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Lesson Study and the Constructionist, Contextualized, and Meaningful approach to facilitate Universal Design for Learning implementations

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Abstract

Inclusion is a process through which society and education collaborate to value people's differences, recognize their abilities, and restructure their organization by utilizing various technological resources to bring out the potential of each individual. This paper outlines and discusses how the Lesson Study professional development methodology, grounded in the Constructionist, Contextualized, and Meaningful (CCM) approach, along with the Universal Design for Learning (UDL) framework, can support teachers in promoting inclusive education. It presents the theoretical assumptions and the pathways researchers have taken to train future teachers, support educators' continuous professional development in the Brazilian context, and build inclusive education through educational actions, academic initiatives, and scientific research. The study suggests that the combined use of Lesson Study and the CCM approach, supported by the UDL framework, fosters effective inclusive teaching practices that address the diverse needs of all students within inclusive educational settings. Furthermore, the results demonstrate that the intentional integration of CCM approach and UDL as facilitative conceptual frameworks, alongside using Lesson Study as an iterative process for professional development, establishes the conditions necessary for inclusive education to flourish.

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Keywords: inclusive education; pedagogical practices; teacher professional development.

Lesson Study e a abordagem Construcionista, Contextualizada e Significativa para apoiar implementações do Desenho Universal para a Aprendizagem

Resumo

A inclusão é um processo pelo qual a sociedade e a educação colaboram para valorizar as diferenças das pessoas, reconhecer suas habilidades e reestruturar sua organização, utilizando diversos recursos tecnológicos para desenvolver o potencial de cada indivíduo. Este artigo descreve e discute como a metodologia de desenvolvimento profissional Lesson Study, fundamentada na abordagem Construcionista, Contextualizada e Significativa (CCS), juntamente com o referencial do Desenho Universal para a Aprendizagem (DUA), pode apoiar os professores na promoção da educação inclusiva. Apresenta os pressupostos teóricos e os caminhos que os pesquisadores têm seguido para formar futuros professores e apoiar o desenvolvimento profissional contínuo de educadores no contexto brasileiro com o objetivo de construir uma educação inclusiva por meio de ações educacionais, iniciativas acadêmicas e pesquisas científicas. O estudo sugere que o uso combinado do Lesson Study e da abordagem CCS, apoiado pela estrutura conceitual do DUA, promove práticas pedagógicas inclusivas eficazes que atendem às diversas necessidades de todos os estudantes em ambientes educacionais inclusivos. Além disso, os resultados demonstram que a integração intencional da abordagem CCS e do DUA enquanto estruturas conceituais facilitadoras, juntamente com o Lesson Study como um processo de desenvolvimento profissional contínuo, estabelece as condições necessárias para o sucesso da educação inclusiva.

Palavras-chave: educação inclusive, práticas pedagógicas, desenvolvimento profissional docente.

Estudio de Clase y el abordaje Construccionalista, Contextualizado y Significativo para apoyar implementaciones del Diseño Universal para el Aprendizaje

Resumen

La inclusión es un proceso mediante el cual la sociedad y la educación colaboran para valorar las diferencias de las personas, reconocer sus habilidades y reestructurar su organización, utilizando diversos recursos tecnológicos para desarrollar el potencial de cada individuo. Este artículo describe y discute cómo la metodología de desarrollo profesional Estudio de Clase, fundamentada en el enfoque Construccionalista, Contextualizado y Significativo (CCS), junto con el marco del Diseño Universal para el Aprendizaje (DUA), puede apoyar a los docentes en la promoción de la educación inclusiva. Presenta los supuestos teóricos y los caminos que los investigadores han seguido para formar a futuros profesores y apoyar el desarrollo profesional continuo de educadores en el contexto brasileño, con el objetivo de construir una educación inclusiva a través de acciones educativas, iniciativas académicas e investigaciones científicas. El estudio sugiere que el uso combinado de Estudio de Clase y el abordaje CCS, apoyado en la estructura conceptual de DUA, promueva prácticas pedagógicas inclusivas eficaces que atiendan las diversas necesidades de todos los estudiantes en ambientes educativos inclusivos. Además, los resultados demuestran que la integración intencional del abordaje CCS y DUA en cuanto a estructuras conceptuales facilitadoras, juntamente con el Estudio de Clase como un proceso de desarrollo profesional continuo, se establecen como condiciones necesarias para el éxito de la educación inclusiva.

