

# **UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS – GOAL 4 (QUALITY EDUCATION) TARGET AREA: PROMOTING LITERACY AND NUMERACY**

*Perspectives from Educational, Instructional, and School Psychology (IAAP Division 5)*



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# PREAMBLE

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In 2015, the United Nations adopted the Agenda 2030 for Sustainable Development with 17 Sustainable Development Goals and specific target areas within them (<http://www.un.org/sustainabledevelopment/>).

This White Paper series addresses Sustainable Development Goal 4 (SDG 4; Quality Education) and one of its target areas (literacy and numeracy): “By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.”

Herein, literacy is defined as the ability to read and write (including, reading comprehension, reading fluency, spelling, punctuation, and written expression skills). Numeracy is defined as the ability to understand and work with numbers (including, numerical, spatial, graphical, measurement, statistical and algebraic skills).

Literacy and numeracy are critical for an individual's success in many walks of life, including school, work, health and well-being, and the many situations and circumstances where individuals will need to interpret and make sense of the world. Literacy and numeracy are also important for the social and economic prosperity of communities. To the extent that children do not develop adequate literacy and numeracy skills to help them function in the world, their educational, health, social, and economic outcomes will be hampered. By implication, development and

outcomes in their communities will also be impeded.

Progress has been made towards addressing SDG 4 and improving fundamental literacy and numeracy skills, but there is need for further work. For example, the UN estimates around 103 million youth worldwide lack basic literacy skills and this poses a significant barrier to improving their lives (OECD, 2017).

Indeed, literacy and numeracy are recognized as a means to enhance personal, academic, workplace, and community wellbeing and thus attending to them extends beyond SDG 4 (Quality Education) to impact other Sustainable Development Goals, such as SDG 3 (Good Health and Wellbeing), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth).

As relevant to Division 5 of the International Association of Applied Psychology (Educational, Instructional, and School Psychology), this series of White Papers explores some of the factors and processes that have been identified as particularly important in SDG 4 with particular focus on one of its targets: promoting literacy and numeracy.



Four White Papers comprise the series:

- White Paper 1 explores the motivation and engagement factors and processes underpinning children's literacy and numeracy.
- White Paper 2 explores effective instructional approaches to enhance literacy and numeracy.
- White Paper 3 examines these as relevant to students with special needs.
- White Paper 4 addresses literacy and numeracy for immigrant, refugee, and Indigenous children.

Taken together, and consistent with IAAP Division 5's disciplinary strengths, this White Paper Series aims to scope the psycho-educational factors important to consider in efforts to enhance children's literacy and numeracy.

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# THE ROLE OF MOTIVATION AND ENGAGEMENT IN PROMOTING LITERACY AND NUMERACY

IAAP Division 5 (Educational, Instructional, and School Psychology)  
United Nations Sustainable Development Goals **White Paper 1**

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## INTRODUCTION

This White Paper (#1) is focused on the roles of motivation and engagement in promoting literacy and numeracy. Promoting literacy and numeracy is a key Target under United Nations Sustainable Development Goal 4 (Quality Education). The Paper first identifies specific motivation and engagement factors critical for children's literacy and numeracy. Following this, an integrative framework is presented aimed at assisting practitioners to better identify and target motivation and engagement factors they deem important for children's literacy and numeracy development. Then, some indicative strategies to promote each motivation and factor are described. The discussion concludes with recognition that literacy and numeracy are located in a broader educational ecology. Accordingly, the discussion summarizes some of the home, school, and neighborhood factors that are important in supporting motivation and engagement in literacy and numeracy—as well as some key implementation considerations relevant to developing nations and regions.



## MOTIVATION & ENGAGEMENT

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For the purposes of this White Paper, motivation is defined as the inclination, energy, direction, emotion, and drive relevant to learning and achievement; engagement is defined as the behaviors that reflect this inclination, energy, emotion, and drive (Martin, 2007, 2009). Thus, motivation and engagement as relevant to literacy and numeracy refers to children's inclination, direction, energy, emotion, drive, and behaviors aimed at: (a) reading and writing and (b) understanding and working with numbers.

