



Universal Design For Learning in the Inclusive Setting

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Universal Design for Learning, Inclusive Education, UDL Curriculum.

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ABSTRACT *Universal Design for Learning (UDL), developed by Center for Applied Special Technology, is a curriculum design framework that promotes equal opportunities for all the children, regardless of their disabilities and learning difficulties with the help of specially designed methods and technology. The principles of UDL, based on neuroscience, can be applied to the inclusive practices in the school. The paper highlights the principles underlying the UDL curriculum, its components and how it can be applied in the inclusive setting in order to cater to the special needs of the children with or without disabilities and learning difficulties.*

Inclusion, according to Oxford English Dictionary, is defined as the action or state of including or of being included within a group or structure. Inclusive Education is an approach of educating the children with disabilities and learning difficulties along with normal children within the same group. Today's classroom is of student diversity which includes students with varying abilities, disabilities, different learning needs and preferences. Every child has the right to get proper education under any circumstances. School should accommodate these children regardless of their disabilities which led to the concept 'Inclusive School'. According to the Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994), the Principle of Inclusive Education was adopted at the "World Conference on Special Needs Education: Access and Quality." It was also supported by Dakar Framework of Action (UNESCO, 2000).

India is a land of varying diversities not only in custom, belief, language and culture but also in the case of children with disabilities. Till 1990, majority of the children with disabilities were excluded from the mainstream education due to many reasons. The National Policy on Education (NPE, 1986) stresses on the need of integrating 'children with special needs' with the normal children with the objective "to integrate the physically and mentally handicapped with general community as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence." With the implementation of Inclusive Education, children with disabilities are accommodated in the mainstream schools thereby helping them to meet their special educational needs. One of the main challenges in the Inclusive Education is the task of developing child centered pedagogy suitable for all children with or without learning difficulties and disabilities.

Education of individuals with disabilities in the United States reflects the worldwide trend of encouraging a single curriculum for all learners. The alignment of the federal laws of USA 'No Child Left Behind Act' (NCLB) with 'Individuals with Disabilities Education Act' (IDEA) brings students with all kinds of disabilities to general education curriculum standards and promotes accountability for teachers and schools to ensure that large numbers of students with disabilities attain levels of proficiency that is similar to their

peers without disabilities (Brigham, Scruggs and Mastropieri, 2011). Student diversities of the 21st century classroom highlight the need of implementing curricular frameworks that foster instructional strategies and inclusive practices suitable for every child in the classroom. Universal Design for Learning (UDL) offers such a framework for designing educational environments that enhance inclusive setting.

Universal Design for Learning (UDL) is a curriculum design framework that promotes equal learning opportunities for all students. The term Universal Design was evolved from the movement in architecture and product development that occupy the features to accommodate different users. In the early 1990, Center for Applied Special Technology (CAST) developed the principles and practices of UDL. Based on the Federal Law of USA, The Higher Education Opportunity Act of 2008 (as cited in CAST, 2011) stated UDL as "The term UNIVERSAL DESIGN FOR LEARNING means a scientifically valid framework for guiding educational practice that:

- provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and
- reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient."

Principles underlying UDL

UDL is based on the principles of neuroscience, how the human brain processes information which includes recognition networks, strategic networks and affective networks. According to CAST (2011), the principles underlying UDL framework are

- To support recognition learning, provide Multiple Means of Representation to give learners various ways of acquiring information and knowledge
- To support Strategic learning, provide Multiple Means of Action and Expression that give learners alternatives for demonstrating what they know
- To support affective learning, Provide Multiple Means

of Engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn

Learners may differ in the way they perceive and comprehend information. Some concept may be new to one learner, but it may be easily understood by another. Use of multiple representations allow students to make connections within, as well as between, concepts. Multiple means of representation can be provided to the learners for effective learning by providing options for perception, language, mathematical expressions, and comprehension. This can be done by providing the same information through different ways or information in a format that will allow for adjustability by the user; clarifying vocabulary, symbols, syntax, structure and mathematical notions, illustrating with multimedia and provide understanding across language; supplying background knowledge, highlighting patterns and features, visualizing and generalizing the context.

