

**Generative artificial intelligence as a co-pilot in universal design for learning:  
Automation of curriculum adaptation in inclusive education.**

*Generative artificial intelligence as a co-pilot in universal design for learning: automation of curriculum adaptation in inclusive education*

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**Abstract:** The daily life of teachers facing inclusive education is marked by intense challenges, especially due to the complexity of middle school (grades 6-9). This article discusses the role of Artificial Intelligence (AI). Generative AI is not a substitute, but rather a co-pilot for teachers in implementing Universal Design for Learning (UDL). The objective is to present practical solutions to pedagogical overload, using AI to automate curricular adaptations that teachers often cannot carry out due to lack of time or tools. Through an analysis based on teaching practice and the reality of Brazilian schools, the study demonstrates that this technology can be the key to overcoming pedagogical barriers, transforming planning into a more agile and accessible process. In conclusion, it is understood that the conscious use of these digital tools offers the necessary support for teachers to truly embrace diversity in the classroom, guaranteeing each student's right to learn.

**Keywords:** Teaching Practice; UDL; School Inclusion; Artificial Intelligence; Curriculum Adaptation.

**Abstract:** The daily routine of teachers regarding school inclusion is marked by intense challenges, especially within the complexity of Middle School. This article discusses the role of Generative Artificial Intelligence (AI) not as a replacement, but as a co-pilot for teachers in implementing Universal Design for Learning (UDL). The objective is to present practical solutions for pedagogical overload, using AI to automate curricular adaptations that teachers often struggle to complete due to time constraints or a lack of tools. Through an analysis of teaching practices in Brazilian schools, the study demonstrates that this technology can be the key to removing pedagogical barriers and transforming planning into a more agile and accessible process. Ultimately, it is proposed that the conscious use of these digital tools offers the necessary support for teachers to effectively embrace diversity in the classroom, ensuring every student's right to learn.

**Keywords:** Teaching Practice; UDL; School Inclusion; Artificial Intelligence; Curricular Adaptation.

## 1. Introduction

Talking about school inclusion is something that, at first glance, seems resolved on paper. It is known... of the laws, official documents and guidelines that, above all, provide security and guarantee. to this right. However, when observing the daily routine of schools, it becomes clear that, upon doing a comparison, as practice can be understood as a much more complex element than theory and how it is presented.

The teacher is the one closest to the students in this daily challenge: welcoming each one of them.

With care, acknowledge that everyone is different and do everything possible to ensure that everyone can learn and develop. However, he does not always receive the necessary training, constant support, or suitable conditions to make this proposal a reality.

Having rules isn't enough. For inclusion to truly happen, preparation is necessary. Organization and opportunities to learn more about the topic. The teacher needs time to think. In new ways of teaching, adjusting activities and changing course when something doesn't work. In Without this support, it is common for many educators to feel insecure and helpless when faced with challenges. of the daily challenges, since they need to deal with heterogeneous classes, in which each student It has its own pace and distinct ways of learning.

Ideas like UDL (Universal Design for Learning) arise from the school's own needs and present themselves as... Promising avenues for making education more accessible. However, when there is no guidance and However, without proper monitoring, these proposals end up seeming distant from the reality experienced in the classroom. class. Therefore, it is essential to strengthen spaces for conversation among teachers, to encourage groups study and ensure ongoing pedagogical support. These actions help transform theory into practice. concrete in everyday life.

Another aspect that deserves reflection is the use of technology. The cell phone is a resource. Technology is present in students' lives, but is often still seen only as something connected. to entertainment and distraction. Because of this view, the educational system ended up prohibiting it. in various school settings. However, when it comes to be understood as an instrument That which can contribute to learning ceases to be a problem and becomes a support. important for pedagogical work.

At the same time, it is impossible to ignore the digital divide. Social inequality is a In reality, not everyone has access to technology, not even to devices with access to... Good quality internet is needed to carry out the proposed activities. In this context, it is clear that if the If technology is not planned in a universal way, aiming for access by all, it ceases to be inclusive. to become exclusive, progressively increasing the gap between students from different backgrounds.