Motivation and engagement are associated with students' participation in class, educational aspirations, and academic achievement (Martin, 2007, 2009; Guay, Ratelle, Roy, & Litalien, 2010; Hau & Ho, 2010; Hau & Salili, 1996; Pintrich 2003; Schunk & Mullen, 2012). They are also relevant for children's literacy and numeracy (e.g., Froiland & Oros, 2014; Martin & Lazendic, 2017). Motivation and engagement are made of different,



but complementary psychological states. When seeking to promote children's skill development, it is important to target the specific motivation and engagement psychological states that underpin these skills (e.g., O'Mara, Marsh, Craven, & Debus, 2006). Thus, a first step in improving literacy and numeracy is to identify the specific states inherent to children's motivation and engagement in these domains.

Major theories of educational and instructional psychology have been highly informative in this regard and have emphasized the following key psychological factors: perceived competence and control, valuing, responses to difficulty and failure, goals, and self-regulation (e.g., see Pintrich, 2003). Each of these is briefly described.

## PERCEIVED COMPETENCE & VALUING

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In most motivation and engagement theorizing, self-appraisals of one's competence are prevalent. These take the forms of self-concept, perceived competence, expectancies, and self-efficacy. Major

theories such as social-cognitive theory (Bandura, 2001), self-determination theory (Deci & Ryan, 2012), and achievement goal theory (Mascaret, Elliot, & Cury, 2017) centrally position perceived competence as



vital for skill development. For the purposes of this White Paper, we will focus on self-efficacy as a case in point (but see Guay, Marsh, & Boivin, 2003 for self-concept; Wigfield & Eccles, 2000 for expectancies; and Harter, 2015 for other competence perceptions).

Self-efficacy refers to the appraisals students make about their task-related academic capacity—including their confidence with regard to literacy and numeracy. Students high in self-efficacy tend to function well academically (usually by way of enhanced effort and persistence) and respond effectively to academic challenge, including in literacy and numeracy. Self-efficacy is thus a subjective judgment where some students might over- or under-estimate their skills. Usually, a subjective judgement that is a little more positive than the current skill set is expected to produce the

most desirable outcomes.

Psychologists have identified other factors that operate alongside self-efficacy to enhance academic skills. For example, expectancy-value theory (Wigfield & Eccles, 2000) holds that alongside one's perceived competence, a child's valuing of the relevant skill is critical. Accordingly, students who value literacy and numeracy are more motivated to behave in ways that improve their literacy and numeracy (Martin, 2007, 2009; Wigfield & Eccles, 2000).

Thus, boosting children's self-efficacy in and valuing of literacy and numeracy is recommended.

## A SENSE OF CONTROL

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A sense of control in literacy and numeracy refers to a child's belief that they have significant determination and influence in learning to read, write, and work with numbers. Whereas self-efficacy is the belief "that" one can read, write, and work with numbers (i.e., "I know that I can read"), a sense of control refers to knowing "how" to read, write, and work with numbers (i.e., "I know how to read").

There are numerous reasons why a sense of control is important for skill development. According to attribution theory (Weiner, 2010), for example, a sense of control connotes an internal locus that is important for skill development.

Thus, enhancing children's sense of control with regard to their literacy and numeracy development is recommended.

## RESPONDING TO DIFFICULTY & FAILURE

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How children respond to difficulty and failure as they develop literacy and numeracy skills will also shape their progress in these domains. Two theories—need for achievement and self-worth motivation theories—have characterized students in terms of how they perceive and respond to success and failure (Covington, 2000). Researchers have harnessed these theories to identify major student profiles. Two profiles are particularly pertinent to difficulties with literacy and numeracy: failure-avoidant and failure-accepting profiles (Martin & Marsh, 2003).

Children who are failure avoiders tend to be anxious, fearful of failure, and engage in unhelpful learning approaches such as self-handicapping (e.g., procrastination or insufficient effort in developing



literacy and numeracy) (Covington, 2000; Martin & Marsh, 2003). Children who are failure accepters have abandoned persistence and become disengaged (Covington, 2000) in efforts to read, write, and work with numbers.

Thus, the recommendation is to increase children's persistence and reduce their anxiety, fear of failure, and disengagement as they develop their literacy and numeracy skills, particularly when they experience difficulties in reading, writing, and working with numbers.

## GOALS & GOAL SETTING

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Goals and goal-setting have also been identified as helpful in working towards and developing skill. Broadly, there are two dimensions to goals. The first relates to goals that reflect the reasons why students strive to learn and achieve (goal orientation). The second relates to the actual goals that students set and the means by which they strive to meet them (goal setting).