Palabras clave: educación inclusiva; prácticas pedagógicas; desarrollo profesional docente.

Introduction

The importance of an education system that includes all learners has been broadly recognized globally (IBE-UNESCO, 2016). There is a growing emphasis in international education policy on the necessity for national education systems to deliver inclusive and equitable education for every student (e.g., United Nations Convention of the Rights of

People with Disabilities, 2006; United Nations Convention of the Rights of People with Disabilities, 2020; and Progress towards the Sustainable Development Goals). Although particular focus is frequently given to the most vulnerable students, an inclusive approach to education is increasingly acknowledged as advantageous for all pupils (Fluminhan *et al.*, 2022). In response to shifts in international conventions and national education policies, numerous education systems have started to explore how innovative pedagogical approaches can enhance inclusive education practices (Jwad *et al.*, 2022; Lanuti; Mantoan, 2021; Norwich; Benham-Clarke; Goei, 2021; Oliveira *et al.*, 2023).

Motivated by the need to transform pedagogical practices to facilitate knowledge construction during teaching while fostering autonomy and inclusion, the Constructionist, Contextualized, and Meaningful (CCM) approach (Schlünzen, 2020) has gained significant prominence in contemporary education. Its rise is primarily attributed to its strong focus on the contextualized and meaningful construction of knowledge (Lima, 2024). Aligned with the CCM approach, this paper discusses the role of the Universal Design for Learning (UDL) framework as an appropriate framework for proactively addressing inclusive education. UDL anticipates and plans for inherent student variability in every classroom and incorporates flexibility and choice in how students engage in learning and with both formative and summative aspects of assessment (Bray *et al.*, 2024).

Despite a growing interest in both the CCM approach and UDL being recognized as relevant frameworks for inclusive education (Orndorf *et al.*, 2022), there is little understanding of how schools can create quality teaching and support teachers and pre-service teachers to incorporate this knowledge into their pedagogical practices (Bray *et al.*, 2024; Norwich; Benham-Clarke; Goei, 2021). Thus, “if the goal is to establish a new theory of education for all, grounded in difference itself, there is a need to be consistent in the training of those who are part of the process and participate in the re-articulation of the school: the teachers” (Lanuti; Baptista; Mantoan, 2022, p. 109).

Teacher education is a definitive contributory factor influencing pedagogical processes, potentially initiating profound transformation in schools and society. Consequently, mere training in teaching and learning processes is insufficient for the future educational workforce. Nóvoa (2024, p. 2) contends that teachers must be prepared to navigate cultural, symbolic, social, and political dimensions while valuing “their central role in the construction of a new social contract for education.” Educating

teachers to be inclusive is not a task that can be accomplished simply through workshops, theoretical reading and discussions, public politics, and international recommendations.

According to Darling-Hammond *et al.* (2017), effective teacher professional development should (1) be content-focused, (2) incorporate active learning strategies, (3) support structured teacher collaboration, (4) make use of models and modeling of effective practice, (5) integrate coaching and support of experts, and (6) provide opportunities for feedback and reflection. The Lesson Study methodology includes all six above elements. These components collectively establish a robust foundation for initial and ongoing professional development, with the potential to foster improved teaching practices. Lesson Study is a form of collaborative professional development methodology that includes clear learning goals for students, a shared curriculum, support from administrators, and the dedicated efforts of teachers striving to improve their practice over time. The idea behind Lesson Study is that improving student learning requires understanding their interests, motivations, and difficulties and finding ways to offer a teaching methodology that addresses their needs (Stigler; Hiebert, 1999).

This paper explores how Lesson Study, grounded in the CCM approach, can facilitate UDL implementations and support teachers in promoting inclusive education. This discussion resulted from a transnational collaboration between universities in Brazil and the U.K., fitting as Lesson Study's historical genesis evolved from the cross-fertilization of educational ideas and practices between Japan and the United States in the nineteenth century. The collaborations, facilitated by the Center for the Promotion of Digital, School, and Social Inclusion (CPIDES), provided valuable lessons in designing effective professional development for promoting inclusive teaching at any school level or educational context.

Need for pedagogical development models

In this paper, and according to the CCM approach and the UDL model, inclusion is a process through which society and education collaborate to anticipate learners' differences, recognize their abilities, and utilize various technological resources to help individuals reach their full potential. To achieve this, the educational environment needs to be restructured to ensure learners have access to, remain engaged in, and actively

participate in formative processes while appreciating each person's unique differences.

