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Curriculum Greening in Agronomy Courses of two Paraná's Universities: na Analysis from Aces Network Categories

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ABSTRACT

In this study the main is to analyze the curriculum differences about the inclusion of the environmental concerns in the curriculum of Agronomy's course of two Universities of the State of Paraná. It is qualitative research characterized as an explanatory case study, in which the data collection techniques used were: documental research and semi structure interview with 21 professors of 48 selected disciplines, with four course's coordinators (the first and the latest) of both investigated courses. After analyzing the 10 categories of Aces Networking to have a green curriculum, it is reinforced the importance of the teacher's role in the process of curriculum greening in high education. Therefore, even in courses with a sustainable bias as the Agronomy course of Universidade da Fronteira Sul (UFFS), it is the teacher's practices during the teaching and learning processes the differential to the success of curriculum greening in the student's formative process. That is why it is comprehensive the similarities of Aces Network elements in both curriculum analysed, even if Unioeste has a lower number of disciplines that discuss the environment when compared to UFFS.

KEYWORDS

Curriculun. Environment. High Education.

A Ambientalização Curricular nos Cursos de Agronomia em duas Universidades Paranaenses: uma Análise a partir das Categorias Propostas pela Rede Aces

RESUMO

Neste estudo objetivou-se analisar as diferenças curriculares sobre a inserção da temática ambiental nos currículos do curso de agronomia em duas universidades paranaenses. Optou-se por uma pesquisa qualitativa caracterizada como um estudo de caso explicativo, cujas técnicas de coletas de dados foram: pesquisa documental e entrevista semiestruturada com 21 docentes das 48 disciplinas selecionadas, com 4 coordenadores de curso (primeiro e atual) Ao analisar as 10 características propostas pela Rede Ambientalização Curricular dos Estudos Superiores, de um currículo ambientalizado, reforça-se a importância do papel do docente no sucesso da ambientalização curricular no ensino superior. Dessa forma, mesmo em cursos com viés sustentável, como é o caso do curso de Agronomia da Universidade Federal da Fronteira Sul – UFFS, o diferencial para o êxito da ambientalização curricular no processo formativo do discente são as práticas dos docentes durante o processo de ensino e aprendizado. Por isso, torna-se compreensível a semelhança na presença das categorias da Rede ACES nos currículos dos cursos de agronomia com ênfase em agroecologia da UFFS e de agronomia convencional da Unioeste, mesmo que esta tenha menor número de disciplinas que discutam a temática ambiental do que o da UFFS.

PALAVRAS-CHAVE

Currículo. Ambiental. Ensino Superior.

La Ambientalización Curricular em cursos de Agronomia de dós Universidades Paranaenses: uma Análisis de las Categorias de laRed Aces

RESUMEN

Em ese estúdio el objetivo es investigar lasdiferencias curriculares relacionadas a lainsercÍon de la temática ambiental em los currículos del curso de agronomia de los universidades paranaenses. Es una investigacioncualitativa caracterizada como un estúdio de caso explicativo. Los datos fueran colectados por uma investigacíon documental y 26 encuestassemiestructuradas com los professores (21) de 46 disciplinas seleccionadasyconcoordinadores (4) de los dos cursos investigados.El análisis de las 10 caracteristicas de laRed Aces enlos currículos reforzalaimportanciadel papel del professor enelsuceso de laambientalización curricular enlaenseñanza superior. Sin embargo, mismo que en cursos orientados a lasustentabilidad como el de la Universidade Federal de la Frontera Sul – UFFS, sonlaspracticas de losprofesores durante elproceso de enseñanza y aprendizajeel diferencial para eléxito de laambientalización curricular enel processo de formación de losalunnos. Por eso, es compreensíblelasemejanza de la presencia de las categorias de laRed Aces enlos currículos de los cursos de agronomia: elcon ênfase enAgroecología de la UFFS y el de agronomía convencional de laUnioeste, mismo que esta última tengaun número de disciplinas inferior que de UFFS.

PALABRAS CLAVE

Currículo. Ambiental. Eseñanza Superior.