With regard to goal orientation, goal theory posits that students have mastery or performance reasons that underlie their achievement strivings (Elliot, 2005). A mastery orientation is aimed at developing skill and learning. As relevant to this discussion, a mastery orientation would be directed at developing one's skill in reading, writing, and working with numbers. A performance orientation is aimed at outperforming others. As relevant to this discussion,



a performance orientation would be directed at being better than others in reading, writing, and working with numbers.

Theory and research have further suggested an extension on this perspective that incorporates avoidance dimensions (Anderman & Patrick, 2012; Elliot, 2005). Thus, mastery avoidance is focused on a desire to avoid a loss of skill in literacy and numeracy; performance avoidance is focused on avoiding appearing incompetent or being outperformed by others in literacy and numeracy tasks.

In the main, mastery orientation has been most consistently associated with academic skill development. Encouraging a focus on developing task mastery (rather than outperforming others) is therefore recommended for the promotion of literacy and numeracy. More recently it has been suggested that if it is difficult to implement a mastery orientation

over a performance orientation, the important thing is that the approach dimension (not the avoidance dimension) of performance is emphasized (Van Yperen, Blaga, & Postmes, 2014).

Goal striving and goal type are also critical for skill development. Goal setting theory (Locke & Latham, 2013) is informative here. This theorizing holds that effective goals are specific, challenging, and difficult. Goals meeting these criteria are frequently associated with positive academic outcomes (for review, see Locke & Latham, 2013). Personal best (PB) goal setting is a case in point (Martin & Liem, 2010). PB goals are specific, challenging, and competitively self-referenced goals towards which one strives and is linked with positive achievement outcomes (Martin & Elliot, 2016a, 2016b). A PB goal setting approach would recommend a child strives to outperform his/her previous best level of (or effort towards) literacy or numeracy.

## SELF REGULATION

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As children strive to improve their literacy and numeracy, their capacity to direct their own learning and skill development will have a bearing on the success of their efforts. Self-regulated learning refers to the strategies by which children organize and direct their own learning and skill development (Zimmerman, 2002).

Thus, for example, self-regulated learners monitor and evaluate their learning approaches in order to improve upon them (Zimmerman, 2002). As self-regulated learners monitor and evaluate how they are proceeding, they also adjust their approaches as task demands change.

Interms of reading, writing and working with numbers, self-regulated learners would monitor and evaluate their progress in a given literacy and numeracy task and make the appropriate adjustments as needed.

For example, they would have a plan for what they are to do in a given task, monitor their progress against this plan, and adjust the time or strategy needed to accomplish the task.

Thus, the recommendation is to enhance children's planning, monitoring, and task management capacities as relevant to their literacy and numeracy development.

## AN INTEGRATIVE MOTIVATION & ENGAGEMENT FRAMEWORK FOR LITERACY & NUMERACY

It is evident there are numerous theories and constructs relevant to children's motivation and engagement and that these have direct relevance to the development of their reading, writing, and understanding

and working with numbers. To assist practitioners in their efforts to boost students' motivation and engagement in literacy and numeracy, it is important to synthesize and organize the critical constructs into a manageable framework.