Access involves using assistive technology, ranging from simple adaptations, such as modified tools, to more advanced digital technologies. Furthermore, careful planning and preparation are essential when utilizing digital material, such as animations, audio files, e-books, videos, and other technologies. For instance, texts should be formatted in PDF or HTML to ensure compatibility with screen readers and voice synthesizers. Visual materials should feature audio descriptions, including images, videos, games, and animations. At the same time, auditory content must include sign language, which in Brazil is referred to as Libras (Brazilian Sign Language), and captions. When designing a Virtual Learning Environment (VLE), it is essential to ensure that the platform is easy to navigate for all users, and that those requiring accessible resources do not need to search for them. Instead, once users complete their profiles, they should automatically receive accessible materials, fostering autonomy and equal opportunities for everyone (Schlünzen Junior *et al.*, 2015). This approach aligns with what Bracken (2019) refers to as 'anticipatory inclusive design,' where educational resources are designed to be inclusive from the outset rather than being customized or adapted later.

In terms of retention and participation, educators still face challenges in adhering to the principles of inclusive education. This is because ensuring all students learn at the same pace and within the same timeframe in such a heterogeneous classroom is complex. As Haug (2017, p. 206) states

Inclusive education faces challenges connected to ideals and action. If we turn to different international organizations, such as UNICEF, UNESCO, the Council of Europe, the United Nations and the European Union, the definitions of inclusion have several common ideal elements (Hardy and Woodcock, 2015; Kiuppis, 2011). Inclusion then involves the right to education for all students. The values associated with inclusion have links to interactionist ideology and revolve around fellowship, participation, democratization, benefit, equal access, quality, equity, and justice. Inclusion involves fellowship and participation in school culture and curricula for all students (Booth, 1996). (Haug, 2017, p. 206).

According to Haug (2017), following the 1994 Salamanca Statement, most European countries started recognizing that inclusive education is essential for ensuring equal educational rights for all individuals with specific needs. In Brazil, the 1988 Federal Constitution already included provisions for including people with disabilities, further strengthened by this declaration. The 2008 National Policy on Special Education

from the Perspective of Inclusive Education (PNEEPEI) established the target group for Special Education to include individuals with disabilities (auditory, physical, intellectual, and visual), those with Global Developmental Disorders (GDD), now referred to as Autism Spectrum Condition (ASC), and those with High Abilities or Giftedness.

Although Inclusive Education differs from Special Education, the challenges of inclusion became more complex when learners identified as students with special educational needs (SEN) gained the right and duty to attend regular schools. Educational institutions struggled to integrate these students into their pedagogical practices designed for a standard student profile. This was particularly challenging due to the methodological approach adopted by schools. This approach focused on homogenizing students, aiming for all to learn the same material at the same time, in the same way, and at the same pace, with assessments that hindered students' ability to progress and succeed. As a result, schools attempted to enforce homogeneity in a context where students are inherently diverse, especially those with specific needs.

Responding to the identified issues, in the 1980's UDL emerged as a systems-based approach to consider the diversity and differences of students. UDL encourages educators to creatively envision the curriculum in a way that facilitates learner progression by promoting their development within an inclusively designed learning, social and technological environment. Sebastián-Heredero (2020) indicates that UDL is founded on principles that, beyond ensuring physical access to the classroom and materials, facilitate access to the aspects of learning. According to Bracken and Novak (2019, p. 25), "Increasingly, international research illustrates that UDL can transform educational provision through a framework that uses multiple means of engagement, multiple means of representation and multiple means of expression (...)." The engagement facet of the framework ensures that learners' identities and interests are considered; the representation feature enables learners and their teachers to plan for ways that information can be conveyed and retained in a diversity of ways, including by maximizing the affordances of information and assistive technologies. The notion of action and expression provides scope for learning to be formatively scaffolded, showcased and assessed so that learning plays to the strengths of what diverse learners are capable of doing.

UDL is intrinsically related to the curriculum, which should be open and flexible. School actors should review and modify this curriculum to make it accessible to students, aiming for their integral development. Beyond cognitive aspects, this development includes social, political, emotional, and affective dimensions, which should be valued in the society and educational environment where it is implemented. Robinson, Johnson, and Rappolt-Schlichtmann (2013, p. 1211) counter criticism of UDL by stating that “Universal” does not mean “one size fits all”; rather, it implies that curricula and materials are conceived of and designed to accommodate the broadest possible range of learner needs and preferences.

