the contents were organized and worked. In the evaluation, they did not need to identify themselves, so that they could feel more comfortable expressing their impressions about the way in which the contents were selected and worked on and classes.

The evaluations were analyzed using the Content Analysis method, defined as a "set of communication analysis techniques that use systematic and objective procedures to describe the content of messages", whose intention is the "inference of knowledge related to the conditions of production (or, eventually, reception), an inference that resorts to indicators (quantitative or not)" (Bardin, 2011, p. 44).

For this author, Content Analysis methods have two main objectives: to overcome uncertainties, that is, to check if what is thought to be seen in the message is really there; enrichment of reading, that is, attentive reading can increase productivity and relevance by allowing the discovery of contents and structures that an immediate look is not capable of offering.

Gomes (2012) highlights the main methodological procedures used in the Content Analysis from a qualitative perspective: categorization, inference, description and interpretation.

Categorization, according to Bardin (1995, p. 117), "is an operation of classification of the constituent elements of a set, by differentiation and then by regrouping according to gender (analogy), with previously defined criteria", that is, it is the gathering of a group of elements, referred to as registration units (words, clauses, phrases), which have common characteristics, under the same category, whose criteria can be semantic, syntactic, lexical or expressive. The categories can be elaborated either preliminary to the effective analysis of the research material, or they can emerge from this analysis.

In the inference, a logical deduction of the analyzed content is performed, articulating the analyzed material with assumptions already accepted from other studies produced. Thus, making inferences "means, not only to produce subliminal assumptions about a given message, but to support them with theoretical assumptions from different conceptions of the world" (Campos, 2004, p. 613).

Based on the inferences, the interpretation is conducted, discussing the results obtained from the research with the theoretical foundation that supports the work being developed. Thus, the interpretation occurs when "we manage to make a synthesis between: the research questions; the results obtained from the analysis of the collected material, the inferences made and the theoretical perspective adopted" (Gomes, 2012, p. 91).

Considering the procedures presented, in this study, we chose to follow the path of analysis suggested by Gomes (2012), consisting of the following steps: comprehensive and exhaustive reading of the selected material; exploitation of the material; interpretive synthesis.

RESULTS AND DISCUSSION

Despite the centrality that integrative pedagogical practices represent for the realization of the IHS proposal, there are several difficulties encountered in its development. Costa (2012) reported that implementing IHS is a challenge for teachers, for several reasons, such as lack of knowledge of its assumptions, lack of preparation and lack of permanent and effective training programs. Another difficulty reported by Paula, Sá and Andrade (2017) is the fact that the initial training

of many teachers who work in this teaching modality was organized through fragmented subjects, without encompassing practices guided by the idea of integration.

Added to this, there is no "step by step" on how to carry out the integration between subjects, although there are relevant works with indications of their assumptions, such as Frigotto, Ciavatta and Ramos (2005), Ramos (2008) and Araújo *et al*. (2015). Indeed, according to these last authors, there are several possibilities and practices that can be used for integration, the commitment to a broad education and social transformation being fundamental for any experience.

Thus, the analysis of student evaluations in relation to the proposed integration of two subjects can provide teachers with subsidies on the possibilities of implementing integrative pedagogical practices, contributing to the development of more experiences in this regard.

Regarding the answers to the class evaluation questionnaires, for the purpose of preserving their identities, the students were identified with the letters "A" and "B", which correspond to their Class, and the numbers from 1 to 22, in this case for Class A, which has 22 students, and from 1 to 18, to Class B, composed of this number of students.

The categories were elaborated *a posteriori*, arising from the reading and analysis of the students' answers. Data were organized through the enumeration by the frequency in which the registration units appeared in each category and subcategory, in each of the four questions that made up the applied questionnaire, using the mutual exclusion criterion, that is, the registration units they were listed only once within the categories and subcategories.

Question 1, "In the classes given, the teacher used a different methodology. What are the positive and negative points you consider in this new way of teaching?" aimed to understand the favorable and unfavorable elements observed by students in the development of the Pedagogical Moments methodology. From the analysis of the responses, it was possible to organize them into 2 categories and 5 subcategories, as listed in Chart 1.