Given this scenario, this work proposes a reflection on generative Artificial Intelligence. as a possible support for the teacher. It is not about replacing the educator, but about offering a resource. that facilitates planning and helps transform inclusive principles into concrete actions. The intention It is especially important to collaborate with those who work in jobs that lack a good structure and who do not... They receive the necessary support from institutional backing to develop quality work.

## 2. THEORETICAL FRAMEWORK

### 2.1 Universal Design for Learning (UDL) as an Inclusion Strategy

Universal Design for Learning (UDL) is not, and should not be seen as, a collection of ready-to-use techniques. It invites us to rethink how teaching is done. It is planned from the start. Instead of waiting for challenges to arise and only then making adjustments, the planning should already take this into account as necessary from the beginning, given that the class is formed by students who are different from each other. Each student learns in their own way, and this diversity needs to be considered in advance, so that strategies are developed from the outset that are more flexible and inclusive.

The UDL (Universal Design for Learning) proposes that lesson planning be designed for all students, considering human variability as the norm and not the exception. To this end, it is based on principles that guide the creation of flexible learning environments, capable of offering diverse means of engagement, representation, action and expression, in order to minimize barriers and maximize learning for all (Zerbato; Lopes, 2020, p. 5).

In middle school (grades 6-9), this approach can be planned through fairly straightforward questions. Simple questions, such as: How does the student understand the learning process? What are... What knowledge do you really need to build? And, in practice, how can you demonstrate that? Did you manage to understand? These questions help structure the planning, but they run into a problem. The real challenge: time. The teaching routine is marked by many tasks and, faced with this great demand, this often makes it difficult for teachers to create, develop, and reflect on truly meaningful activities for each topic covered.

Therefore, the proposal to implement the DUA cannot be understood as more just another task, another activity outside the teacher's daily routine, but rather a new strategy. It is a tool to help organize teaching work. It encourages clear objectives, varied strategies, and... More flexible assessments. This approach is even more important in middle school, a stage in which... Students experience intense emotional changes and construct their identity.

Digital resources can assist in this process, provided they are used intentionally. pedagogical. Videos, written materials adjustable as needed, audio resources and Activities designed to involve all students are alternatives that broaden the possibilities of teaching and learning, offering different ways to work with and understand the content. Therefore, the teacher does not need to develop completely different plans, but can diversify them. paths within the same proposal.

According to scholars in the field, Universal Design for Learning is based on neuroscience evidence indicating the existence of...

different brain networks are involved in learning, related to engagement, recognition, and strategy. Based on this understanding, it is argued that offering multiple means of engagement, representation, action, and expression is not merely methodological diversification, but rather a structured response to how the brain processes information and constructs knowledge, reinforcing the need for flexible and inclusive pedagogical practices (Cast, 2018).

The applicability of UDA has the potential to promote paradigm shifts and...

mindset, since the focus of the assessment shifts away from the difficulties encountered by the student.

to value their achievements and potential. Thus, the educational unit begins to review

their practices. Inclusion is no longer directed only at some students and becomes part of the

Planning is essential for everyone. When the teacher anticipates potential obstacles, it broadens participation and provides support.

to prevent some students from becoming excluded, which often happens without anyone doing anything about it.

Notice.

Putting this proposal into practice requires ongoing training, management support, and organization.

collective. However, when diversity is recognized as a natural characteristic of the classroom

In this class, the school adopts a fairer and more humane approach.

## 2.2 Generative Artificial Intelligence as a Co-pilot in teaching practice

It is important to highlight that the arrival of AI in the field of education has generated much discussion and,

These are some of the doubts and insecurities. On the other hand, it requires attention, as it is a tool that is...

a great ally in teaching work; however, it does not replace it. Amidst the overload of tasks, it

can collaborate in organizing ideas, creating differentiated activities, and adapting to

texts.