Thus, for students to develop their skills and discover their potential, it is necessary to eliminate communicational, pedagogical, technological, and methodological barriers through accessible and diversified materials and to review the teaching and learning process. To achieve this, it is essential to consider a new pedagogical approach and reconsider how assessment is conducted, using tools that observe student engagement in tasks.

Considering this panorama, researchers of the CPIDES (available at <https://cpides.com.br/portal/>) sought to build a collaborative trajectory with educators in regular education environments to reassess teaching methods and introduce new methodological concepts. They researched pedagogical practices that value differences and diversity in classrooms and focused on providing opportunities for students with special educational needs (SEN) to discover their own skills, competencies, and potential.

In this regard, Perrenoud, Ramos, and Alessandrini (1999) emphasize the need to develop an approach that fosters the competencies of both teachers and students, according to their perspectives. Based on these premises, Schlünzen's doctoral research (2000) defined the basic principles to guide teachers in constructing a methodology that includes technological resources to create a Constructionist, Contextualized, and Meaningful (CCM) environment. This approach aims to awaken students' potential and skills, using project development as a strategy.

In this approach, the environment is constructionist because students use Information and Communication Technologies (ICTs) to produce a tangible product and build knowledge based on their interests (Valente, 2005). It is contextualized because the project topic is chosen based on the student's field of interest, with data

being constructed from their context. Using a generative theme, the project is developed from their experiences, life, and reality. It is meaningful, firstly, because during the project development, students encounter new concepts, and the teacher seizes this opportunity to provide pedagogical mediation to formalize and systematize these concepts, giving meaning to the learning process. Secondly, each student can act according to their capabilities, skills, and interests.

With the results obtained from Schlünzen's doctoral research (2000), the research group named Potentializing Environments for Inclusion (PEI) was created and registered in 2003 with the National Council for Scientific and Technological Development (CNPq) of Brazil. According to the CCM approach, this group is linked to CPIDES and aims to develop research projects and formative processes focused on investigating resources that promote digital, social, and school inclusion and studying teaching practices for students with special educational needs (SEN).

One noteworthy factor is that, during the nearly 21 years of the PEI research group's activities, it has been observed that undergraduate and continuing education programs face difficulties in preparing professionals who work in the school context and the process of including students with SEN. The main difficulties faced by schools in building an inclusive school culture are related to the following aspects: (1) the gaps in training and preparation of teachers, both in regular classrooms and among specialists; (2) pedagogical practices, which have generally focused on addressing the difficulties of students with special educational needs (SEN) at the expense of exploring their potential; (3) the inadequate physical and architectural structure of the school environment that hinders accessibility; (4) the lack of knowledge among school administrators and leaders to meet the accessibility requirements outlined in public education policies; and (5) the misconception about the meaning of inclusive education (see Schlünzen *et al.*, 2020). Together, these challenges provide a strong rationale for researchers to investigate the complexity of the topic and explore how to provide in-depth training that supports teachers in becoming effective, inclusive educators.

The articulation of the Constructionist, Contextualized, and Meaningful approach with the UDL framework

To enable inclusive education and address the proposals for reorganizing the

school curriculum to meet the demands set forth by the 2008 National Policy on Special Education in the Perspective of Inclusive Education (PNEEPEI) and the Brazilian Law on the Inclusion of Persons with Disabilities, which call for the implementation of a high-quality public school for all, the PEI research group adopted the CCM approach. As new investigations were conducted, the researchers advanced along a path of scientific maturation. The research validated the CCM approach, which has been increasingly consolidated, demonstrating its effectiveness in supporting teaching and learning in both schools and universities and opening up possibilities for the formative processes of educators striving for an inclusive society.

Notably, the CCM approach facilitated the integration of everyday life into the classroom, enabling practical applications and learning grounded in the student's context and reality, which Masetto (1988) considers fundamental. Consequently, educators who participated in the formative processes offered by CPIDES leveraged the richness of each moment to address curriculum content, thereby formalizing and contributing to the meaningful construction of knowledge. The curriculum was delivered based on issues of interest to educators and students, without the segmentation of disciplines, as Hernández *et al.* (2017) advocated. In each activity, educators conducted inquiries within their immediate environment, encouraging reflection, formalization, and systematization of the concepts addressed; these processes honed skills they could apply in their classrooms. Thus, the curriculum was addressed even when concepts were not covered linearly. In sum, the CCM approach emphasizes that content should be drawn from students' everyday experiences and advocates for teachers to continuously analyze potential areas of exploration, allowing upcoming activities to be designed and planned through a reflective process.