In the category "Positive perceptions about the methodology", the included answers were those in which registration units appeared with elements favorable to the applied classes, notably those in which expressions such as "the positive point" or "the positive points" were identified. Within this category, the registration units were distributed in subcategories "Integration between the two subjects", "Resources and techniques used" and "Differentiated methodology". According to Chart 1, the subcategories that appeared more frequently in the two classes are 1 and 2.

Observing the registration units, that is, the excerpts from the students' answers contained in Chart 1, in the subcategory "Integration between the two subjects", it is possible to visualize perceptions about the relationship between the subjects and the interaction between contents, in this sense, enabling to infer that, for these students, integration could show the unity between different subjects and forms of knowledge, as pointed out by Santomé (1998).

Regarding the methods and techniques used in the applied classes, which corresponds to the subcategory "Resources and techniques used", Gasparin (2012) recommends that it is through them that the contents are made available to students,

Chart 1 – Analysis of responses to question 1.

Categories	Subcategories	Inferences	Example responses	Frequency	
				Class A	Class B
Positive perceptions about the methodology	Integration between the two subjects	• Relationship between subjects Interaction between contents	"*We can see how the contents meet*" (Student A22). "*In History classes we relate food preservation contents*" (Student B9).	7	6
	Resources and techniques used	• Video display • Development of practical classes • Organization of talking circles • Slide show • Text analysis	"*The talking circle was a very good point*" (Student A13). "*Positive points: debate round, practical class in the laboratory*" (Student B3). "*Positive points, practical class, video about the content*" (Student B10).	7	4
	Differentiated methodology	• Involvement in classes • Classes different from the usual ones • Better understanding through the methodology	"*The method used by the teacher was very different*" (Student A6). "*It differs from regular classes*" (Student A21). "*This methodology used was very positive, as it helped to understand better*" (Student B2).	3	3
Negative perceptions about the methodology	Insufficient time	• Difficulty of assimilation due to lack of time • Need for more classes	"*As there were few classes, it was not possible to better fix the content in mind*" (Student A4). "*It was a very short time, there should have been more*" (Student B6).	1	1
	Large volume of content	• Difficulty in understanding the integrated content • Overload of worked content	"*I found it very confusing to understand the two subjects together*" (Student A1). "*It's like another subject, so more work*" (Student B7).	1	1
Total				19	15
Did not answer the question				3	3

so that their appropriation occurs. Thus, when observing that these elements were a highlight in the students' assessments, it is possible to affirm that the methods and techniques used (video display, practical class, talking circle) achieved the objective of working on the proposed themes and contents.

In the subcategory "Differentiated methodology", analyzing the registration units, the importance given to the fact that the methodology is different can be seen, possibly in relation to the customary nature of traditional teaching. In fact, when presenting their work proposal from the perspective of the PHC, Gasparin (2012) makes it clear that this is a new form of pedagogical work, "completely different from the traditional perspective" (Gasparin, 2012, p. 10).

For the category "Negative perceptions about the methodology", the answers whose registration units had unfavorable conceptions towards the classes with the proposed methodology were considered, in which expressions such as "the negative point" or "the negative points" were used. From the analysis, the subcategories "Insufficient time" and "Large volume of content" were created.

The subcategories "Insufficient time" and "Large volume of content" refer to the planning of classes, as the points raised by the students were part of the process of predicting how classes would be developed as directed by Gasparin (2012, p. 149): "For an adequate performance of the teaching task, it is necessary to forecast, albeit in a broad way, the activities that will be developed"; however, often the practice can impose challenges in relation to what was initially planned, often leading to the perception that "*it was in a very short time*".

In question 2, "Do you think this methodology contributed to your learning? Why?" the aim was to get to know the students' opinions about the influences of the methodology adopted in their learning. The answers were divided into 2 categories and 6 subcategories (Chart 2).

In the category "The methodology contributed to learning", affirmative answers were inserted, marked mainly by the words "yes" and/or "contributed". In this category, the following subcategories were organized: "By the resources and techniques used", the most frequent subcategory in Class A, "By facilitating understanding", "By the contents worked", which appeared more frequently in Class B, and "Others".

In a similar sense to the first question, question 2 was about Pedagogical Moments. Here, it is also identified that the most frequent points were the resources and techniques, represented by the subcategory "By the resources and techniques used" and the way in which the contents were worked, according to the subcategory "By the contents worked". In the latter, it is interesting to highlight opinions among the registration units about the new vision that the methodology could provide in relation to the contents, which constitutes an important objective for the PHC methodology.