Learner may differ in the way they express what they know and understand. Learners with language barriers may approach learning in such a way that they may be able to express themselves well in written text, not in speech and vice versa. It may vary according to the ability or disability of learners. So they must provide options for physical action, expression, communication and executive function. This can be done by maximizing access to tools and assistive technologies, providing multiple media for communication, guiding to set appropriate goals, supporting to plan and develop strategy, facilitating to manage resources and enhancing to monitor process.

Some learners may highly engage with peers while some others prefer to work alone. Teachers should take effort to recruit learner attention and engagement in the learning process. They should provide options for recruiting interest, sustaining effort and self regulation. This can be done by maximizing individual choice and value and minimizing threats and distractions; highlighting importance of goals and objectives, varying demands and resources to optimize challenge, fostering collaboration with learner community and increasing mastery-oriented feedback; motivating the learner, facilitating learner's response to internal and external events, providing sufficient alternatives to meet the challenge of individual differences in the kinds of strategies and providing models for self assessment.

Some learning experiences that can be given in the classroom to cater to the needs of all the students including disabled are

- use text-to-Speech, speech-to-text software, Sign Language for developing language (especially for deaf person)
- clarify unfamiliar syntax (in language or in math formulas) or underlying structure (in diagrams, graphs, illustrations) through alternatives
- use automatic voicing with digital mathematical notation (MathML),
- use digital text with an accompanying human voice recording (e.g., Daisy Talking Books)
- use advanced organizers and provide interactive models that guide exploration and new understandings
- provide scaffolds that connect new information to prior knowledge, embed new ideas in familiar ideas and contexts and provide opportunities to generalize learning to new situations
- provide alternate keyboard commands for mouse ac-

tion

- use social media and interactive web tools, solve problems using a variety of strategies, provide spellcheckers, grammar checkers, word prediction software, provide calculators, graphing calculators, geometric sketchpads, or pre-formatted graph paper
- prompt learners to identify the type of feedback or advice that they are seeking and provide differentiated models of self-assessment strategies like role-playing, video reviews, peer feedback
- provide tasks that allow for active participation, exploration and experimentation, create an accepting and supportive classroom climate, vary the social demands required for learning or performance and involve all participants in whole class discussions
- encourage peer interactions and supports, construct learner communities with common interests, provide feedback that emphasizes effort, improvement, and achieving a standard rather than on relative performance
- provide frequent feedback that models how to incorporate evaluation, which includes identifying patterns of errors and wrong answers, into positive strategies for future success
- provide differentiated models, scaffolds and feedback which helps to manage frustrations and emotions and provide different self-assessment techniques that help the learner to identify and select the one that is optimal

UDL Curriculum

The UDL curriculum is designed not simply to help students to achieve specific instructional goals but to make them expert learners. To mould an expert learner, the curriculum should be flexible and variable which would help them in the improved access to learning. According to Rose & Meyer (2002), Universal Design for Learning extends Universal Design in two key ways. First, it applies the idea of built-in flexibility to the educational curriculum. Second, it pushes universal design one step further by supporting not only improved access to information within classrooms, but also improved access to learning. From the UDL perspective (CAST, 2011) expert learners are resourceful, knowledgeable, strategic, goal-directed, purposeful and motivated learners. In order to develop an expert learner, the different components of the UDL curriculum should be thoroughly examined which are highly interrelated and indispensable part of UDL Instruction.

The main components of UDL curriculum are Goal, Method, Material and the Assessment. Goals are expressed in such a way that it identifies learner variability and offer more options and alternatives like various tools, strategies and platforms for achieving mastery. Methods include instructional approaches that facilitate differentiation of methods based on learner variability, social/emotional resources and the classroom climate. These flexible methods are modified based on learner progress and outcome. For transacting concepts, UDL offers materials like multiple media, hyperlinked glossaries, on-screen coaching etc. For strategic learning, UDL materials offer tools and supports needed to access for enhancing learning. In UDL curriculum, the assessment is comprehensive and reduces or removes barriers to accurate measurement of learning outcomes of the learner.