In this process, the individual undergoing training—whether a manager, teacher, or student—becomes an active participant who uses technology to create something of personal interest in a co-creative situation. The logic of the training shifts, with the focus moving away from purely academic goals toward preparation for life and professional practice in the school setting. In continuing education, theory underpins practice, with data gathered from the educators' contexts rather than delivering content or techniques that professionals often struggle to apply. The CCM approach is based on the premise that knowledge is constructed through experience, reflection, and theory, which, while necessary, should not be the sole source of knowledge construction.

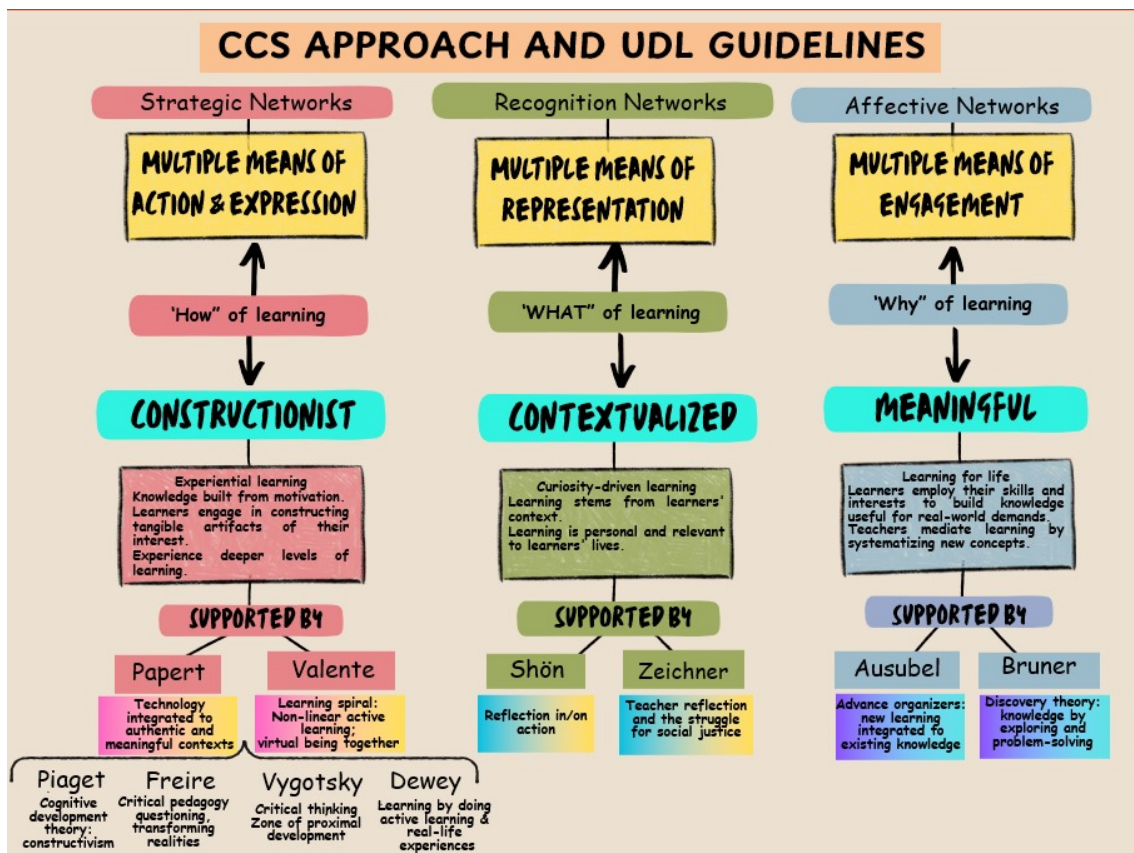
Moreover, an open education system utilizing digital educational resources enables the development of pedagogical practices centered on the individual.

From the perspective of the CCM approach, assessment aims to encourage individuals to reflect and become aware of their growth and skills to continuously develop and refine their abilities and self-image for participation in society. In this context, self-assessment is crucial for understanding individual and collective perceptions, and when properly designed, it becomes essential in shaping formative assessment. The teacher should not disregard formative assessment (Perrenoud; Ramos; Alessandrini, 1999), as this assessment allows for analyzing students' various social, emotional, affective, and cognitive manifestations in learning situations. As an active participant, this is important because the student perceives the ease and challenges of reasoning, proportion, articulation, and sociability (Hoffmann, 2014).