The arrival of new technologies has come to contribute to the teacher's work, allowing them to rethink and...

Reframe your practice, not seeing them as a monster, but rather as tools to support your practice.

educational. By taking on some of the more operational tasks of planning, the teacher allows

that dedicates more time to what truly makes a difference: giving individualized attention, offering

guidance, open conversation, and walking alongside students throughout the process of

learning.

From this perspective, the teacher is required to reflect, in an analytical and critical way, on the

The tools, how they will be used, and the content to be created. Technology does not

He understands the reality of the class, their stories, their challenges, and their potential. This sensitivity

This belongs to the teacher. With this concept, the teacher needs to be aware that it is the main responsibility of the teacher.

responsible for developing the activities and ensuring that they are meaningful, that is, they give purpose to the

student learning.

When used consciously, Artificial Intelligence can expand possibilities and Strengthening inclusive practices. However, it only becomes meaningful when it has the purpose of strengthening inclusive practices. a clear pedagogical intent.

Therefore, the implementation of UDL in Middle School requires investment in continuing education, reorganization of planning and institutional support, which presents potential significant for improving pedagogical practices. By understanding diversity as a principle. As a structuring element of education, the school is moving forward in building more accessible, participatory and... aligned with the contemporary demands of inclusive education. Thus, UDL ceases to be understood as a methodological addition, it becomes a guiding reference. for the guidance of a pedagogical practice committed to the learning of all and for all.

### **2.3 Generative Artificial Intelligence as a co-pilot in teaching practice**

It is important to highlight that the arrival of AI in the field of education has generated much discussion. ...and from these, doubts and insecurity. On the other hand, it requires attention, as it is a tool that... It is a great ally in teaching work; however, it does not replace the professional. Amidst the overload In addition to tasks, she can collaborate in organizing ideas, creating differentiated activities, and in... adaptation of texts.

In this sense, the teacher acts as the main mediator of learning, being responsible for planning activities that, due to their relevance, give meaning to the process. educational.

The use of planning support tools allows educators to move from the position of information provider to becoming learning designers. By using resources that organize and diversify materials, the teacher can focus on removing pedagogical barriers, ensuring that the curriculum is accessible from its conception and not just through later and tedious adaptations (Nelson, 2021, p. 84).

When used consciously, Artificial Intelligence can expand possibilities and Strengthening inclusive practices. However, it only becomes meaningful when it has the purpose of strengthening inclusive practices. a clear pedagogical intent.

### **2.4 Challenges of implementation between prohibition and digital exclusion**

Even while acknowledging the diverse possibilities for teaching proposals, it is worth noting that... Obstacles are always present. This contributes significantly to the teacher's ability to...

Develop in a more conscious and questioning way, expanding your knowledge based on your own experience. In practice, however, some challenges still hinder this process. Among them is the total prohibition of the use of cell phones, which, when rigidly enforced, can interfere with student performance, as well as in the way the teacher conducts their classes.

Another challenge is social inequality. Not all students have the opportunity to use a technological tool (cell phone or notebook) or even have direct access to the internet. Therefore, any proposed work or educational activity that requires technology needs to be seriously considered and reconsidered, since inclusion can only truly occur when no one is excluded due to a lack of resources.

The integration of artificial intelligence into inclusive education cannot ignore existing technological gaps. It is imperative that AI be used to democratize knowledge, allowing teachers to create teaching alternatives that reach both connected students and those who depend on physical resources, otherwise technological innovation risks deepening existing educational inequalities if it is not planned ethically and equitably (Rosa; Rocha, 2023, p. 12).

### 3. Materials and Methods

This study adopted a qualitative approach, based on the analysis of academic publications about inclusive education and Universal Design for Learning in the Brazilian context. The intention was not only to bring concepts together, but also to reflect on how these ideas can be transformed into concrete actions in the school. Through bibliographic reading, an analysis was carried out on the daily life of teachers and their challenges. The resulting proposal stems from this dialogue between theory and practice.

