Universal Design for Learning in the Indian Classroom: Supporting Struggling Learners

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Abstract. Technology has transformed how struggling learners engage with content - how accessible materials are, how students can demonstrate their learning, and how teachers can build student engagement. Through the lens of Universal Design for Learning (UDL), teachers can ensure their classes are designed to serve all students, including children with special needs. This paper will share how UDL can be implemented in the Indian context. It will talk about the challenges faced by struggling learners, and share strategies that have been seen to be effective in Indian classrooms. The paper draws on outcome data from a six-month professional development programme (PDP) where mainstream and special educators were introduced to the concept of UDL and supported with implementing UDL strategies in their classes. Implications for the field at large are discussed.

Keywords: Universal Design for Learning, struggling learners, inclusion

1 Introduction

India has taken several positive steps to serve students with disabilities. Most recently, the Draft of the National Education Policy 2019 [1] highlights the need for equitable and inclusive education. India is a signatory to the 2006 UN Convention on the Rights of Persons with Disabilities [2], making an international commitment to better serve struggling learners. The Right of Children to Free and Compulsory Education Act 2009 [3] guarantees education for all children, including those with disabilities.

While India has made provisions at the policy level, the implementation of these policies often falls short of expectations. A 2019 UNESCO report on the Status of Children with Disabilities in India [4] identified several gaps between policy and practice. The most recent census data of 2011 paints a dismal picture, with almost one in two persons with disabilities classified as illiterate.

There are several lines of action proposed by both the Draft of the NEP 2019 [1] and the UNESCO 2019 [4] report, and one identified by both reports as having potential to dramatically improve outcomes for children with disabilities is the use of digital technologies (DT). DT are changing how many of us engage in learning today, and has the potential to transform the learning experiences for persons with disabilities. This paper discusses strategies and tools seen to be effective to serve

children with disabilities in mainstream and special education settings in India through the Universal Design for Learning (UDL) framework.

1.1 Universal Design for Learning (UDL)

UDL [5] is a framework that uses insights on how humans learn to improve teaching and learning experiences for all students. UDL is based on the premise that learners differ across three broad areas - how they engage with content, how they understand content, and how they demonstrate their learning. These premises are drawn from neurobiological research on how the brain learns. In order to best support learning, UDL outlines three principles when designing lessons: planning for multiple means of engagement, multiple means of action and expression, and multiple means of representation. Keeping these principles in mind when designing lessons ensures that most learners will be able to successfully engage in most learning experiences.

Designing a UDL class involves much more than using technology. However, technology has enabled teachers to easily build differentiated learning strategies, ones that may not have been possible, or have been too time-consuming, if a teacher had to do it manually [6]. For example, consider the principle of multiple means of representation. This calls for a teacher presenting information in different ways so that all learners can access and understand the content. Using technology, a teacher could give students the soft copy of a reading passage. Students could change the font to their comfort level. Some students may choose to have the computer read out to them. Others, who find tracking difficult, could use an online feature of a reading bar that highlights only the line being read. Teachers could embed videos within the text to support students' background knowledge. Words could become dynamic, with links to meanings or other related information.

2 The Professional Development Programme (PDP)

This paper draws on outcome data from a professional development programme (PDP) designed to equip teachers with strategies and skills to better serve struggling learners. While the PDP covered a range of topics and strategies to serve struggling learners, this paper specifically discusses the DT tools introduced in the PDP and shares how participants were able to take tools back to their settings.

The PDP was a six-month in-service professional development programme, comprising six full-day interactive workshops held once a month for six months. During these workshops, participants were given opportunities to use strategies and guided on how to implement these tools in their classes. Participants set goals at the end of each session on what they would action in the following month. Participants were also assigned coaches who were responsible for supporting them as they implemented strategies in their contexts. Coaches visited the participants' organisations to better understand the context and guide participants in their own settings. Participants also had an opportunity to visit the host school to learn how strategies could be implemented with students. Each month, participants shared video- or photo-evidence of how they had been implementing strategies in their context, which culminated in an end of PDP summary presentation on all their take-aways. A three-month follow up of participants indicated that 90% continued to use strategies learnt in the PDP.

This paper shares evidence from two PDP cohorts in 2018 and 2019. Eighty-nine participants from 39 educational organisations in and around Mumbai attended the PDP. Participants came from across low-, middle- and high-income schools. Figure 1 presents a description of participant roles within their organisations.

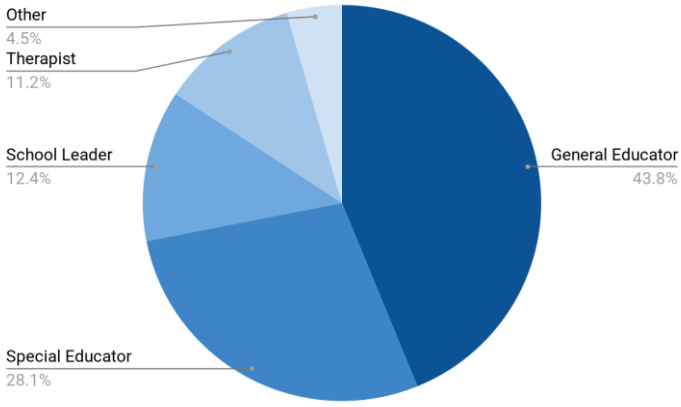

Fig. 1. PDP participant roles within their organisations.