Based on the experiences garnered through the research conducted by CPIDES members, adopting the CCM approach facilitates collective group work, which fosters collaborative learning and aids in overcoming challenges, aligning with Vygotsky's (1993) Theory of the Zone of Proximal Development. Moreover, learning does not occur solely within a dependent relationship with teachers (Masetto, 1998); instead, it emerges from a robust partnership between teachers and students. Notably, each participant in the research conducted from the perspective of the CCM approach contributed significantly, transitioning from the role of spectator to becoming a protagonist in the changes that transpired.

The three fundamental principles of the CCM approach—constructionism, contextualized learning, and meaningful learning—are foundational values supporting inclusive education's advancement through experiential learning. These principles align with the UDL framework, enabling its integration with the CCM approach to ensure accessibility for all types of learners within the educational environment. The UDL framework encompasses critical principles designed to overcome barriers within the learning environment. These principles include i) representation, which ensures resource accessibility; ii) action and expression, which provide alternative methods of communication; and iii) engagement, which employs strategies to foster active participation in learning (CAST, 2024). Figure 1 demonstrates how the CCM approach and the UDL framework can be interwoven and the pedagogical foundations that support the theories.

Figure 1 – Pedagogical foundations of the CCM approach intertwined with the UDL guiding principles



Source: Elaborated by the Authors (2024). Based on Schlünzen *et al.* (2020) and CAST (2024).

Building on the above, the CCM approach is introduced as a pedagogical theory emphasizing collaborative learning that is meaningful to the learner's life and valuable for constructing knowledge through experimentation. The constructionist dimension holds that people learn best when actively involved in creating something meaningful to them. This could be a computer program, a piece of art, or a physical model. Papert (1986) posits that learning occurs in authentic and meaningful contexts. Instead of grasping concepts abstractly, learners engage in projects that interest them, making learning more relevant and motivating. The Spiral of Learning by Valente (2005) emphasizes that learning is not a linear process but a dynamic, evolving cycle. Each iteration through the spiral deepens understanding and knowledge as learners continually build on previous experiences, refine their thinking, and apply what they have learned in increasingly complex ways.

The contextualized dimension of learning asserts the value of acquiring knowledge within authentic, real-world contexts, contrasting with traditional learning

methods, which often depend on abstract, decontextualized knowledge. The reflective practice in action concept proposed by Schon (2017) argues that students and professionals, including teachers, learn best by reflecting on their experiences while they are engaged in practice (before, during, and after action). This reflection allows them to adjust and make decisions in the moment, grounded in the specific context they are working within. Zeichner (1993) extends these ideas into the field of teacher education, advocating for a more contextualized approach to learning. He argues that teachers should engage in reflective practice, critically examining their teaching methods and decisions within the context of their classrooms. This reflection helps teachers understand how their actions impact student learning and how they can improve their practice.

The meaningful dimension of learning involves deeply understanding content, integrating new knowledge with existing cognitive structures, and applying this knowledge to new situations to form new organizers. Ausubel's Advanced Organizers Theory are tools or frameworks presented before new learning content. They help bridge the gap between what the learner already knows and what they are about to learn, facilitating the integration of new knowledge and ensuring the learning is significant and relevant. As proposed by Bruner (1973), discovery learning highlights the value of learners actively engaging in discovering and constructing their understanding of concepts rather than passively receiving information from a teacher. Bruner's theory is based on the idea that learning is most effective when students explore, inquire, and solve problems independently. This approach aligns with the concept of scaffolding, which involves supporting students as they develop their skills and understanding.

These three dimensions—constructionist, contextualized, and meaningful learning—intertwine to form a comprehensive and dynamic pedagogical framework within the CCM approach. Together, these dimensions create a learning perspective that is engaging, relevant, and inclusive of learners' evolving needs, ultimately leading to more effective and lasting educational outcomes. The UDL framework complements this by accommodating the multidimensional aspects of inclusive education. The specific model of inclusive education adopted by CPIDES researchers acknowledges the potential for the framework to further augment the CCM approach, especially since the further development of the framework 3.0, which acknowledges and validates wider attributes of learner identities, such as appreciation for the socio-economic and the wider

community cultural contexts within which learners and their schools are situated (CAST, 2024).