1.Introduction

The socioenvironmental crises experienced in the early XXI century points out the need for emergency measures to face harmful practices to the environment, to society and, consequently, to people's quality of life. Thus, we question how society can change this scenery and undertake an ethical commitment, by developing responsible actions and keeping a balanced relationship between professional practices and the environment.

Such endeavor requires the recognition of the importance of education, and the use of its influence in contributing to the necessary changes through the education of individuals that are aware of their role in society reconstruction. The challenge resides in offering an education process focused on the holistic education of individuals, which goes beyond technical knowledge to encompass environmental, social, economic, ethical, cultural, political, and spiritual reflections (ARRUDA; ANDRADE; LIMA, 2016). Such focus aims at educating citizens that are qualified to act upon contemporary society, which presents increased need for alternatives of a new development model, considering sustainability, solidarity, and respect to all live species in the planet (WACHHOLZ, 2014).

When the education process offers a holistic approach to learning, which includes themes related to the environment and society (environmental education), some opportunities are created for the preparation of reflective and critical citizens, who approach productivist, exploratory, technocratic, and authoritarian systems with alternative proposals aiming at the progress of society in an ethical and fair way, which is concerned with the future of the humanity (REIGOTA,1998).

Therefore, due to their strong influence on the individual's development, higher education institutions (IES, Brazilian acronym for Instituições de ensino superior) must promote an education process that prepares professionals that are aware of the socioenvironmental issues, contributing to the education of decision makers that are recognize the importance of their decisions to the future of the planet. Such professionals must be prepared to act guided by an ethical and environmental behavior, with values linked to sustainable development, equating economic, environmental, and social issues (SALGADO; CANTARINO, 2006).

However, guided by the technicist and fragmented logic, IES usually face difficulties, not only to insert environmental content in the professional education, but also to manage the institution, which in its historical construction has valued the individualization of knowledge areas, neglecting the dialogue between different positions that are part of the academic community (GUIMARÃES; TOMAZELLO, 2003).

Courses in the field of agrarian sciences, with direct relation with natural resources and the environment, should be the first ones to prioritize curriculum reforms and create opportunities for reflection upon the guidelines adopted in most IES. The agronomy course,

for example, by inserting in its curriculum contents that evidence ways of opposing the agrobusiness dominant model, could enable a professional qualification that broadens its objectives and goes beyond the fulfilment of market and profit demands of a dominating minority (dominant model), and make those professionals able to build models of sustainable agriculture (CAVALLET, 1999).

Therefore, in their teaching plans, agronomy courses that provide the kind of education that acts on the perspective of sustainable rural development commit themselves to face the difficulties that challenge the rural environment. They should encompass ethical behavior that contribute to the development of the agronomist engineer profession towards environmental sustainability. For this reason, curriculum greening in agronomy undergraduate courses might become an instrument that enables the internalization of the environmental theme from interdisciplinarity and the choice of proper themes and methodological approaches to provide students with a critical and reflective development regarding the society-nature relationship in agronomic practices (CAVALLET, 1999; ALEXANDRE, 2014).

Taking that into consideration, this research aimed to identify and analyze curriculum greening proposed by the ACES network in agronomy undergraduate courses in two universities in the state of Paraná.

2. Methodology

This research adopted a qualitative, descriptive, and exploratory approach, which is considered the best method to develop this kind of study for enabling a deep interpretive investigation, and ascribing meanings to the collected data (LÜDKE; ANDRÉ, 1986).

In this study, the research universe included the agronomy undergraduate courses of the Federal University of Fronteira Sul – UFFS and the State University of Oeste do Paraná – Unioeste, both located in the same state (Paraná) and in neighboring regions (the mesoregion of Cantuguiriguaçu and Western Parana), around 200 km distant one from another. We chose IES that were regionally close to each other to minimize cultural, social, and economic differences.

Regarding the course of the curricula investigated, the choice was based on the fact that the professional work of the agronomist is directly related to the environment. The option for agronomy courses aimed to understand whether there were curriculum differences between the two courses, since the UFFS agronomy undergraduate course on campus Laranjeiras do Sul, focuses on agroecology, while the Unioeste agronomy undergraduate course on campus Marechal Cândido Rondon, can be considered a traditional course, which

as no specific focus of qualification. According to Gil (2002), regarding the research instruments, we employed document research and semi-structured interview.