Considering the subcategory "By facilitating understanding", there is a perception that the methodology used helped in the understanding of the contents worked, which shows a reflection by the own students about their learning process. Notwithstanding the differentiated conception of learning by PHC, seen not only as the demonstration of theoretical mastery of the content, but also as the manifes-

tation of a new practical attitude on the part of the student, it is interesting to note that, at first, the students demonstrate to themselves their level of understanding of the topics studied (Gasparin, 2012).

Chart 2 – Analysis of responses to question 2.

Categories	Subcategories	Inferences	Example responses	Frequency	
				Class A	Class B
The methodology contributed to learning	By the resources and techniques used	• Use of different resources and techniques • Development of practical classes	"*Bring new things, not just remain on the blackboard*" (Student A2). "*In practice I learn much more*" (Student A19). "*I could understand better through the resources used in the classroom*" (Student B5).	11	1
	By facilitating understanding	• Assistance in understanding the content	"*Because I was able to understand better*" (Student A14). "*Because it facilitated the understanding of the content*" (Student B3).	4	4
	By the contents worked	• Deepening of the topics covered • New knowledge • Expanding the vision of the content	"*Deepened the content and it was possible to understand more about the concepts*" (Student A9). "*Provides us with a new view on the content*" (Student A22). "*Because we thought about the conditions of the food at that time*" (Student B14).	6	9
	Others	• Positive responses, but no motivation		0	2
The methodology did not contribute to learning	Because it makes understanding difficult	• Difficulty in understanding the methodology	"*Was very confused to understand this learning methodology*" (Student A1).	1	0
Total				22	16
Did not answer the question				0	2

For the responses that did not have motivation about why the methodology contributed to learning, having limited to only answering "yes", the subcategory "Others" was created.

For the responses that considered that the methodology did not contribute to learning, marked by the word "no", the category "The methodology did not contribute to learning" was created, whose subcategory "Because it makes understanding difficult" was marked by the students' conception that they had difficulty in understanding the methodology. In fact, as explained above, it is a new methodology that faces many difficulties for its implementation and appropriation, such as the educational management of teaching networks, which often do not continue the work developed; the lack of support for teachers, with support and didactic materials developed within this perspective; the teachers' lack of time and the lack of contact with this work methodology in most of the initial training (Gasparin, 2012), which can result in problems in its assimilation by the students.

In relation to question 3, "Did the way the contents were organized facilitate or hinder their understanding? Why?", the questioning focused on how the integration between the contents of the subjects of History 2 and Food Preservation was carried out in the students' perception, and whether this integration of contents facilitated or hindered their understanding. From the responses, 3 categories and 8 subcategories were elaborated, arising from the expressed motivations (Chart 3).

The category "The organization of the contents facilitated the understanding" encompassed responses that included the use of the word "facilitated", being composed of the subcategories "By the articulation between the contents of the subjects", viewed more frequently in both Class A and Class B, "By the teaching methods used", "By the use of resources and techniques", "By the organization of classes" and "Others", the latter contemplating unmotivated responses, limited to only providing an affirmative response, "facilitated".

In the subcategory "By the articulation between the contents of the subjects", when analyzing the registration units, it is observed that many students understood what was proposed, working contents of the two subjects in an integrated way in order to provide a broader understanding, providing a historical view of a technical knowledge that makes up the specific part of the course, as shown in the following examples of responses: "*It made understanding easier because I was able to understand not only the technique of food preservation but also see where it fits into the story of people who lived before*" (Student A3); "*It made understanding easier, as the learning in the History and Food Preservation subjects complemented and completed each other, increasing my understanding*" (Student B5).

For Gasparin (2012, p. 2), "the contents are always a historical production of how men conduct their lives in social work relations in each mode of production", thus, one can understand the techniques as a result of historical processes, whose meanings and uses are different depending on the period considered, and integration is capable of enabling the understanding of reality beyond its phenomenal occurrence, from the perspective of social totality (Ramos, 2008).

The subcategory "By the teaching methods used", the responses refer to the use of the didactic-pedagogical guidelines that Gasparin (2012) produced for the

Chart 3 – Analysis of responses to question 3.