The UDL framework is grounded in three core principles, one of which is providing multiple means of action and expression. This principle asserts that rigid summative assessments should not determine students' success. Instead, assessments should be personalized, offering choice and flexibility through ongoing formative and summative evaluations. These assessments allow students to demonstrate their knowledge, understanding, skills, and values in ways that align with their learning goals. Therefore, to ensure an inclusive curriculum, it must offer diverse options for students to showcase their learning and abilities, recognizing that there is no one-size-fits-all approach (Edyburn, 2005).

Providing multiple means of representation is the principle that emphasizes the importance of accommodating learner variability in accessing, engaging with, interpreting, and understanding educational content. Teachers must present information through various media and methods to effectively support this diversity. By doing so, they reduce barriers to learning, fostering an inclusive educational experience for all students (CAST, 2024). Through thoughtful and creative anticipatory instructional design, teachers can address varying levels of prior knowledge, experience, skills, and capacities while also honoring the diverse backgrounds and identities of their students, facilitating “broader access to and deeper engagement with the learning concept” (Chen; Evans; Luu, 2023, p. 2).

The principle of providing multiple means of engagement is rooted in the belief that learning environments should be designed flexibly to allow every student to find their own path into the learning process, participate meaningfully, build their capacities, and remain motivated when faced with challenges (CAST, 2024). This principle emphasizes the importance of creating learning experiences that resonate with students. When students can incorporate their identity, prior knowledge, and experiences into the learning process—and when these elements are valued—they are more likely to be motivated and actively engaged. Simultaneously, teachers must be mindful of managing students' cognitive load. If the learning environment is overwhelming, students may struggle to focus or to know where to direct their cognitive energy. Therefore, teachers must ensure that students can access the necessary language, background knowledge, and skills for engagement without introducing additional layers of complexity that could

hinder their meaningful participation (Flood; Banks, 2021).

These principles have emerged as a framework to improve the learning of all students (see CAST, 2024). However, achieving inclusivity requires careful consideration of various factors and involves qualifications. Transformations in pedagogical practices must account for what teachers do, feel, and say, as well as their interactions with others (students, colleagues, parents, and communities), all within the context of the demanding nature of teaching. This involves imparting meaning to students and operating within a specific work environment shaped by a particular social context (Schlünzen *et al.*, 2020). To address these challenges, it is essential to promote professional teaching-learning methodologies and to encourage teachers to adopt a multidimensional perspective in their work, fostering a reflective approach to their initial and ongoing professional development (Lima, 2024).

Lesson Study

Lesson Study, which originated in Japan, has garnered increasing global interest. While much of the research has been conducted in Asia and the United States, an expanding body of research is emerging from European countries (Fang; Wang, 2021) and Latin America (Lima, 2024). Research on Lesson Study has focused on enhancing academic teaching and learning, particularly in mathematics and science (Da Ponte, 2017; Fluminhan; Schlünzen; Schlünzen Junior, 2024). However, recent studies suggest that Lesson Study also holds promise for fostering inclusion (Norwich; Benham-Clarke; Goei, 2021). Given its emphasis on collaborative, reflective practices, Lesson Study has significant potential and the required credentials to advance in inclusive education.

In Lesson Study, one or more groups of teachers work together to develop their practice. The methodology centers around the research lesson, where teacher groups work collaboratively to establish objectives for student learning and long-term development, meticulously planning the lesson. During the implementation of the lesson, one group member teaches while others observe, gathering evidence on student learning and development. The teachers meet to reflect on and discuss the collected evidence after the lesson. In the final phase of the Lesson Study cycle, all groups come together to share and discuss their insights, fostering collective learning and contributing to developing the school's culture (Lewis, 2002). Through observing various students, teachers gain

insights into how students engage with and learn from the lesson. This emphasis on understanding student thinking and learning is fundamental to Lesson Study. Rather than merely aiming to create effective lessons, Lesson Study is better understood as a research process designed to facilitate teacher learning and enhance future instruction (Stigler; Hiebert, 2016).

In the Lesson Study process, reflecting on how teaching impacts student learning, observing student learning, and anticipating students' lesson experiences are crucial elements (Fujii, 2014). Cerbin and Kopp (2006) refer to this practice as *cognitive empathy*, which involves understanding students' perspectives and comprehending their thoughts, motivations, and intentions. These insights can then be used to plan lessons that better support student learning (Aas, 2021). Lesson Study systematically provides opportunities for teachers to develop and apply this form of cognitive empathy, thereby facilitating the incorporation of the inclusive CCM way of being educators.