The documents surveyed in the document research were: The Institutional Pedagogical Project (PPI, Brazilian acronym for Projeto Pedagógico Institucional), the Bylaws, the Undergraduate Teaching Guidelines, the Course Pedagogical Project (PPC, Brazilian acronym for Projeto Pedagógico de Curso, and the description of course content of the subjects of the courses under investigation.

Also, for the selection of the subjects included in the investigation sample, the content and/or objectives of the subjects included in the course PPC were analyzed. This document was chosen for representing the course identity, which is related to the historical, political, and teaching moment when it was built up (PEREIRA; CAMPOS; ABREU, 2009).

When selecting subjects, we surveyed their content/objectives looking for evidence of environmental issues, and the keywords used were: environment, environmental, natural resources, sustainability, agroecology, sustainable development, and agroecosystem. In the UFFS agronomy course, we found 36 subjects (mandatory and elective) that met the criteria set, while in the Unioeste agronomy course, we found 11 subjects (mandatory and elective) with these characteristics.

After selecting the subjects, semi-structured interviews were carried out with the professors responsible for the curriculum components, in order to understand the issues permeating the AC categories proposed by the ACES network: a) commitment to the transformation of society-nature relationships; b) complexity; c) disciplinary order (flexibility and permeability); d) local-global-local and global-local-global contextualization; e) considering the subject in the knowledge construction; f) considering individuals' cognitive and affective aspects; g) coherence and reconstruction between theory and practice; h) guidance of alternative scenarios; i) methodological suitability; j) spaces for reflection and democratic participation; l) transformation of society-nature relationships.

At UFFS, twelve professors were interviewed, who were in charge of the 36 selected subjects, and 2 coordinators (the first and the current), while at Unioeste, 9 professors, who taught the 11 subjects selected, and 2 course coordinators (the first and the current) were interviewed. In both courses the number of individuals intervewed was lower than the number of subjects selected, since some professors teach more than one CCR.

The interview data analysis was based on content analysis, which according to Bardin (2011), aims at the description of the content of the information gathered to extract knowledge from it. Thus, the phases were completed as follows: first, the interviews were fully transcribed. Next, the information was organized so that it could be interpreted and analyzed from the ACES network 10 categories, which were taken as a priori defined categories to identify the degree of curriculum greening in the courses under analysis.

3.Results and discussions

3.1 Subjects showing evidence of curriculum greening in agronomy undergraduate courses in two universities in the state of Parana.

The 36 subjects selected from the UFFS agronomy undergraduate course, campus Laranjeiras do Sul, totalled 1410 horas. Out of those, 24 subjects were mandatory and had a 930-hour total workload, while 12 were elective, and had a 480-hour total workload. However, three selected subjects have not been taught yet (for having been included in the last PPC review). For this reason, they were not included in the professors' interview phase.