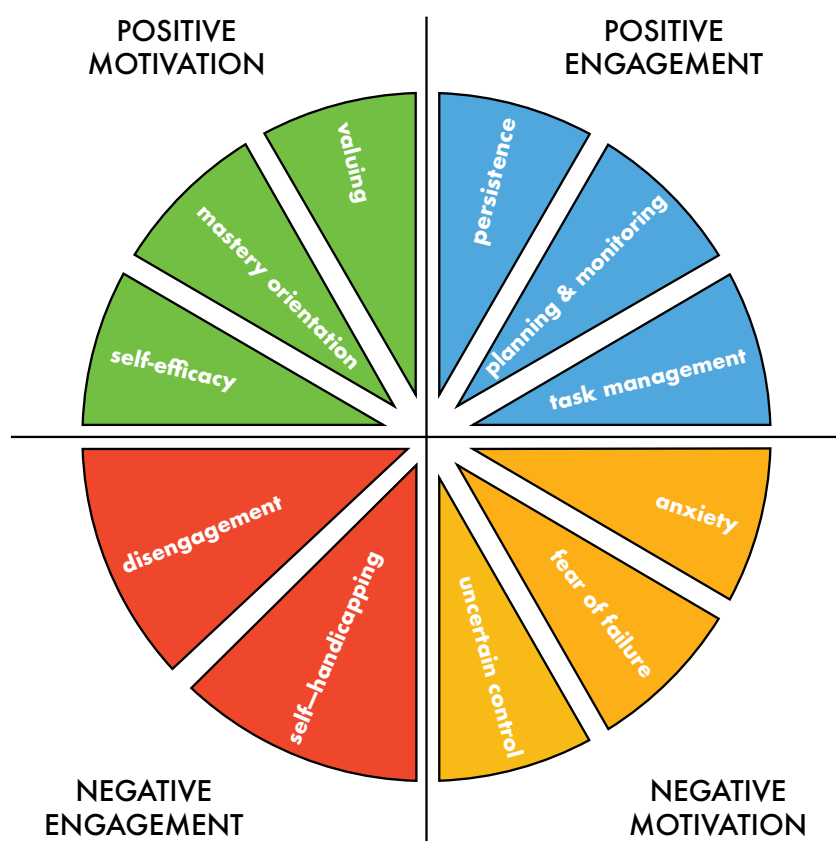


Figure 1.

*Motivation and Engagement Wheel (reproduced with permission from Andrew J. Martin; download Wheel from [www.lifelongachievement.com](http://www.lifelongachievement.com); see Appendix for practical strategies targeting the Wheel in literacy and numeracy).*

One recent approach has been to organize the numerous factors in terms of positive motivation (self-efficacy, valuing, mastery orientation), positive engagement (planning and monitoring behavior, task management, persistence), negative motivation (anxiety, fear of failure, uncertain/low control), and negative engagement (self-handicapping, disengagement). The Motivation and Engagement

Wheel (Martin, 2007; Figure 1) is the integrative framework representing this synthesis. Research has demonstrated the utility of the Motivation and Engagement Wheel in both literacy (Collie, Martin, & Scott-Curwood, 2015) and numeracy (Green, Martin, & Marsh, 2007; Martin, Anderson, Bobis, Way, & Vellar, 2012).

## BOOSTING MOTIVATION & ENGAGEMENT IN LITERACY & NUMERACY

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Educational research and practice has identified many strategies to boost students' motivation and engagement. Indeed, demarcating motivation and engagement into positive and negative multidimensional factors (the Wheel; Figure 1) enables targeted educational support aimed at promoting motivation and engagement as relevant to literacy and numeracy.

These intervention efforts are aimed at promoting positive motivation and engagement factors

(e.g., self-efficacy, persistence, etc.), while reducing the negative motivation and engagement factors (e.g., anxiety, self-handicapping, etc.).

In the Appendix, we detail specific strategies that educators may implement to address individual motivation and engagement factors in their efforts to promote literacy and numeracy (more detailed and extensive advice can be found in Martin, 2003; Marzano, 2000; McInerney, 2000; Petty, 2009).

## THE EDUCATIONAL ECOLOGY SUPPORTING MOTIVATION & ENGAGEMENT

It is also important to recognize that the child's motivation and engagement function in and are supported (or hampered) by an educational and cultural ecology (Bronfenbrenner, 2001; Guay & Vallerand, 1996; Hau & Ho, 2010; Sameroff, 2009; Shonkoff & Phillips, 2000). Alongside the child, this ecology comprises the home, the school, and the neighborhood—and the child's interactions with all these. More recently, this ecological systems framework has been extended to more appropriately account for the diverse populations (including diverse ethnic and cultural groups) that typically reside in a given educational ecology (Spencer, 2008).

Particularly relevant to motivation and engagement are the child's personal characteristics such as age or stage of schooling (Roeser, Eccles, & Sameroff, 2000), gender (Martin, 2004), ability (Hattie, 2009), ethnicity and migration status (OECD, 2006), and disability status particularly as relevant to literacy and numeracy (Swanson & Harris, 2013).

Home factors comprise socio-economic status, parents'/carers' education, household resources, and parent/carer involvement and availability (Mansour & Martin, 2009; Pomerantz, Moorman, & Litwack, 2007; Wang & Eccles, 2012).