Pinto (2022), a member of the CPIDES research group, investigated whether and how the Lesson Study methodology could contribute to the understanding and implementation of the Technology and Innovation curriculum component during the transition from remote to face-to-face teaching. It also aimed to explore how this methodology could support the professional development of teachers in this curricular area in alignment with the CCM approach.

The CCM approach guided reflective practices, encouraging teachers to leave their traditional roles and adopt the students' perspective. This shift allowed them to develop anticipatory and empathetic thinking concerning their lesson plans' environmental conditions and curriculum, leading to re-evaluating teaching and learning processes. A vital outcome of this reflection was a significant revision of the lesson plan between the first and second implementations. New elements were added to the teacher's script to foster more significant interaction with students and ensure that all students could engage in deep, meaningful learning activities aligned with the principles of the UDL framework. These new activities included prompts to elicit student responses and supported formative assessment, carefully managing the level of challenge and support each student required throughout the learning process.

Another example, in line with the CCM approach, was identifying elements relevant to the student's age group that could enhance learning. The teachers recognized that Digital Information and Communication Technologies (DICT) offer valuable

opportunities in the teaching and learning process, provided they are used intentionally. As a result, they decided to retain the online game activity. However, it should be noted that other possibilities for using DICT were suggested, which could have fostered additional experiences of student agency. Despite this, collective decision-making always served as the final authority, as the group often justified maintaining certain activities due to time constraints related to covering the curriculum content and addressing various school demands.

In a recent study, Lima (2024), a researcher in the CPIDES department, examined how Microteaching Lesson Study (MLS) grounded in the CCM approach could foster meaningful, collaborative, and inclusive educational practices among 33 preservice teachers in Brazil. The CCM approach provided participants with a transformative experience. During the study, it was observed that preservice teachers who initially felt anxious, nervous, and uncertain about their ability to engage in the MLS process became central figures in their learning journey. They worked individually and collaboratively to study, plan, teach, revise, and reflect on a lesson that was not focused on meeting the expectations of the subject teacher or the researcher. Instead, participants centered their learning on their interests and contexts, making their learning and teaching active practices.

Integrating the CCM approach with the MLS methodology primarily contributed to redefining teaching practice, shifting away from mere adaptation to a specific group of students. The CCM approach advocates for an educational system designed for all, acknowledging that learning varies in pace and style. The UDL principles supported the researcher and participants in removing barriers to achieving high-quality education for everyone. It provided scaffolding and flexibility in lesson planning, class delivery, and assessments. This approach meant that participants did not follow uniform learning paths, encouraging them to reflect on their lesson plans and ensure inclusivity. The focus was on shaping preservice teachers into inclusive educators, equipping them to meet contemporary educational demands beyond just a 'lesson' and fostering their development as autonomous, reflective practitioners (Lima, 2024).

Final considerations

Based on the research conducted by the CPIDES team since the 2000s in

teaching, research, and outreach, formative processes were developed to find ways for educators to be trained with a thorough understanding of the CCM approach. The research aimed to contribute to including students with and without SEN in school environments and to enhance research production at the levels of undergraduate research, master's, doctoral, and postdoctoral studies. The CCM approach has demonstrated transformative potential by reducing inequalities in information and communication technologies—addressing digital, technological, and knowledge exclusions—and accelerating progress toward implementing the 2030 Agenda (UNESCO, 2021).

Education in Brazil is currently under critical review and constant debate. With ongoing discussions about promoting inclusive education for all and aligning with national legislation, now may be an ideal time to proactively integrate the CCM approach and UDL principles into policy, curriculum design, and teaching practices. The CCM approach, combined with flexibility UDL principles, promotes lifelong learning and equitable learning opportunities. We argue that Lesson Study is a suitable teacher-training methodology that supports teachers in understanding how to become CCM educators in a sustainable, steady teaching improvement.

Based on the studies and experiences in teacher education carried out by the CPIDES research group, a strong, solid educational alignment between Culturally Sustaining Pedagogy (CCM) and Universal Design for Learning (UDL) has been identified, as outlined in this article. Lesson Study, in turn, has emerged as a teacher development methodology that, when grounded in the principles of CCM and UDL, creates learning opportunities that foster the establishment of inclusive cultures within educational environments across diverse contexts. Ongoing formative processes may further advance the consolidation of CCM, UDL, and Lesson Study as a cohesive, inclusive educational framework, aligning with global efforts to achieve inclusive schools.

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