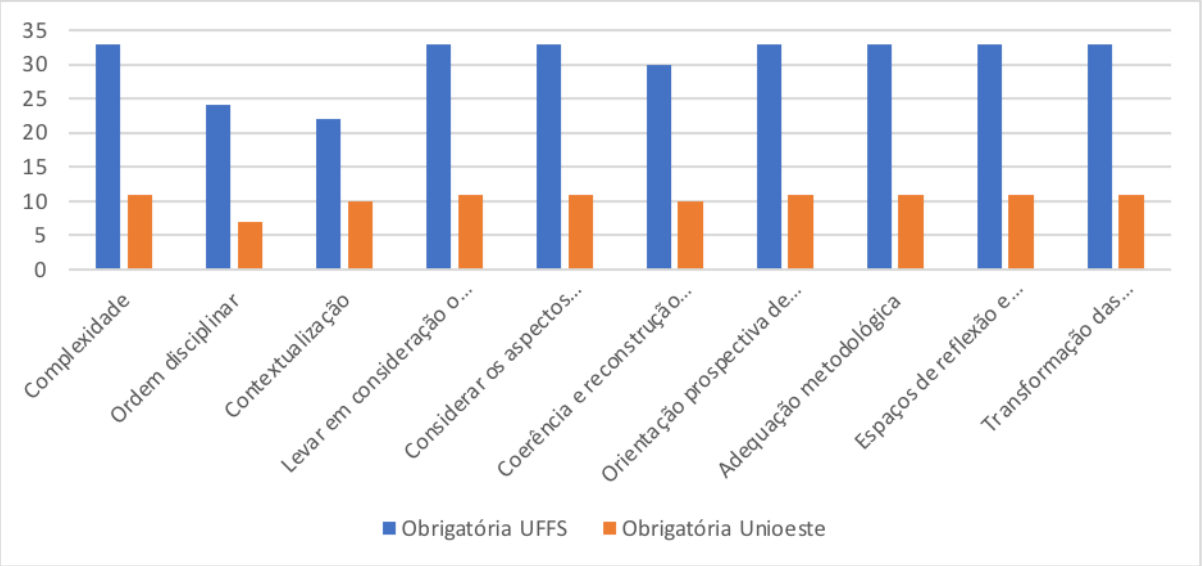
All periods of the course presented at least one subject whose content dialogued with the environmental theme, providing students, since their first year of higher education with a perception of the strong connection between the environment and agronomic practices. The year that presented the highest number of selected subjects was the 4th year, where 5 subjects were identified. It was followed by the 1st year, with 4 subjects, and the 5th year with 3 subjects. In the 12nd year, two subjects were identified, and in the 4th year, only one subject.

In the Unioeste agronomy undergraduate course, 11 subjects were selected with a 697-hour total workload, which corresponded to half of the UFFS CCR workload. Out of the subjects selected, 10 were mandatory, with a 646-hour workload, and one was elective, with 51 hours. We noticed that the fact that there are few elective subjects, which might mean that students' choices do not necessarily represent their learning interests regarding their education.

As for the years of the subjects selected, the 1st and 4th years were the ones with the highest number of subjects, each year had three. Next, comes the 3rd year with two subjects, and, finally, the 2nd and 5th years with one selected subject in each year. We observed that both institutions offer subjects every year that address the environmental theme in their content, which is a relevant characteristic that might favor the curriculum greening.

Both courses were analyzed considering the curriculum greening ten categories proposed by the ACES network (Graph 1).

Graph 1. Comparative analysis of the presence of the ACES network curriculum greening categories in the UFFS and Unioeste agronomy undergraduate courses.



Source: The author (2021).

The ten categories proposed by the ACES network are presented below:; complexity; disciplinary order (flexibility and permeability); local-global-local and global-local-global contextualization; considering the subject in knowledge construction; considering the individuals' cognitive and affective aspects; coherence and reconstruction between theory and practice; guidance to alternative scenarios; suitable methodology; reflection and democratic participation spaces, and transformation of the society-nature relations.

Complexity

This characteristic proposes that the understanding of environmental issues must start from a systemic approach, integrating several concepts related to the environment in the subject contents. In this category, among the CCR selected from the UFFS agronomy undergraduate course, 23 mandatory and 9 elective subjects were selected. Only one mandatory subject did not present this feature, namely, agrotoxicology. In the Unioeste agronomy undergraduate course, this category was found in all subjects selected.

Disciplinary Order

When the subjects present this characteristic, there is an interdisciplinary perspective in the teaching practice, with interaction between courses, subjects, and professionals of different knowledge areas, incorporating diversified themes and procedures related to the environment, offering the flexibility and permeability of other themes and concepts from different understandings.

This feature was the most difficult to find in both agronomy undergraduate courses. At UFFS, 16 out of the 24 mandatory subjects and 8 out of the 9 elective subjects offered managed to incorporate this characteristic in their classroom practice, being open to interact with other subjects and professionals of diverse areas. In the Unioeste course, 4 (mandatory) subjects out of the 11 selected ones did not show the participation of professionals from other areas in their teaching practices, as shown by the interviews.

Contextualization

Subjects with this characteristic propose learning supported by systemic thought, understanding the influence of global actions in their local issues, and vice-versa. At UFFS, out of the 24 mandatory subjects, 11 did not presente this characteristic. However, it seems relevant to point out that among them was the CCR field practices, which is offered in all periods, and the other two were agrotoxicology and experiences in agroecology. At Unioeste, Only one out of the 11 selected subjects in the agronomy undergraduate course did not present this feature. This subject was the CCR Planning, policies, and rural development.