At school there are instructional factors that support motivation and engagement, as well as school resources, school-level advantage, and intake



characteristics relevant to its students (Hattie, 2009; Martin, 2016; Perry & McConney, 2010).

Neighborhood factors such as housing quality and availability, children's programs, safety, and proximity to school are also relevant to academic motivation, engagement, and skill development (Alston & Kent, 2003; Shonkoff & Phillips, 2000).

Furthermore, alongside the direct influence of these factors on students' motivation and engagement in literacy and numeracy, the child's transactions with these factors represent another source of influence. For example, interpersonal relationships the child has at home, at school, and in his/her neighborhood significantly impact his/her motivation and engagement (Martin & Dowson, 2009).

Thus, although beyond the scope of this discussion, the child's educational and cultural ecology will also factor into efforts to promote their reading, writing, and work with numbers.

## EDUCATION IN DEVELOPING CONTEXTS

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It is also the case that the nature of many home, school, and neighborhood factors is qualitatively different in developing contexts when compared with developed (particularly “Western”) contexts. Whereas most motivation and engagement guidance is based on research among students and schools in developed nations (typically “Western” nations), there are unique challenges inherent in developing contexts that must be considered in efforts to enhance motivation and engagement in literacy and numeracy. For example, the availability of schools, high poverty rates, discrimination against girls, the absence of adequately prepared teachers, a dearth of support services for children in schools, availability of special needs resources, children’s ability to attend school (rather than, for example, work), are all issues relevant to promoting educational outcomes (including literacy and numeracy) in developing nations (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2016).

Although strategies to address these contextual and personal “headwinds” are beyond the scope of this document, we emphasize that academic motivation and engagement (including in literacy and numeracy) require appropriate contextual and personal supports. Educators seeking to enhance children’s motivation and engagement in literacy and numeracy are likely to be more effective when there are successful inroads made into these challenging contextual and personal factors—factors prevalent in many developing nations.



We refer readers to relevant UNESCO Global Education Monitoring Reports that address, inter alia, educational access, teaching, and learning (UNESCO, 2014), girls in education (UNESCO, 2006), issues implicated in poverty (UNESCO, 2010), teacher preparation, (UNESCO, 2014), and similar such challenges relevant to educational pathways in developing nations.



## ADDRESSING MOTIVATION & ENGAGEMENT IN DIFFERENT (NATIONAL) CONTEXTS

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The factors identified in the Motivation and Engagement Wheel are considered pan-human. Thus, researchers have demonstrated the validity and relevance of these factors in developed and developing contexts (as well as among highly marginalized ethnic groups such as Aborigines) in Asia, Oceania, North America, Europe, United Kingdom, Africa, the Middle East, and the Caribbean (e.g., Bodkin-Andrews, Denson, & Bansel, 2013; Liem & Martin, 2012; Martin, Martin, & Evans, 2016).

Inevitably, however, the precise ways in which these motivation and engagement factors are addressed will vary from nation to nation (and educational jurisdictions within them). Additionally, in developing contexts, practical efforts to address motivation and engagement in literacy and numeracy will need to accommodate major challenges such as the availability of schools, poverty, sex discrimination, availability of qualified teachers, etc.—and these also vary from nation to nation (UNESCO, 2016).

That noted, there will also be some common considerations when seeking to address motivation and engagement in literacy and numeracy (e.g., implementing recommendations and strategies identified in the Appendix). Being common considerations, they are likely to generalize across most contexts. These considerations include, but are not limited

to, whether these recommendations and strategies are operationalized as:

- recommendations for policy at the educational jurisdiction or system level
- a whole-school initiative
- a classroom or group initiative
- a focus for teacher/practitioner professional development and attention
- a joint home-school initiative
- an individualized intervention for a child

For any one of these, other common considerations will involve the precise nature of implementation and action. For example, some typical approaches to enhancing motivation and engagement include:

- awareness-raising among practitioners, parents/carers, and children (e.g., identifying and describing the key parts of motivation and engagement as relevant to literacy and numeracy)
- self-reflection among practitioners, parents/carers, and children (e.g., identifying and describing the key parts of motivation and engagement and asking stakeholders to reflect on how each factor may operate in their literacy and numeracy)
- formal assessment with results provided to children (e.g., motivation and engagement

researchers have developed measurement tools that can be a basis for feedback to students; see, for example, Martin, 2010)

- formal assessment (as above) with results aggregated to understand classrooms/groups, schools, or jurisdictions/systems—and inform policy makers accordingly
- formal assessment (as above) that is used for ongoing monitoring of progress (including of any intervention that might take place)
- informal intervention (e.g., based on results from assessment, disseminate practical advice to practitioner, parents/carers, and children with ideas on how to promote motivation and engagement—see Appendix).
- formal intervention (e.g., based on results from assessment, develop differentiated activities and tasks that target key parts of motivation and engagement in literacy and numeracy; e.g., see Martin, 2008).

