inspirED 2020

The white-papers published at inspirEd 2020 are in service to schools, educational organisations, local and state government bodies towards implementation of the practices aligned to NEP 2020 priorities with support from the partners and authors of the respective white papers.

Repurposing Curriculum & Assessments for Deep Learning: Solutions from the Ground

Authors:
Initoli Vinito, Simple Education Foundation | ini.vinito@simpleeducationfoundation.org
Shruti Mushran, Simple Education Foundation | shruti.mushran@simpleeducationfoundation.org
Srishti Paliwal, Simple Education Foundation | srishti.paliwal@simpleeducationfoundation.org
Manisha Upreti, iTeach Schools | manisha.upreti@iteachschools.org

Table of Contents

1. Purpose of Paper

This paper examines current curriculum and assessment practices in India and advocates for an integration of academic competencies and socio-emotional development for deep and meaningful learning. We address core areas that need changing and recommend a way forward in meeting the challenges of design and implementation in curriculum and assessment.

2. Introduction

For decades, a persistent challenge in the Indian setting has been the need to step away from a system of education that transfers knowledge, leading to rote learning, and shift towards an education that enables students to engage with and experience knowledge cognitively, emotionally and socially in the learning process (Gandhi, 1921; Krishnamurti, 1953). With the same intent and purpose in mind, the National Education Policy (NEP, 2020) addresses a curriculum for holistic growth that will grow 21st century skills, most of which was addressed in the National Curriculum Framework (NCF, 2005) as well. As educators, our hope for a meaningful education system is growing, but there is also a recurring question of how the way forward in the design and implementation of curriculum and assessments will unfold.

There are evident dangers in our societies and world when knowledge is acquired without nurturing or growing life skills and dispositions - in other words, without the education of the "heart" (Krishnamurti, 1953). The need to incorporate socio-emotional learning in school is increasingly recognised in the Indian education landscape. However, this is also met with certain challenges, such as teacher readiness or misalignment in the teaching and learning process of academic content and life skills (iTeach, Simple Education Foundation). Hence, in this paper, we discuss and present an integrated curriculum where (a) socio-emotional skills such as character, empathy, compassion, self-awareness and self-expression come alive while the student is engaging with academic content; and (b) subjects are presented in an interdisciplinary fashion, because we experience life in an interdisciplinary and integrated manner. In this way, children are engaged in *deep learning* in that they are able to pause, reason, rationalize and make connections between what is being taught at school and day-to-day life, considering its implications and mindful application in family and society (Dewey, 1923; Gandhi, 1921; Holmbukt, 2018).

3. Challenges and Repurposing

a. Clear Scope and Sequence for Deep Learning

In India, the two important curricular documents that direct teaching and learning are the National Curriculum Framework (2005) and the Learning Outcomes by the Ministry of Human Resources Development.

The MHRD learning standards specify learning as standalone actions that students will be able to do. For example, *'The learner recites poems with correct pronunciation', 'the learner reads and writes numbers up to 999 using place value'. (pp. 41, 67)*

Even though clear in actions which would be visible in the classroom, the learning outcomes lack a scope and sequence of concepts and knowledge that will enable a teacher to scaffold concepts for deeper learning. For example, in the Common Core Curriculum for Math, objectives till Grade 5 have been divided into five domains: (1) operations and algebraic thinking, (2) number and operations in base ten, (3) number and operations in fractions, (4) measurement and data and (5) geometry. The objectives in every domain progress in rigour and expand in knowledge as grades progress. This breakdown enables the teachers to gauge the breadth of learning which is appropriate per objective and the prerequisites required for students to engage with the new content and skills meaningfully. This will enable the teachers to plan for teaching a whole concept rather than conducting standalone activities in class.

iTeach schools have drafted a curriculum for grades 8-10 which not only breaks down the knowledge and skills students require to pass grade 10 exams but also builds crucial critical thinking and problem solving skills in students. The grade 8 curriculum spirals towards the grade 10 curriculum and systematically progresses in rigour and knowledge. The curriculum has been adapted from Common Core Standards and is contextualised for students studying in Grade 8-Grade 10.