Considering the subject in the knowledge construction / considering students' cognitive and affective aspects

Due to the relation between these two categories, namely, considering both the subject in the knowledge construction and students' cognitive and affective aspects, they were analyzed jointly. Thus, for these characteristics to be included in the subjects, the professor must propose learning methods that stimulate the students' active participation in knowledge production, by ensuring that their experience can be taken advantage of and explored in the teaching and learning process, as shown in Freire's (1996) studies. The interviews with the professors of the selected subjects from both courses revealed that they presented these categories.

Coherence and reconstruction between theory and practice

This feature proposes that an articulation be created between theory and practice, as two necessarily complementary ways of dynamic creation of knowledge. In this category, only 2 mandatory and one elective subject were not included in the UFFS agronomy undergraduate course. In the agronomy undergraduate course at Unioeste, this category was not found in only one mandatory subject.

Prospective guidance to alternative scenarios and transformation of the society-nature relations

These two categories were analyzed jointly due to their similarities. Their characteristics propose the inclusion of subjects that employ their contents and teaching practice to the qualification of critical and reflective professionals that are aware of the socioenvironmental issues, and undertake a commitment to proposing alternatives that prioritize new relations with nature and society, and the responsibility with future generations. These professionals shall be better able to act in a transforming fashion in environments where human beings are inserted. All subjects selected from the agronomy undergraduate courses in both universities included these two categories.

Methodological suitability

This characteristic proposes the existence of coherence and articulation between the contents and teaching methodologies, using strategies related to a greater involvement of students, and promoting professional practices more committed to the environment.

Despite the fact that some professors from both institutions investigated pointed out difficulties regarding the achievement of the objective of this category, all professors interviewed from both courses expressed their concern regarding the effort to organize their teaching practices so that they favor learning and understanding of the content proposed, stimulating the analysis of each case through critical reflection upon their reality.

Space for reflection and democratic participation

The objective of the inclusion of this characteristic in curricula is to foster students' autonomy and reflection, through their democratic participation in different spaces that promote knowledge generation. This category was identified in all subject analyzed in both courses and institutions.

3.2 Discussing curriculum greening in the agronomy undergraduate courses at UFFS and Unioeste

The UFFS agronomy undergraduate course has approximately 30% subjects addressing the environmental theme, while at Unioeste the percentage is around 15%. However, ir seems relevant to emphasize that the UFFS agronomy undergraduate course is 753 hours shorter than the Unioeste course. Therefore, if the UFFS course workload were longer, the percentage of selected subjects might also be higher.

Also regarding the selected subjects, we observed that in relation to the distribution between practical and theoretical classes, in both courses, the workload of theoretical classes

is approximately twice as much as that of practical classes. When considering the agroecological focus of the agronomy undergraduate course at UFFS, a question remains of how contradictory it is to have more theoretical than practical courses and how much this could hamper knowledge construction in relation to the environmental theme.

In the UFFS agronomy undergraduate course, the categories identified in all selected subjects were: considering the subject in the knowledge construction; considering students' cognitive and affective aspects; prospective guidance of alternative scenarios; methodological suitability; space of reflection and democratic participation; and transformation of society-nature relations. We observed that this course shows some differentials that might facilitate curriculum greening such as emphasis on the agroecology course, presence of the subject field practices, and a team of professors committed to the course proposals and objectives.