3 Strategies and Tools

Table 1 presents a brief description of the tools that PDP participants were able to implement in their settings. Most tools support across the three principles of UDL and provide for multiple means of engagement, multiple means of representation, and multiple means of action and expression.

Table 1. A brief description of select tools employed by PDP participants.

Tool	UDL Principles			Supports with	Access
	Engagement	Representation	Action and Expression		
ReadWorks ®		Y		Reading comprehension	Free
Quizlet	Y	Y	Y	Vocabulary	Free
Zearn	Y	Y	Y	Mathematics	Free
Kahoot!	Y			Formative assessment	Free
Quizizz	Y			Formative assessment	Free
Mentimeter	Y	Y	Y	Formative assessment	Free
Playposit	Y	Y		Formative assessment	Free
Plickers	Y		Y	Formative assessment	Free
Socrative	Y		Y	Collaborative learning	Free
Padlet	Y		Y	Collaborative learning	Free

Among the tools to support reading and reading comprehension, ReadWorks® [7] was most widely adopted by PDP participants. ReadWorks® is a free software that can be used to build reading comprehension. It has a bank of articles and question sets that are categorised by grade, lexile level, and by the type of text - narrative or informational. In particular, features that support struggling learners include StepReads, which is the same article written in decreasing complexity, read aloud options, vocabulary support which provides the meanings of difficult words, a split screen feature that allows students to read a passage and see questions side by side, and the highlighter ribbon, which supports students with tracking by highlighting only the line being read. The account can be shared by teachers and parents and many of the PDP participants have used ReadWorks® to support extension work at home.

Another tool widely used among the PDP participants was Quizlet [8]. Quizlet is a free online software to build vocabulary knowledge. Using Quizlet, teachers can create vocabulary banks for particular chapters, lessons, or browse through existing sets. Features that support struggling learners include multiple ways to practice words including individual games and tests, read aloud features, and a live gaming format that allows for collaborative group work. PDP participants shared Quizlet sets with parents using a WhatsApp link, which helped parents support school work. Participants also used the live gaming format in classes where all students had access to personal devices.

Zearn [9] is a freely available mathematics curriculum to support learning in primary years. Zearn is built on the principles of UDL, providing multiple ways for students to engage with mathematical content. PDP participants have used Zearn to personalise learning in mainstream classes, as well as an additional tutoring or remedial session to supplement learning in the classroom. Features that support struggling learners include differentiated pacing, multiple opportunities to practice, and virtual representations and manipulatives.

Several technology tools can be used to assess learning across and build engagement. Kahoot! [10] and Quizziz [11] are ‘fun’ ways to assess students’ knowledge and skills. The gaming format keeps students motivated and engaged. PDP participants used them as formative assessments when all students had access to a personal device, and when personal devices were not available, teachers could use Plickers [12] to achieve the same purpose. Features of Quizizz that are particularly effective for struggling learners are the option to attempt the quiz again, and the read aloud feature available on the application (app). PDP participants assigned quizzes as homework, so second attempts did not necessarily eat into class time. Another software, Mentimeter [13] combines a presentation with in-built assessment, making the entire class interactive. Students can access the presentation on their personal devices and teachers can build in interactives as needed. PDP participants also used Mentimeter to support in-house professional development.

Video apps like Playposit [14] further build in engagement by letting teachers embed questions and other interaction slides within a video. PDP participants used this software with younger students who might struggle to sustain attention throughout a video. Interactive apps like Wizer [15] let teachers create dynamic worksheets. Students could display their learning in different ways - by audio-recording, video-recording or writing responses. PDP participants found these worksheets particularly useful for primary grade students.

Technology can transform how students work together in class. Tools like Padlet [16] let students work on the same board and share responses in real-time. PDP participants used Padlet to support collaboration during homework assignments. Socrative [17] is another tool that supports collaborative work in class by letting students vote for the best answer. Socrative is particularly useful in helping students understand multiple approaches to answer a question, and in building models that students can use as references for their own work.

4 Conclusions

This paper presents a select set of tools that have been successfully implemented in Indian classrooms. Through the PDP, we have seen that technology that is available today, at no additional cost, can be used powerfully to enhance learning experiences for struggling learners. Most often, the challenge is for teachers who are either not aware of the existing technology, or do not have the skills to use digital technologies (DT) effectively in their classes [18]. The PDP provided the support that teachers needed in order to implement strategies. It first exposed teachers to the tool through workshops, then helped teachers see how tools could be implemented through visits to host schools. It supported teachers as they explored strategies in their own settings through coaching and mentoring, and most importantly, created a community of learners where teachers could share insights, questions and concerns as they experimented with new tools. Teachers were able to overcome the barrier of students not having personal devices, by bringing in parent support and building home programmes. Further studies can continue to explore innovative ways that DT can be adopted effectively in the Indian classroom.

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