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“Lost Learning”: What does the research really say?

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IB mission statement

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.



IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

INQUIRERS

We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

KNOWLEDGEABLE

We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

THINKERS

We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

COMMUNICATORS

We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

PRINCIPLED

We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

OPEN-MINDED

We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

CARING

We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

RISK-TAKERS

We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

BALANCED

We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

REFLECTIVE

We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

The IB learner profile represents 10 attributes valued by IB World Schools. We believe these attributes, and others like them, can help individuals and groups become responsible members of local, national and global communities.

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Introduction

While unplanned school closure, as a consequence of a natural disaster or adverse weather conditions, is not new, the scale of school closures as a result of the Covid-19 pandemic is unprecedented. UNESCO reported that “nationwide closures are impacting hundreds of millions of students”. (UNESCO, 2020, November 11). As school closures continued in some parts of the world, media attention began to focus on “lost learning”, further heightening levels of concern for students, teachers and parents. Some of the articles reference research findings, carefully selecting quotes from studies to substantiate their claims.

To support teachers, school leaders, students and parents, this paper aims to provide:

- a brief review of the definitions of “lost learning”
- an overview of studies into “lost learning”
- studies of summer learning loss
- studies of the impact of natural disasters on student learning
- projections on the potential impacts of COVID-19 on student learning
- guidance on key factors that can mitigate the impacts of disaster, shock and “lost learning”

What is meant by “lost learning”?

Taken at its simplest, the term refers to learning previously gained being lost, with the inevitable consequence that students return to school knowing less than they did when they left. However, in many of the studies on learning loss, this is not how the term is used.

Some studies on learning loss during summer vacation refer to “near-zero levels of growth” (Kuhfeld, 2019, p.26) as opposed to learning loss. This has led some researchers to suggest that the phenomenon would be “better described by a phrase like ‘summer slowdown’ or ‘summer stagnation’” (von Hippel, Workman & Downey, 2018, p.337). Similarly, some of the studies on learning loss as a result of natural disasters measure learning loss against the “expected gains in academic scores” (Gibbs et al, 2019, p.1407); again, while students may not have made the expected progress, they have not necessarily “lost learning”.

Overview of studies into “lost learning”

Studies of “lost learning” tend to fall into four categories:

- studies of the impact of absenteeism on student learning
- studies of the impact of school closure due to bad weather (eg snow days)
- studies of the impact of summer vacation on student learning
- studies of the impact of natural disasters on student learning

The causes of absenteeism are complex and could very well impact student learning even if the student attended school regularly; for this reason, studies of absenteeism are not included. School closure due to bad weather tends not to be prolonged, therefore studies of school closure due to inclement weather are also excluded.

Summer learning loss

For reasons given earlier, the phenomenon of summer learning loss is perhaps more appropriately referred to as summer learning effect (SLE) which “is described as a stall or drop in achievement over summer” (Meyer, Meissel & McNaughton, 2017, p.232). Many of the studies conducted into SLE were based entirely on data from students in the USA; this is significant because there is a “shorter summer break in most European countries (6-10 weeks) in contrast to the longer break in the United States (10-12 weeks)” (Meyer, Meissel & McNaughton, 2017, p.234).

Another key point to consider in terms of studies into SLE is that “Research estimating summer learning loss, or evaluating programs to diminish it, usually focuses on reading and math outcomes” (Fitzpatrick, 2018, p.2). In addition, a review of studies on SLE found that “No study has examined the effect of summer break on students beyond eighth grade” (Cooper, Nye, Charlton, Lindsay & Greathouse, 1996, p.264). The study by Cooper et al. reviewed 39 studies and did a meta-analysis on 13 of them. For the conclusions drawn from analysis of 26 studies conducted before 1975, authors caution that the conclusions they draw “need to be viewed as imprecise and suggestive only” (Cooper et al., 1996, p.236). They also advise that “inferences about early primary grades and about high school should not be made” (p.241).