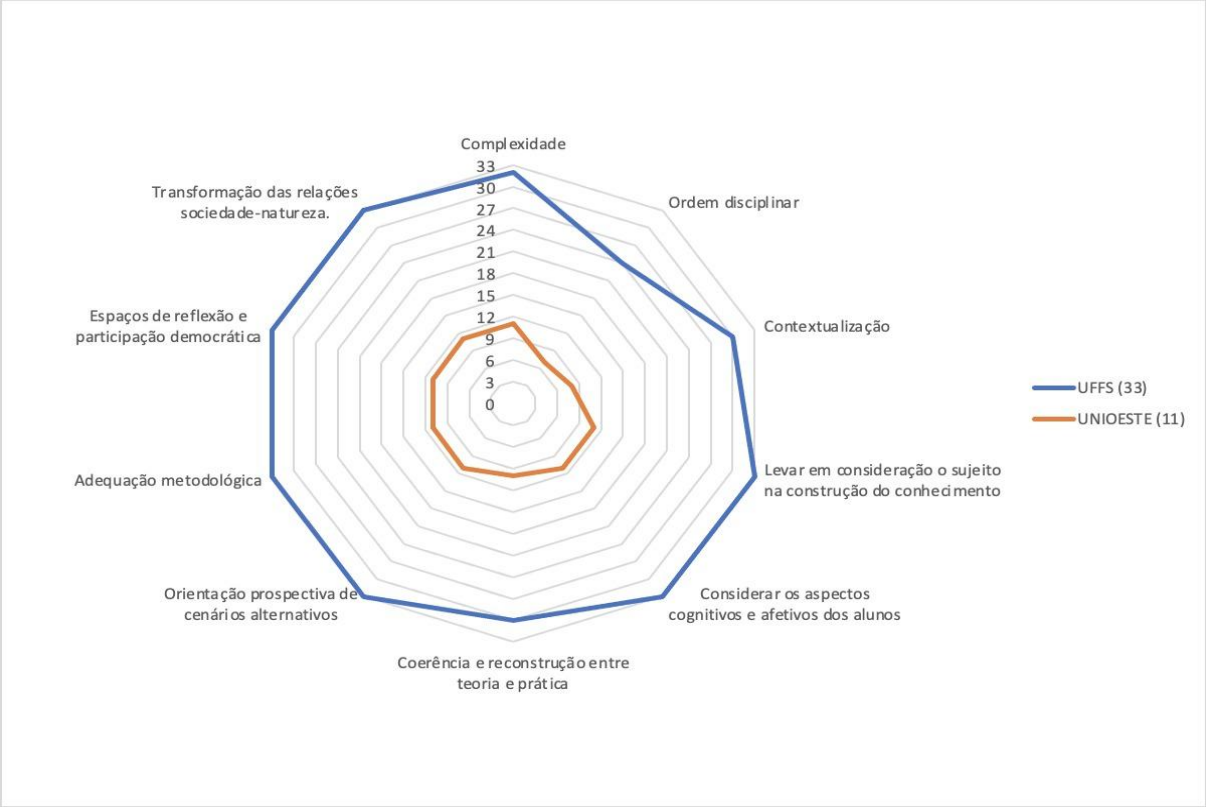
When the curriculum greening categories arenot in one of the selected CCR, the main reasons reported by the professors of the UFFS agronomy undergraduate course refer to: i) subject short workload; ii) fragmented and technicist professors education in their work area; iii) subjects 100% theoretical with too much content for the actual workload; iv) lack of resources for practical activities; v) lack of professors' education in environmental education; and vi) lack of time to dedicate to the teaching practice due to the management, research, and outreach activities, which they also have to develop.

As for the Unioeste agronomy undergraduate course, the curriculum greening categories found in the selected subjects were: complexity, considering the subject in the knowledge construction; considering students' cognitive and affective aspects; prospective guidance of alternative scenarios; methodological suitability; space of reflection and democratic participation; and transformation of society-nature relations. In addition to professors' involvement in outreach activities in their teaching action, the development of activities involving students in an interdisciplinary perspective favor the course curriculum greening.

We observed that when the subjects did not include some of the curriculum greening categories, the main reasons mentioned by the Unioeste agronomy undergraduate course professors related to: i) subject short workload; ii) subject with too much conceptual and technical content; iii) lack of structure and resources to develop practical activities; iv) excess activities transferring responsibility to the professor.

We compared the presence of curriculum greening categories in both courses investigated (Graph 2):

Graph 2. Comparative radar of the presence of the ACES network categories in the subjects of the agronomy undergraduate course at UFFS and Unioeste



Note: it seems relevant to highlight that the difference between de total number of subjects in each university determines the radar size. For this reason, the Unioeste radar is smaller (magnitude 11) than that of UFFS (magnitude 33). Such difference, however, should not interfere with the comparison regarding the adherence to the ACES network characteristics, which is carried out by the analysis of the radar contour shape.
Source: the authors (2021).