Taken together, given differences in educational ecologies from nation to nation, it is not realistic to be prescriptive about how exactly motivation and engagement in literacy and numeracy should be promoted in a specific context. To be relevant and appropriately targeted, educational practice is best shaped locally. Notwithstanding contextual variation, however, we suggest there are some common implementation considerations (see bullet lists above) and specific recommendations and strategies (see Appendix) that can assist policy and practice initiatives.

## CONCLUSION

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In promoting SDG 4's target area of literacy and numeracy, it is important to recognize that every child has the capacity to think more positively about themselves, learn more effectively, constructively respond to setback and difficulty, and strive to achieve to potential. To the extent that this is the case, children can be motivated and engaged as they

develop their literacy and numeracy skills. Moreover, there are many straightforward strategies that can be implemented to enhance their motivation and engagement in literacy and numeracy. These efforts are vital to assist children in their development through school—and beyond.

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# APPENDIX: RECOMMENDATIONS & STRATEGIES TO PROMOTE MOTIVATION & ENGAGEMENT IN LITERACY & NUMERACY

## SOME IDEAS TO BOOST MOTIVATION & ENGAGEMENT IN LITERACY & NUMERACY

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Educational research and practice has identified many strategies to boost students' motivation and engagement. Following are some that can be applied for each motivation and engagement factor in efforts to promote literacy and numeracy (more detailed and extensive advice can be found in Martin, 2003; Marzano, 2000; McInerney, 2000; Petty, 2009). Moreover, in developing nations/regions, implementing these strategies may well also require addressing prevalent educational challenges such as the (un)availability of schools, high poverty rates, discrimination against girls, the absence of adequately prepared teachers, a dearth of support services for children in schools, availability of special needs resources, children's ability to attend school (rather than, for example, work), etc. (UNESCO, 2016).

## BOOSTING POSITIVE MOTIVATION & ENGAGEMENT IN LITERACY & NUMERACY

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### Strategies to enhance children's self-efficacy in literacy and numeracy:

- Challenge the child's negative thinking about his/her literacy and numeracy aptitude with some positive alternative thinking. For example, encourage the child to think that with appropriate quantity and quality effort, he/she can improve literacy and numeracy.
- Expand how children view success (that is a basis of self-efficacy). For example, seeing literacy and numeracy success in terms of effort and personal improvement (not just in terms of achievement compared to others) gives all children access to success and this is a basis for enhancing their self-efficacy.

- Encourage the child to recognize the many (small) ways he/she can succeed in literacy and numeracy. For example, setting small and proximal goals for spelling or arithmetic can build more opportunities for success and a sense of efficacy into the task.

#### **Strategies to enhance children's valuing of literacy and numeracy:**

- Identify ways that literacy and numeracy are relevant to success at school and life beyond school.
- Encourage parents/caretakers to look for opportunities to show the child that they value literacy and numeracy.
- Look for opportunities to make reading, writing, and working with numbers fun. For example, using games and technology can be helpful ways to help children enjoy learning.
- Reduce the reliance on rewards and remove the use of punishments to motivate students.

#### **Strategies to enhance children's mastery orientation in literacy and numeracy:**

- Encourage children to focus on the process of developing literacy and numeracy (e.g., effort, learning, skill development) more than achievement and performance (e.g., marks, ranks).
- Increase the emphasis on personal best (PB) goals and reduce the focus on comparisons with others.

#### **Strategies to enhance children's planning and monitoring behavior in literacy and numeracy:**

- Encourage the child to get it clear in his/her mind what the literacy or numeracy task is asking, dedicate some time thinking out how to do it, and outline the plan to do it.
- While doing the task, monitor progress against the plan.
- Make appropriate adjustments in time or strategy that may be required to successfully perform or complete a literacy or numeracy task.