More recent research into summer learning loss found that “the research into summer learning loss is far from conclusive” (Kuhfeld, 2019, p.25). Kuhfeld’s study used NWEA MAP Growth reading and mathematics assessments for students in K-Grade 8. One of the findings from this study is that “*when* students were tested, and how much effort they made on the test, does appear to explain some of the large variation in results that we observed.” (Kuhfeld, 2019, p.28). The finding is consistent with that of another recent study showing that “many results about gap growth have been distorted by measurement artifacts” (von Hippel & Hamrock, 2019, p.43). One of the conclusions to the study is: “If summer learning gaps are present, most of them are small and hard to discern through the fog of potential measurement artifacts”. (von Hippel & Hamrock, 2019, p.75).

Impact of natural disasters on student learning

Natural disasters have led to extended school closures and therefore some articles have used the findings of such studies to tentatively predict the impact of Covid-19 on student learning. A key point that must be borne in mind is that students affected by a natural disaster often have to face a range of disaster-related consequences. Some may have their homes completely destroyed; some may be evacuated, in some cases without their families and to areas that are completely different to where they were living. In such cases, clearly, the impact on learning is not only the result of school closure.

A study of the delayed impact of bush fires on learning in primary schools found that “in reading and numeracy the expected gains in academic scores from Year 3 to Year 5 were reduced” but there “were no significant trends in academic scores for the writing, spelling, and grammar domains” (Gibbs et al., 2019, p.1407). The authors hypothesized that the distinction in subject impacts could “be cognitively mediated (either directly or indirectly) through the development of PTSD” (post-traumatic stress disorder) but they also point out that “The impact on reading results in this study may also have arisen due to reduced supported reading at home” (Gibbs et al., 2019, p.1408) because there was evidence that some parents’ mental health was affected for up to five years after the bushfires. The study evidenced that students react differently to the situation; while some children seem to be minimally affected, others progressively recover and the impact on others is delayed. The authors stressed the need for schools and parents to be aware that some children may need additional support long after the disaster is over. While there are many differences between the pandemic and a local natural disaster, reactions to the experience of the pandemic and its consequences could be delayed for some students.

Some of the studies of the impact of natural disasters on student learning are longitudinal and offer insights into possible ways to mitigate the long-term impact of lost learning. One such study focused on the long-term educational effects of the Canterbury earthquakes. The study found that “there was no evidence for increased school disengagement or poorer academic performance by students as a consequence of the earthquakes” (Beaglehole, Bell, Frampton & Moor, 2017, p.70). To explain this finding, the authors identified “the possibility of post-disaster growth and resilience being the norm for the majority” and suggested that a “range of post-disaster responses may have mitigated adverse effects on the adolescent population” (Beaglehole et al., 2017, p.70).

One of the primary objectives of a study into the impact of Hurricane Katrina was “to identify who or what facilitated children’s educational recovery” (Peek & Richardson, 2010, p.1). All of the children in the study were displaced and “more than 75% (n=32) reported a marked decline in their grades in the first year following Hurricane Katrina” (Peek & Richardson, 2010, p.4). The children self-reported the following as being key to their educational recovery:

- teachers who dedicated extra time and offered additional support to the evacuees improved the students’ academic motivation and overall desire to achieve (p.4)
- high teacher expectations (p.5)

Some children identified participation in extra-curricular activities as helpful for managing stress and/or sustaining motivation (p.6).

A study into the long-term effects of an earthquake on student learning considered students aged between 7 and 15 whose schools had been closed for 14 weeks on average. Independent tests in English, Urdu and mathematics administered four years after the earthquake provided “evidence across the entire age range that persistent developmental deficits can arise in young children due to a large, albeit “temporary” shock” (Andrabi, Daniels & Das, 2020, p.5). However, the study found that “school closures account for at most 10% of the earthquake effect, suggesting that test score losses must have continued even after children rejoined schools” (Andrabi, Daniels & Das, 2020, p.26). Findings in the study indicated that “children in the earthquake affected regions learnt less every year after returning to school” (Andrabi, Daniels & Das, 2020, p.30). The authors suggest that a possible explanation for this could be that “every child had to be promoted in the new school year, and if teachers taught to the curriculum in the new grade, they could have fallen farther behind” (Andrabi, Daniels & Das, 2020, p.30).