Categories	Subcategories	Inferences	Example responses	Frequency	
				Class A	Class B
The organization of the contents facilitated the understanding	By the articulation between the contents of the subjects	• Complementarity between the contents of the subjects • Joint work between subjects • Deepening of contents	"*Used two subjects which were History and Food Preservation and helped to understand more*" (Student A5). "*They were organized according to each other*" (Student B9).	7	7
	By the teaching methods used	• Clearer explanation	"*The understanding became easier and clearer*" (Student A22). "*The understanding was clear*" (Student B7).	4	4
	By the use of resources and techniques	• Development of practical classes • Differentiated resources and techniques	"*We went to the laboratory to preserve the fish*" (Student A7). "*Several different forms with a small excerpt from a film [...] debate about stories*" (Student A11).	3	0
	By organization of classes	• Clarity in the steps developed • Explanation of proposed activities	"*Everything we did was very well explained*" (Student A15). "*We understand why we should do what would be proposed*" (Student B3).	2	2
	Others	• Positive responses, but no motivation		1	2
The organization of the contents did facilitate the understanding	Insufficient time	• Speed in class development	"*It was a hurry*" (Student A14).	1	0
	Large volume of content	• Difficulty in understanding the integrated content	"*It made it a little difficult to assimilate the two contents*" (Student A20).	1	0
Ambiguity		• Indecision as to the ease or not of understanding	"*I understood more or less*" (Student A1). "*A little of both*" (Student B6).	1	1
Total				20	16
Did not answer the question				2	2

development of each of the PHC Pedagogical Moments: initial social practice of the content, problematization, instrumentalization, catharsis and final social practice of the content, especially the work performed by teachers to implement the proposal, which requires a new practical posture for its implementation (Gasparin, 2012, p. XI).

For the subcategory "By the use of resources and techniques", whose answers focused on the resources and techniques used, many registration units specifically mentioned practical classes and talking circles as positive elements of the classes:

> *It made understanding easier, because it had several different forms with a small excerpt from a film that clarified a lot about this period, there was a debate on reports from people who went on these navigations, this brought a lot of knowledge and the opinion of each one, the slides were very enlightening, the practical class was great, I managed to learn a lot!* (Student A11)

The practice in Integrated High School is a significant part of a teaching that is based on work as an educational principle, breaking with the division historically constituted between manual work and intellectual work (Ciavatta, 2005). In addition, the practical classes arouse great interest on the part of students, who, through them, have the opportunity to give new meaning to the theoretical and scientific concepts learned. Pedagogical techniques such as the talking circle enable interaction between students and encourage their participation in the construction of their knowledge.

Regarding the subcategory "By organization of classes", it also deals with the didactic-pedagogical guidelines of Gasparin (2012), who indicates the need to present all the steps and explain their objectives, in order to engage them in the teaching-learning process to actively build their knowledge.

For the responses that classified that the form of organization of the contents made understanding difficult, characterized by the use of the word "difficult", the category "The organization of the contents did not facilitate the understanding" was created, with subcategories "Insufficient time" and "Large volume of content".

The subcategory "Insufficient time" deals with the use of time for developing classes. According to Frago (1997, p. 113, our translation), the issue of time at school is something institutional, personal, cultural and individual; perceived and experienced differently by each of the participants in the school process, as "there is not only one time, but a variety of times", thus, the times of the teacher and the student, for example, can be different.

The choice for the development time of the Work Project was made during the planning, considering the minimum time necessary for what was proposed in the classes and the time made available by the teachers to work on the contents, due to the syllabus and plans that should be followed. All Pedagogical Moments were developed, however it was possible to observe that the limitation of time required that on some occasions the discussions and dialogues were closed, as in the case of the talking circles and practical classes, which is in line with what was stated by the students in this case.

Regarding the volume of content, which refers to the subcategory "Due to the large volume of content", in order to prevent many issues from being dealt with in class, hindering the main objective, a thematic cut was made within the content "The European Commercial Maritime Expansion" from the curricular unit's syllabus of History 2. Thus, the difficulty that the students presented in this regard needs further investigation, in order to assess which elements specifically contributed to this situation.