A Lead Teacher at iTeach schools shares the benefits of having a scaffolded curriculum: *"The comprehensive curriculum has been a guiding document for all the teachers. It has been carefully crafted by using a backwards designing model from G10 to G8. Skills, Mindsets and Knowledge pieces are progressive moving from grade 8th-10th. For example, in Grade 9 Science Comprehensive curriculum, the vision is to build Critical Thinking in students via open ended exploration. Hence, each chapter in the curriculum has a project with weekly tasks leading to a successful completion of the projects and the knowledge and skills students will develop through the course of the project."*

b. Knowledge Orientation vs Building Competencies and Socio-emotional Skills

A shift from a knowledge oriented curriculum is required to build crucial life skills that students can apply in their everyday life. Making learning as close to real life as possible must be one of the aims of the curriculum. Despite having a strong knowledge based curriculum, students across the country struggle to attain even basic learning.

The average performance of grade 3 students in the National Achievement Survey (NAS) assessments of 2017 for language, math and EVS was 65%. For grade 5, grade 8 and grade 10, the average performance was 55%, 46% and 38% respectively. As students progress to grades, the learning gap only widens. India also scored extremely low in the PISA examination in 2009. It ranked 72nd out of 74 countries in this exam

that evaluates 15-year-olds' proficiency in reading, math and science.

The Common Core Standards for Language and Arts state clear reading, writing and listening skills that the students will need to prepare for success in college, career and life. While such learning standards are essential to prepare students for real life situations, they fall short in addressing the socio-emotional skills that students require as they navigate through diverse socio-emotional conditions.

Studies have shown that the improvement in academic performance is directly proportional to the growth in socio-emotional skills and dispositions (Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P., 2017; Economist Intelligence Limited, 2019). Hence, the curriculum needs more than just a mere breakdown of knowledge and skills, as given in the Common Core standards. Integration of socio-emotional skills and making learning interdisciplinary will enable deep learning for children. Holmbukt's (2007, 2018) studies and findings also present a strong case stating that interdisciplinary learning leads to deep learning.

While there is some attempt to integrate skills and socio-emotional learning in the NCERT textbooks, the learner does not get ample opportunity to practice and internalise the skill.

At the Simple Education Foundation, the focus is on making the curriculum interdisciplinary and integrating socio-emotional skills in the core content. According to SEF's curriculum design principles, the curriculum should be integrated across subjects and must also integrate skills and dispositions. In their Foundational Learning Curriculum titled 'My Home and Surroundings', students get the opportunity to learn about describing words and geometric patterns while also experiencing creativity and common topics like 'Question words' bilingually. The curriculum also gives the students ample opportunities to Pause and Think, which helps them to synthesise their learning, which in turn enhances retention. According to the Research and Design team at SEF, *the focus is to engage the head, heart, hand and soul of the learner simultaneously to facilitate deep learning.*

A school leader at one of the schools supported by the Simple Education Foundation shares her experience with one teacher who has been actively engaged in delivering content that integrates different subjects and skills: *"Sunita ma'am, our grade 3 teacher, is able to identify that integrated content is engaging, more meaningful and rigorous for our students. The content and its scope for teacher facilitation allows the teacher to reflect on how every child is learning and give individual feedback to children. Moreover, the teacher is able to see that teaching and learning can happen at the intersection of subjects and that content across subjects can be connected. This helps students make better connections. E.g. While learning about their family trees and family relationships, students also placed their family members on a map and grouped members in the family tree that stayed in one house. In one module, students learnt about maps, number grouping and family relationships.*

c. Integrated Assessments for Deep Learning

The intent of the assessments is to measure all areas (physical, intellectual, emotional and social, personal qualities, interest and values) of a child's growth and development through differentiated and multiple forms of formative and summative assessments (Continuous and Comprehensive Evaluation, 2019).

The current system of grading students, however, does not reflect their actual learning levels. Studies show that such a grading has negative consequences for their emotional and social well-being (Henley, Ramsey & Algozzine ,2010). It not only labels children but also does nothing to inform teacher practice. This highlights an urgent need for assessments that mark growth of the skills, dispositions and cognitive competencies envisioned in the integrated curriculum, which by definition must be culturally and developmentally

appropriate. This reflects a clear alignment in purpose as well as design and practice of assessing students. Here are some examples:

i) iTeach uses the SSC Syllabus and replaces its standards with certified and rigorous standards that drive inquiry and creativity. For example, the recent Science Curriculum has sourced standards from the globally certified "Next Generation Science Standards".

Science objectives are taught keeping in mind the real life prevalence of scientific concepts. It covers skills like application of concepts, investigation and observation, reasoning, prototyping and presenting findings. *(Refer to Appendix A for a detailed example.)* Students are given an opportunity to express their learning through a performance task. Students participate in these tasks in groups and are evaluated on the process of design used by the team, resourcefulness of the material used by the team, implementation of the idea and team reflections.