The UDL guidelines offer a set of strategies applicable to any discipline, to ensure that all students have access to and can participate in meaningful learning opportunities. The method based on these guidelines requires the researcher and educator to identify barriers in the teaching environment and use flexible options to support recognition, strategy, and affective engagement in the learning process (Cast, 2018, p. 3).

Since this is a literature review, no physical or online questionnaire was used, nor direct participation of collaborating professionals or volunteers. All sources used are public and properly referenced, in accordance with the ethical principles of research in the academic.

### 4. Results and discussion

The analysis reveals that artificial intelligence can significantly enhance the

pedagogical work, making the development of activities and strategies more feasible and ensuring the

Regarding inclusion, the main obstacle is often not a lack of teacher commitment.

but the lack of time in the face of the multitude of daily demands.

The topic of inclusion requires a different perspective from everyone, especially those who are...

involved in the field of education. From this perspective, the school needs to develop a

Differentiated work, adapted to the students, and not the other way around. From this perspective, it is understood

New technologies have proven to be of great value and allies in the production of materials.

pedagogical. In this way, the teacher has more time to propose questions, intervene

when necessary and closely monitor the students' development, observing how each one...

He is advancing in his learning.

Technology, as a tool, has the power to transform education and the student's reality.

It is required that it be included and integrated into the teacher's planning and routine.

coordinator. It must be a conscious and well-thought-out plan, that is, with clear objectives,

so that learning can take place and the cell phone doesn't become a tool for entertainment.

Mobile learning and the use of smart technologies can help educators allocate their time more effectively by automating administrative tasks and allowing them to focus on providing individualized support to students. When used well, these technologies offer teachers the opportunity to create richer and more personalized learning environments that meet the specific needs of each learner (UNESCO, 2013, p. 22).

#### 4.1 The Intelligence of "Input": The human role in mediation with AI

The quality of the use of Artificial Intelligence depends, above all, on the teacher's perspective. The more...

The more he knows his students, the more meaningful the use of the tool will be. It's not just about using it.

It's not just about apps, but also about knowing how to consciously integrate them into daily classroom activities. It's up to the teacher.

choose, adjust, and organize what you consider most appropriate for your students and for the objectives you

wants to achieve.

Accessibility must be ensured as a fundamental right, guaranteeing access to assistive technology products, resources, strategies, and services that maximize the autonomy, personal mobility, and quality of life of people with disabilities. In the school environment, this implies that any technological innovation must serve to eliminate barriers to communication and information, allowing the full development of the student's potential (BRAZIL, 2015, p. 2).

By using the new tools and technological resources, the teacher gains more time and...

This period is extremely important so that he can be closer to his family.

students, being able to monitor them more closely, evaluating and reflecting on the performance of each one.

One, and through this result, this new way of evaluating, he should continue the work.

New processes, new content, and thus, their students will begin to construct new knowledge.

This will strengthen new bonds, and a welcoming environment can also be created.

### Final considerations

In the educational field, Artificial Intelligence has come to provide great support to teachers and, consequently, it contributes to the student's learning process, in addition to enabling the practice of actions inclusive, especially in contexts characterized by a lack of resources and Teacher overload. However, it does not replace experience, sensitivity, and commitment. teacher.

When planned, it can help open new paths for each student to learn from their own learning. That's the way it is. However, it's important to remember that the challenges aren't limited to technology. They also This involves the education system itself, school management, and teachers, who need to rethink their practices to meet the demands of the times we live in. A change is needed. The thinking and mindset of the professionals involved in teaching and education.

Overcoming the logic of prohibition and understanding technology as a pedagogical tool can... To bring the school closer to a more democratic and inclusive stance. The construction of an education that Truly welcoming all students depends, above all, on human decisions. conscious, respectful of diversity and difference, and committed to teaching and learning.

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