CAST offers various UDL tools and UDL Exchange for enhancing learning. UDL Exchange includes UDL Resources (websites, documents, images, presentations, audio, video,

etc. that support implementation of UDL), UDL Lessons (lesson plans that address the variability of all learners) and UDL Collections (sets of resources/lessons to support UDL practices). Kumar and Wideman (2014) in their study on applying UDL principles in a first year undergraduate course found that students responded very positively to the course design, and felt that the weaving of UDL throughout the course resulted in increased flexibility, social presence, reduced stress, and enhanced success.

How UDL applies in the Inclusive Practice?

The principles of UDL can be applied in the inclusive classroom setting. It can be used in designing and organizing academic activities and environments so that students can access and engage in the learning process. The use of UDL in lesson planning provides a framework for differentiating instruction through the integration of flexible options for teachers and their students across three major components: *representation* (multiple methods of content delivery), *engagement* (variety of choices for student participation in instructional activities), and *expression* (different ways students demonstrate understanding of content) (Williams, Evans & King, 2012). The UDL framework can be incorporated with the principles that support inclusive practice in the classroom.

According to (NCSE, 2010), the four key elements of inclusion presented by UNESCO provide a useful summary of the principles that support inclusive practice. These elements are:

- Inclusion is a process. It has to be seen as a never-ending search to find better ways of responding to diversity
- Inclusion is concerned with the identification and removal of barriers. It involves collecting, collating and evaluating information from a wide variety of sources in order to plan for improvements in policy and practice.
- Inclusion is about the presence, participation and achievement of all students. 'Presence' is concerned with where children are educated, and how reliably and punctually they attend; 'participation' relates to the quality of their experiences and must incorporate the views of learners; and 'achievement' is about the outcomes of learning across the curriculum, not just test and exam results.
- Inclusion invokes a particular emphasis on those groups of learners who may be at risk of marginalization, exclusion or underachievement.

Applying UDL curriculum for inclusive practice helps the learning process to become more flexible and variable. It helps the teacher in setting clear goals, adapting better learning strategies and methods and proper assessment procedure for the effective instruction and practices which in turn helps the learner to respond to varying diversity,

learn how to learn from the differences and learn how to live with differences. Thus it makes inclusion a process. The assumption of variability and flexibility of UDL curriculum helps to embed the options within the curriculum so that it can be adjusted to cater to the special needs of the learner. The use of varying technology in the instructional strategy and methods helps to remove barriers and foster effective learning. UDL, with its specially designed learning tools, minimize the need for assistive technology and maximize learning opportunities for all.

Assistive technology is technology that increases, improves, or maintains the functional capabilities of students with disabilities (Rose, Hasselbring, Stahl and Zabala, 2005). Assistive technologies include tools such as video enlargers, single ability switches, and alternative keyboards. The use of assistive technology cannot be removed completely from the learning process since a learner with some disability may depend on these technologies to cross the barriers. So in some situations, these technologies can be used along with UDL lessons for effective learning. Individual difference in the brain networks will skew the accuracy of the result when the learner interacts with the traditional paper pencil assessment. Within the context of ongoing assessment, teachers can accommodate differences in strategic networks by providing students with multiple means for expressing what they know, such as the option to respond by writing, speaking, drawing, creating an animation or video, or developing a multimedia presentation (Rose & Meyer, 2002). Using tools that are familiar to them will help to demonstrate what they know and the teacher could assess the learner's performance with accuracy. So the components of a UDL curriculum are designed in such a way that it enhances an inclusive setting with in the classroom.

Conclusion

UDL framework is a better platform for educating all type of learner with or without disabilities, ensuring full participation and support for all round development. The differentiated instructional method based on the brain network helps the teacher and the learner to achieve specified goals and learning outcomes. Since the UDL framework rely on brain network specially designed for all with varying diversities, equal opportunities are given to all children whether he/she is disabled or not. So mainstreaming disabled children under UDL framework will help to overcome the barriers in the inclusion.

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