One of the factors that may have contributed to this issue refers to the need for more initiatives in the development of integrative pedagogical practices, which would possibly contribute to reducing the distance between this practice in relation to the experiences of students in the school environment.

In the study by Santos *et al.* (2018), whose objective was to develop an analysis of the integrative pedagogical practices used by IHS professors, based on a state of knowledge carried out through the "Academic Google" in the time period from 2007 to 2017, this fact is evident when they see that "the universe of integrative practices when researching with such a descriptor has a very low percentage, which leads us to understand, at least initially and in this research context, that there are not many academic works in this area" (Santos *et al.*, 2018, p. 191).

Corroborating the scarcity of these practices, in a study published in December 2019, Silveira and Martins (2019) mapped studies addressing curriculum and integrative pedagogical practices in Federal Institutes (FIs), from 2014 to 2018, whose descriptions of their searches in database of the Coordination of Superior Level Staff Improvement (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – CAPES) theses and dissertations catalog and the CAPES Journal Portal allowed the inference that, among the works on the theme of integrative pedagogical practices, only a small portion is located in the context of the FIs.

In addition to the categories already mentioned, it was necessary to create a third category, called "Ambiguity", for imprecise answers that revealed indecision regarding the opinion on the ease or difficulty of understanding, marked by the use of expressions such as "more or less". This indecision can be partially explained by the fact that the application of the methodology evaluation questionnaire was carried out soon after the development of the Pedagogical Moment of Catharsis, in which, among other activities, the content evaluation is carried out. Thus, it is possible that the students did not have the necessary time to reflect on their own learning, since this is constituted as a process.

In question 4, "As a student, would you like this methodology and this way of working the contents to be used in other subjects? Why?" the aim was to know the general evaluation of students in relation to the classes applied, because, when they expressed whether or not they would like to participate in more classes in a similar format, they made their satisfaction or dissatisfaction with the developed proposal clear. In the categorization phase, 2 categories and 5 subcategories emerged (Chart 4).

In the category "Would like to use it in other subjects", the affirmative responses, marked by the presence of the word "yes", were organized into subcate-

gories in: "Integration between subjects", "Generating greater interest", these first appearing with equal frequency in Class A, "Facilitating learning", including the

Chart 4 – Analysis of responses to question 4.

Categories	Subcategories	Inferences	Example responses	Frequency	
				Class A	Turma B
Would like to use it in other subjects	Integration between subjects	• • Relationship between different subjects • Articulation between contents • Expansion of subject knowledge	"*That way I would learn two different things together*" (Student A3). "*Knowing the relationship that one subject can have with another*" (Student A8). "*This methodology contributed to the learning of these subjects; it can also help in other subjects*" (Student B4).	9	4
	Generating greater interest	• Stimulating interest in classes • Differs from traditional classes	"*Makes classes more interesting*" (Student A16). "*Because it takes us out of the usual boring routine, arriving, sitting down and listening*" (Student A17).	9	1
	Facilitating learning	• Facilitated understanding	"*It is a better way to learn*" (Student A19). "*Because it literally helped me to understand*" (Student B2).	3	9
	Others	• Positive responses, but no motivation		0	2
Would not like to use it in other subjects	Makes understanding difficult	• More difficult to understand the contents	"*Because I would never understand the teachers' content properly, and it would be too complicated*" (Student A1).	1	0
Total				22	16
Did not answer the question				0	2

largest number of responses from Class B, and "Others", in the case of non-motivated responses.

Regarding the first subcategory, "Integration between subjects", there is the conception that integration could contribute to the studies of other subjects. In addition, it is interesting to note that in one of the answers a student suggested the subjects to carry out the work: "*Yes, in the subject of Environmental Management and Geography*" (Student B14). Thus, it can be said that the development of integrated classes allowed the vision of the relationships between different areas and the understanding that knowledge is not isolated, as recommended by Andrade *et al*. (2015).

In the subcategory "Generating greater interest", there is an emphasis on the fact that it is a different proposal, which stimulated interest. In fact, Ramos (2010) indicates that working on food issues in the teaching of History in the classroom means allowing greater identification of the student with the subject, since this is a common aspect of the reality of any student, regardless of their class. social or cultural condition, which can contribute to reduce the gap between school content and the student's daily life.