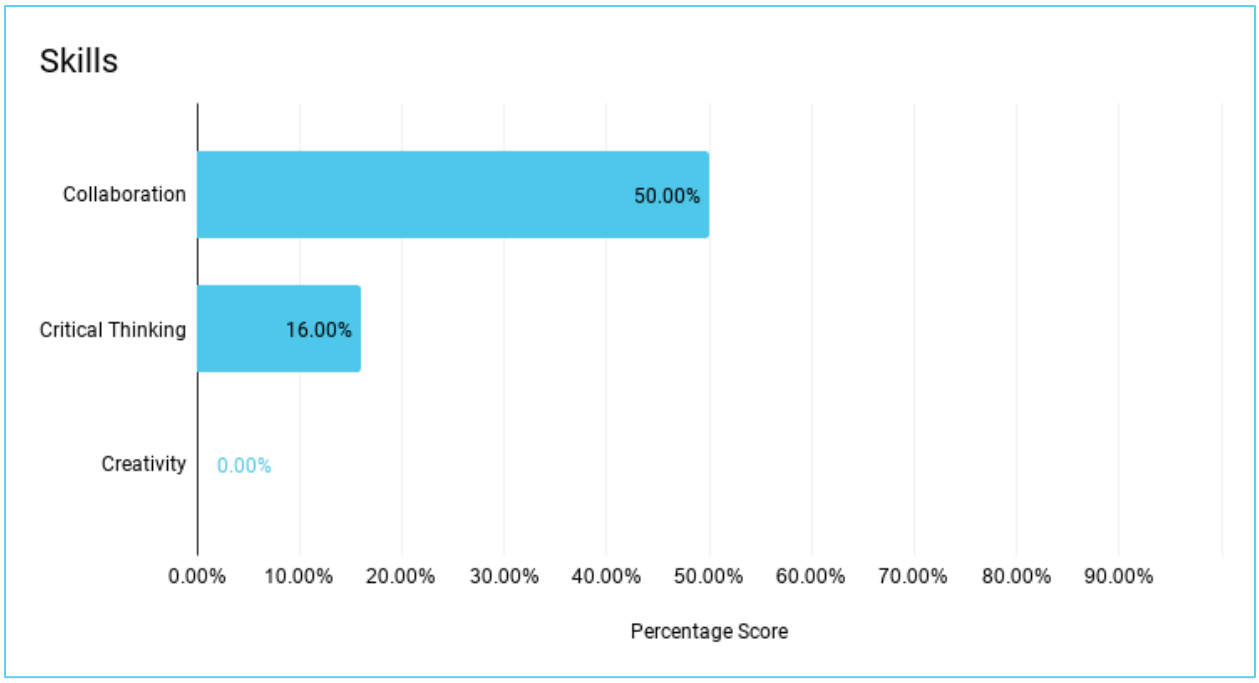
ii) At SEF, the purpose of assessments is to enable the student and teacher to understand where they are in pursuit of their student vision and to inform them on how to grow towards it. Accordingly, their evaluation tool for primary school, which is currently being crafted, draws from the principles of ipsative assessments, i.e, it "*rewards realistic progress and achievement of a personal best rather than achievement of external standards,*" which empowers all learners (Hughes, 2011, p. 19). Anchored in this principle, methods like *performance tasks* are designed and used, where students are presented with real-world scenarios/challenges. For example, the task *"broken circles"* (Cohen, E.G. & Lotan, R.A., 2014, p. 193) or *"peer circles"* is facilitated with minimal teacher talk and gives students an opportunity to display their critical thinking and collaboration skills.

Performance tasks help gauge if academic competencies and socio-emotional skills and dispositions have been embodied in an integrated manner. Hence, it is used both formatively and summatively.

An observation checklist is used to assist teachers in the process of observation with specific guidelines and instructions, after which an evaluation tool (Figure 1) is used to assess student growth. The evaluation data (Figure 2) is able to give teachers deep insight into their practices and what skill to nurture and grow. Through SEF's pilot assessments, it was observed that most students did not demonstrate indicators of creativity and curiosity. School leaders used this data and designed specific practices to build on these indicators.

		SKILLS actions	HEAD, HEART, HAND TOGETHER (Skills with dispositions)		
Skill	Sub-part Definitions	Breakdown	Grit	Empathy	Curiosity
Collaboration	Interdependent: -Understands and values diversity and multiple perspectives -Manages conflict and own emotional response -Valuing the presence and perspectives of members in group	I share my opinions in group discussion		I listen to the opinion of others in group discussion I share resources with my group I share ideas with my group members	I ask suggestions / questions to my group when I am stuck/confused about the task.