We observed in Graph 2 that when the graph does not follow the radar shape, the ACES network curriculum greening characteristics that were harder to be identified in the subjects analyzed are evidenced. We also saw that in both courses, these categories were disciplinary order, contextualization, and coherence and reconstruction between theory and practice, which according to the professors of the subjects were more difficult to be applied in the teaching practices.

Professors' difficulty to improve the disciplinary order is mainly related to their CCR short workload and when the course content proposed is highly technical, which requires more conceptual and specific knowledge from students than what is really needed. Such difficulty was also observed in a study carried out in a IES in Spain, which emphasized the importance of interdisciplinary practices to raise students' awareness of environmental problems and professional sustainable practices, as pointed out by Peña, Jorge and Los Reyes (2018). This is not about professors articulating concepts and methods of their subjects with others different from their qualification, but rather favoring and approximation to the theoretical-methodological dialogue with professionals from different areas of knowledge that are related to their object of study.

Although the methodology used pointed to a lower systemic view of the relations between individuals and the environment, represented by the contextualization characteristic, professors at UFFS believed that while students advanced in their courses, due to the accumulation of subjects and contents related to agroecology, a systemic view was reached. This belief, at UFFS, is also reinforced by the CCR Field Practice, which every semester seeks to relate the content of different subjects of the course with practical activities. We observed that the focus on the agroecology course favored this category. Leff (2001) defends the importance of breaking conceptual barriers and the construction of new support with an emancipatory character, which implies to change the way of thinking and promoting transformations in knowledge and education practices.

While the CCR Field Practice at UFFS strengthens contextualization in the agronomy undergraduate course, the category coherence and reconstruction between theory and practice is also favored by such practice. At Unioeste, professors reported absence of this category and justified it with the short workload of the subjects they teach, which makes it impossible to develop such practices. However, other issues such as lack of structure and limited resources were also mentioned as factors that prevented the theoretical-practical link as a complementary aspect in the knowledge production process. The difficulties of articulating theory and practice in the CCR was also found in other studies such as Silva (2014), in which the relation between concepts, problems, and practice is indispensable in the construction of environmental knowledge.

Despite the other curriculum greening characteristics presence in the subjects investigated, professors from both institutions pointed out other persistent issues related to the theme such as the difficulty to share knowledge in a different approach that is not the traditional one, to which both professors and students are used. The Cartesian and fragmented format of teaching, or according to (1996), the banking model of education, dominates all levels of education and can produce lack of coherence in the methodological suitability, regardless of the theme being studied. Such limitation is understood in Pitanga's (2015) report, which points out that the professors' conservationist view, built up in some areas of knowledge, reflects a reductionist view of the themes addressed in the classroom concerning aspects related to the environment. However, the professors interviewed believed that the teaching time, from their professional experience, allows these gaps to be filled in in the teaching and learning process.

In addition, professors in general do not have a background in environmental education, as pointed out by the interviewees in both courses, which would favor a teaching practice that included the environmental theme, emphasizing the relations and complexities in the interactions between human beings and the environment. The study put forward by Holmberg *et al*. (2008) reported that some qualification in environmental education might help the teaching practice, mainly when the education of those professionals was in more technical areas, which kept the rigor of the traditional education of those professionals, making it harder for them to approach the environmental perspective in different areas of

knowledge. The differential of such education was also reported by Mercado (2012), who investigated an education institution in Mexico and observed that one of the proposals adopted by the institution investigated and that had significant results in the incorporation of the environmental dimension to the curriculum was the professors' qualification in environmental teaching linked to their teaching practices.

However, the effort towards an environmental education might be hampered by the time destined to bureaucratic and research activities expected from professors, this factor was also identified by Viera (2015), who related these difficulties with lower involvement of the professional in the work with environmental issues in their subjects.

Thus, despite the professors in both courses investigated having pointed out difficulties related to the insertion of the environmental theme in their curriculum components, the UFFS agronomy undergraduate course showed that the emphasis on the agroecology qualification is a differential since it covers content and practice linked to sustainability and that favors curriculum greening, for presenting a higher percentage of subjects than that found at the Unioeste.