On the other hand, the subcategory "Facilitating learning" comprises responses that deal with the perception of students about their own learning in relation to the contents worked. Therefore, they provide important evidences regarding their learning. However, for a better conclusion about learning, a more accurate study would be necessary, although the integration between contents provides a broader and less partialized view of reality, contributing to learning more related to the real world, in a less disconnected way from the students' reality (Araújo and Silva, 2017).

For negative answers, the category "Would not like to use it in other subjects" was created, whose subcategory "More difficult to understand the contents" encompasses the students' perception that integration would make it difficult for them to understand the contents of the subjects. It is possible to understand this opinion through what Santomé (1998) affirms, that often the separation of knowledge in isolated subjects makes it difficult to have a broader view of students, who often cannot visualize the union between contents from different subjects.

Aiming to highlight the analysis of the students' responses to the applied questions, Figure 1 illustrates a synthesis of the relevant points considered by them in the development of integrated classes between the subjects of History 2 and Food Preservation, based on the methodology of PHC Pedagogical Moments, in order to provide teachers with elements to be considered in planning and development of classes based on integrative pedagogical practices.

The above scheme presents suggestive elements to be considered, thus not configuring determinations to be followed, since every pedagogical experience needs to take into account the real context in which it will be developed, suffering implications such as institutional norms, school curriculum, structure school, student characteristics, etc.

FINAL CONSIDERATIONS

Most students positively evaluated the integrated class, reporting that integration is a differentiated form of teaching, which facilitates learning, allows the articulation of technical and common core subjects, improves the organization of contents, arouses greater interest in the class and that they would like the methodology and the way of working the contents to be adopted for other subjects.

The search for overcoming the fragmentation of school knowledge must be based on the idea of social totality, seeking to broaden the students' vision beyond what can be immediately perceived. This also implies working with contents in their historicity, allowing them to be seen as human actions that are the result of historical processes, mediated by their social, economic, cultural, material conditions, etc.

The integration between subjects from different areas is a possibility to demonstrate that knowledge is not produced in isolation, enabling the student to have a broader view of social reality. In relation to the pedagogical work, this practice can help in the formation of the individual in an integral perspective, which constitutes one of the basic elements of IHS.

Thus, the development of these integrated classes allowed to work on content from different subjects in an articulated manner, enabling students to have a

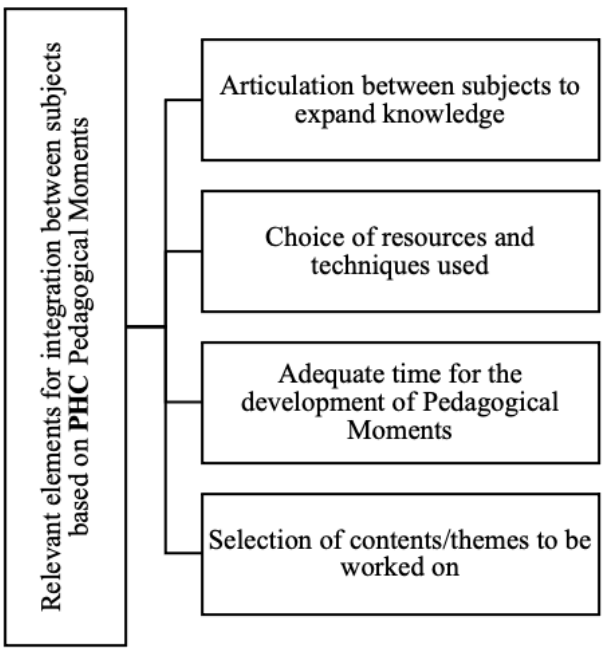

Figure 1 – Elements considered important for planning the development of integrated classes.

historical perception of technical knowledge and less distance between their social reality and pedagogical work. It should be noted that the articulation between the curricular units of History and Food Conservation is only one possibility to carry out the integration between subjects, and that other experiences can be proposed based on this.

In addition, the experience with integration between subjects intended in this study could be expanded, adding other curricular units and knowledge, which would allow different views on the object of study and would contribute to a greater approximation with the social totality and the idea of integral education.

We consider the need to create more opportunities in school institutions for integration, especially those that offer IHS, encouraging integrated planning and pedagogical work, in order to expand experiences and practices guided by this way of working with content.

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