(Figure 1)



(Figure 2)

Rubrics are useful to assess learning as both a process and end product. "*A rubric is a coherent set of criteria for students' work that includes descriptions of levels of performance quality on the criteria"* (Brookhart, 2013). For the evaluation of the process followed by students, rubrics can assess a range of skills (physical, communication, working independently and working in groups). For the evaluation of end products (such as writing samples, presentation or a working model) rubrics can assess more academic based skills. As rubrics are descriptive in nature, they can enable learners and teachers to evaluate learning as a more holistic process.

Examples of rubrics in CCE (2019. pp. 38-40) have integrated tasks in academic areas with skills such as visualisation, imagination/creativity, problem solving and working together with clear criteria. It can help the learner and teacher reflect back and identify not only areas of academic growth but also SEL competencies such as expression of imagination and asking questions in group based tasks. This can deepen learning about patterns of growth in children and accordingly provide them feedback.

iii) Dreamadream's life skills assessment tool can be used to identify as well as track a student's growth in life skills. The life skills assessments tool is *"an observational assessment of 4th-9th-graders that assesses the following five life skills: interacting with each other, solving problems and overcoming difficulties, taking initiative, managing conflict, and understanding instructions" (Measuring SEL, 2019, p. 6).* While this measures only socio-emotional skills, these skills are broken down into observable indicators with clear instructions on how to observe and analyse data objectively. It is a valid and reliable tool which enables educators to track students' level and growth both formatively and summatively. Moreover, it can be used to mark students against their personal best, giving both students and teachers in-depth information on where to grow and where to intervene.

4. Enabling Conditions for Deep Learning

The following factors have helped iTeach and SEF schools in their journey to bridge the gap between integrated curriculum & assessment practices and their implementation:

1. Teachers and practitioners engaged in reflective activities and simulations so that they could understand firsthand why these activities are needed to grow certain skills and dispositions among their students. This has enabled clarity and alignment in implementation.
2. Engaging teachers and practitioners in the process of vision setting, making sure they are co-designers of the curriculum, incorporating their culturally relevant insights and challenges in planning, creating continuous feedback cycles with data, evidence & anecdotes and regular practice for implementation, and creating and reviewing assessments. These factors proved to be essential in enabling deep learning for practitioners.
3. Receiving individualized feedback on their work has been an effective way for students to reflect on their learning experiences. For teachers, giving feedback to each student has deepened their understanding of specific, individual student learning needs.
4. Spending time with school staff at length enabled our teams to build meaningful relationships, building a school culture of mutual respect, trust and continuous learning. As a result, teachers were receptive to new ideas and more collaborative work.

5. Conclusion

Curriculum and assessments need to be in tandem and must follow the same design principles. For instance, if the curriculum is designed to build skills like problem solving and critical thinking, the assessments must also design to test the same skills. This will ensure that all pedagogical methods and teachers' facilitation in the classroom are aligned with the demands of both the curriculum and the assessments.

Deep learning occurs when core competencies like critical thinking and socio-emotional skills like empathy and collaboration are integrated with academic content.

References

- Brookhart, S. M. (2013.). Chapter 1. What Are Rubrics and Why Are They Important? Retrieved 2020 from http://www.ascd.org/publications/books/112001/chapters/What-Are-Rubrics-and-Why-Are-They-Important%C2%A2.aspx

- Continuous and Comprehensive Evaluation Guidelines (2019) https://ncert.nic.in/pdf/announcement/CCE-Guidelines.pdf

- Dewey J. (1923). *Democracy and education: An introduction to the philosophy of education.* Macmillan.

- Economist Intelligence Limited (2019). Emotion and cognition in the age of AI. https://edudownloads.azureedge.net/msdownloads/emotion_and_cognition_ai.pdf

- Henley, M., Ramsey, R. S., & Algozzine, R. F. (2010) *Labeling and disadvantages of labeling*. Retrieved 2020, from http://people.uncw.edu/robertsonj/SEC210/Labeling.pdf

- Holmbukt, T. (2018). Interdisciplinary approaches for deep learning. doi:10.46364/njmlm.v6i1.425.

- Hughes, G. (2011). Towards a personal best: a case for introducing ipsative assessment in higher education.

- Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, 105(11), 2283–2290. https://doi.org/10.2105/AJPH.2015.302630

- Kennedy, F., Pearson, D., Brett-Taylor, L., & Talreja, V. (2014). The Life Skills Assessment Scale: Measuring Life Skills of Disadvantaged Children in the Developing World. Social Behavior and Personality: an international journal. 42. Retrieved from, https://www.changemakers.com/sites/default/files/competition_entry_form_files/3518_lsas_sbp_journal_march_2014.pdf

- Measuring SEL (CASEL Doc). https://measuringsel.casel.org/wp-content/uploads/2019/09/AWG-State-of-the-Field-Report_2019_DIGITAL_Final.pdf

-McKown, C., & Others. (2019). Student Social and Emotional Competence Assessment. Retrieved October 01, 2020, from https://measuringsel.casel.org/wp-content/uploads/2019/09/AWG-State-of-the-Field-Report_2019_DIGITAL_Final.pdf

- National Curriculum Framework(2005). https://ncert.nic.in/pdf/nc-framework/nf2005-english.pdf

- National Education Policy (2020). https://www.mhrd.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics.*Washington, DC: Authors. Retrieved from, http://www.corestandards.org/wp-content/uploads/Math_Standards1.pdf

- Read, L., Bookman, N., & Stormberg, W. (2019). Key Design Principles for Direct Assessments of SEL: Lessons learned from the 2017-2019 Design challenges. Retrieved 2020, from https://casel.org/wp-content/uploads/2020/04/Lessons-Learned-3.pdf

- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: A meta-analysis of follow-up effects. *Child development*, 88(4), 1156–1171. https://doi.org/10.1111/cdev.12864

- The National Council for Educational Research and Training (2016). Learning Outcomes at Elementary Stage. Retrieved 2020, from https://www.mhrd.gov.in/sites/upload_files/mhrd/files/Learning_outcomes.pdf

APPENDIX A

(a) SCIENCE_GRADE 9_SSC:

PARAMETER	STATE STANDARDS
RIGOUR	SSC Curricular Standards being factual sets an average rigour in creative thinking and inquiry. This leads to the textbooks being heavy on content and less on ideas. An SSC Standard looks something like this: *To write equations of motion and use them to solve numerical problems.*
CLARITY OF PURPOSE	No purpose mentioned in the textbook
HOW WILL THIS BE TAUGHT AND ASSESSED USUALLY?	-Learners are expected to explore this idea by following these steps: (i) Derive Newton's first equation of motion (mathematically & graphically) (ii) Derive Newton's second equation of motion (mathematically & graphically) (iii) Derive Newton's second equation of motion (mathematically & graphically) (iv) Solve direct and conceptual numericals based on Equation of Motion

EXAMPLE:

A case for integrated curriculum at iTeach schools:

PARAMETER	iTEACH CONTEXTUALISED LEARNING OUTCOMES
RIGOUR	Use SC Syllabus and replace SSC Standards with certified and rigorous standards that drive inquiry and creativity. [For eg: The recent Science Curriculum, have been sourced standards from the globally certified "Next Generation Science Standards"] An iTeach Sourced Standard looks something like this: (i) Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. (Source: Next Generation Science Standards) (ii) Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

CLARITY OF PURPOSE	Using this Standard, learners are expected to investigate this problem statement: *"One serious road accident in the country occurs every minute and 16 die on Indian roads every hour. 1214 road crashes occur every day in India. 377 people die every day, equivalent to a jumbo jet crashing every day. How can two/ four wheelers be designed to provide passenger safety and prevent accidents in India, (especially in Pune)?"*
HOW WILL THIS BE TAUGHT?	-Learners are expected to explore this idea by following these steps: (a) Calculate Distance, Displacement, Velocity, Speed and Acceleration for a vehicle (which would be provided) (b) Investigate a crash scene by simulating the crash using 3 equations of motion (c) Study the reasons accidents occur in Pune & enlist the additions they would like to add to their vehicle to make it safer. (d) Conduct a crash test on the prototype of the vehicle with an "Egg" Passenger (e) Present findings to propose how their design can provide the best road safety to their passengers
HOW WILL TEACHERS BE TRAINED?	-A subject team bootcamp where the teachers conduct these Performance Tasks themselves to (a) Visualise the facilitation/execution of the idea (b) Bridge individual conceptual needs by learning from each other (c) Planning the lessons together
HOW WILL THIS BE ASSESSED?	FORMATIVE Teacher/Judge will rate the team on a scale of 1-5: (a) The process of design used by the team (b) Resourcefulness of the Material Used by the team (c) Implementation of the idea (d) Team Reflections (e) How well does the model solve the local problem? (F) Innovation (G) Data Orientation SUMMATIVE Unit Assessments/Term Assessments