Schools working on agroecology follow a sociological, anthropological, ecological, and biological perspective, which raise the relations between society and nature in all discussions as inseparable, as pointed out by Sevilla Guzmán (2001). Such differential is also explained by the higher institutionalization of sustainability at UFFS than at Unioeste, as observed in the analysis of their institutional documents. However, it seems relevant to highlight the importance of the faculty of the institutions analyzed, since the teaching team must be engaged to the course proposal and understand that the curriculum is an unfinished instrument. Such understanding enables the choice and inclusion of knowledge and practices that can be emphasized or omitted in the curriculum.

4.Final considerations

The fast increase in environmental impacts caused by the productive practices in our society has evidenced the importance of investments in education that can contribute to the qualification of professionals committed to sustainability. The perspective of curriculum greening in the agrarian science area courses, such as agronomy undergraduate courses that educate professionals to act directly on natural resources and with farmers adds to the technical knowledge another kind of knowledge and a critical view that provokes commitment with environmental issues so that they can contribute to the sustainable rural development.

In such context, given the importance of greening the IES curricula, this research identified and analyzed the degree of curriculum greening proposed by the ACES network in the agronomy undergraduate courses of UFFS, campus Laranjeiras do Sul, which focuses on

agroecology, and Unioeste, campus Marechal Cândido Rondon, which is a traditional course that does not focus on a specific area.

The UFFS agronomy undergraduate course is new, it was created 10 year ago, and its focus on agroecology resulted in a curriculum structure divided into knowledge for a citizen and interdisciplinary education linked to technical knowledge, thus qualifying a professional able to contribute to the sustainable rural development. Conversely, the Unioeste agronomy undergraduate course, which is about 30 years old, shows a traditional curriculum structure with subjects prioritizing technical education in a disciplinary format, following the agrobusiness logic, which was the dominant model at the time of its creation. Due to the context and initial purpose of this IES creation, it is understandable that the UFFS course, despite having a shorter workload than that at Unioeste presents twice as many CCR with an environmental focus.

The difference in the number of subjects covering the environmental theme in both institutions – 36 at UFFS and 11 at Unioeste – might be explained by the different contexts in which both courses were created. However, despite this huge difference, when the selected subjects were analyzed regarding their adherence to the environmental theme, the results were very similar, the greatest difference was the focus on agroecology found at the UFFS course, which prioritized curriculum greening from the beginning of its proposal.

In both courses the curriculum greening appears in the professors' commitment, in outreach practices, and in the development of activities that employ an interdisciplinary perspective. The latter is more evident at UFFS with the insertion of the field practice subject. Professors of both institutions understand that curriculum greening is not more advanced due to the low workload of the subjects and the excess teaching activities, mainly in the areas of management and research. Professors at Unioeste also mentioned lack of structure and resources, while at UFFS lack of professors' qualification in environment-related themes.

Thus, rethinking the aspects that hamper curriculum greening is highly relevant, manly regarding professors' education, which still keeps the characteristics of a traditional education of Cartesian and fragmented format of knowledge transfer, in which active methodologies are not used. These courses could include, as observed in other IES around the world by Borges, Silva and Carniatto (2020), a professors' education course that would be taken every time a new professional joined the institution. However, it seems relevant to emphasize a strength observed in both institutions investigated that is the professors' perspective and commitment to the presence of the environmental theme in the content approached.

Therefore, new courses proposing guidelines for the education of agronomist engineers focusing on sustainability are in fact a differential. This goes beyond the number of CCR included in the course that promote approximation of the environmental theme in agronomic practices, it also favors the inclusion of the 10 characteristics of a greened curriculum proposed by the ACES. This was evidenced in the agronomy undergraduate

course focusing on agroecology at UFFS, which contributes to an education towards sustainable rural development

The framework used in the selection of CCRS limited the universe researched by the keywords selected, excluding other subjects that could also present an environmental perspective outside this framework, or a wider set of information related to the understanding of curriculum greening in higher education. Due to this limitation, we suggest that further research on the theme should broaden the analysis to include all subjects found in the PPC and apply the participant observation method as a way of deepening the analysis of the presence of the ACES network characteristics.

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