#### **Strategies to enhance children's task management in literacy and numeracy:**

- Teach the child how to work on literacy and numeracy tasks under helpful conditions. For example, ask them to turn off their mobile technology if it is a distraction, remove other distractions, ensure sufficient light and space, and have appropriate materials to complete the task.
- Show the child how to use their time more effectively as they learn to read, write, and work with numbers. For example, talk about prioritizing important or large tasks, having a weekly and daily homework/activity timetable, and not leaving things to the last minute.

### **Strategies to enhance children's persistence in literacy and numeracy:**

- Encourage the child to set clear and achievable goals and to monitor progress towards them—these help sustain motivation and engagement, particularly when children experience difficulty.
- Encourage help seeking. For example, when the child experiences difficulty, encourage them to ask for help. This help could be provided by peers, teachers, or parents.
- Prompt the child to think about times when they persisted in a previous difficult task or activity; ask the child to identify what they were thinking and doing to help them through that difficulty—and to see if they can apply that to their literacy and numeracy learning.

## **REDUCING NEGATIVE MOTIVATION & ENGAGEMENT IN LITERACY & NUMERACY**

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### **Strategies to reduce children's anxiety in literacy and numeracy:**

- Challenge the child's negative thinking habits that underlie anxiety. For example, challenge the child if they over-estimate the negative consequences of literacy and numeracy difficulties or exaggerate the probability of future poor performance in literacy and numeracy. This helps the child do the same.
- Identify an effective relaxation technique that works for the child. For example, exercise, meditation, yoga, or Tai Chi can be effective for children. This develops the child's ability to relax him/herself.
- Because much anxiety revolves around test anxiety, give the child some good tips to help prepare for tests that involve reading, writing, and working with numbers.

### **Strategies to reduce children's uncertain (low) control in literacy and numeracy:**

- Encourage the child to reduce their focus on aspects of their literacy and numeracy that are beyond their control. For example, good/bad luck and easy/tough grading are beyond their control. If the child focuses on these factors, they are unlikely to have a sense of control in their literacy and numeracy development.
- At the same time, encourage the child to focus on the three things that are in their control: effort (how hard they work in literacy and numeracy tasks), strategy (the way they do that work), and attitude (what they think about the literacy and numeracy task and themselves as learners).

### **Strategies to reduce children's fear of failure in literacy and numeracy:**

- Reduce the child's fear of failure by having them see that "failure" and "mistakes" in their literacy and numeracy development provide information about how to improve. "Failure" and "mistakes" are not a reflection on them as a person or their worth; they are opportunities to learn and grow.
- Make it clear to the child that if they do not succeed after trying hard, it does not mean they are "dumb". Rather, it is often the case that they need to develop more effective learning strategies—thus, it is likely quality rather than quantity that needs attention.

### **Strategies to reduce children's self-handicapping in literacy and numeracy:**

- Self-handicapping behaviors such as procrastination, time-wasting, and withdrawal of effort must be targeted for intervention.
- Some children self-handicap because they believe they look "dumb" if they fail after trying hard. Encourage the child to see that effort is a key to improvement and not something to be feared or avoided.
- Other children self-handicap to protect their self-worth. Reducing the link between the child's worth and his or her literacy and numeracy is important. Thus, for example, poor literacy or numeracy does not mean he/she is a bad or worthless person.

### **Strategies to reduce children's disengagement in literacy and numeracy:**

- Disengagement is often the culmination of protracted motivation and engagement problems (e.g., with anxiety, failure avoidance, etc.) that have not been addressed—thus, many of the above strategies will be helpful to address factors underlying disengagement.
- Where possible, develop home-school connections and strategies to implement a comprehensive approach to literacy and numeracy development.
- Identify any skill-related factors that need attention – for example, literacy and numeracy difficulties may be underpinned or exacerbated by fine-motor difficulties, hand-writing difficulties, etc.
- Identify any health and wellbeing factors that need attention. For example, literacy and numeracy difficulties may be underpinned or exacerbated by executive function disorders (e.g., ADHD), sensory issues (e.g., poor eye-sight), and even mental health (e.g., disengagement emanating from anxiety or depression).
- Connect with relevant professionals and practitioners as necessary (e.g., psychologists, pediatricians, occupational therapists, speech therapists, etc.).