Projecting the potential impacts of COVID-19 on student learning

In their study “Projecting the potential impacts of COVID-19 school closures on academic achievement” (Kuhfeld et al. 2020), researchers used data from summer learning loss, weather-related school closures and absenteeism to project potential impacts of Covid-19 related school closures. The study was based on scores for mathematics and reading for grades 3-8 in the USA. One of the key points made in the study is that “relying on past precedent may overstate the effect of COVID-19 school closures” (Kuhfeld et al. 2020, p. 3). Specifically, the biggest difference between school closures examined by previous studies and those of COVID-19 is that most school districts are now providing online instruction” (Kuhfeld et al. 2020, p.3).

The transition to and duration of online learning varies greatly across schools. Students in the same school will not have the same experience of, nor the same reaction to, the online learning environment. Furthermore, they will not experience and react to the effects of the pandemic in the same way. All teachers know that each class is diverse in normal circumstances; a further point raised by the study, and one of which teachers are acutely aware, is that “students are likely to enter school with more variability in their academic skills than under normal circumstances” (Kuhfeld et al. 2020, p.27). This challenge is not new to teachers and there is already a range of established strategies to overcome it.

Key factors that mitigate the impacts of disaster, shock and “lost learning”

While some students will have been minimally affected by the pandemic, others will have experienced traumatic circumstances, and some may be living in changed and difficult situations for some time. Sadly, for many students, stresses arising from the effects of Covid-19 will continue long after normal schooling is resumed.

To support students' development, it is essential to maintain the commitment to providing holistic education and not be pressurised to focus predominantly on academic results. A focus on social-emotional activities to recover the motivation and engagement in learning could support students to positively adjust to the new academic tasks. Schools have demonstrated that they are ideally placed to provide much needed support to children and adolescents in challenging times. With this in mind, it is important to remember that in normal circumstances "Compared to children, adolescents encounter many new, potentially threatening or challenging social experiences" (Zimmer-Gembeck and Skinner, 2008, p.5); thus, while acknowledging the need to support younger students, there is reason to pay special attention to the increased needs of adolescents in times that are particularly difficult. The structural brain changes that occur in younger and older adolescents "have been associated with greater stress reactivity" (Zimmer-Gembeck and Skinner, 2008, p.4) but most adolescents have a range of strategies for coping with stress. Zimmer-Gembeck and Skinner identify support seeking, problem-solving, and distraction as being coping strategies most often used by adolescents. In addition, "Researchers point out that mistakes, setbacks, and failures are potential springboards for discovery and learning, offering adolescents the opportunity to build resources for coping with future negative events" (Zimmer-Gembeck and Skinner, 2008, p.3).

An obvious way that schools can help students to cope is to ensure a positive learning environment. In their study, Gibbs et al. (2019) cite research indicating "that positive school environments can, over time, mitigate the disaster-related impacts on academic performance" (p.1403). Another way is to focus on teaching skills that are associated with the development of resilience. Drawing on a synthesis of resilience research, Cahill, Beadle, Farrelly, Forster and Smith (n.d., p.16) list four key attributes and skills associated with resilience:

- higher levels of social competence
- problem-solving skills
- sense of autonomy or self-efficacy
- sense of purpose, hope or meaning

A way to reduce some of the stress, particularly for older students, is to put strategies in place to address one of the causes: "lost learning". One conclusion of a study of 160 adolescents aged 13-18 that were affected by the rainy season in Atlántico (Colombia), was that it is essential to help students to set long-term goals and rethink their aims¹ (Palacio and Barrios, 2013, p.353). By working with students and helping them to set their own goals, teachers promote a sense of purpose and of autonomy.

Drawing on the findings of Andrabi et al. (2020), the University of Oxford (2020) stresses the importance of assessing students to ensure that they can be taught "at the level of their current ability". Banerjee et al. (2016) note that "Interventions which focus on targeting teaching to the current learning levels of students have systematically found large effects on learning levels" (Banerjee et al., 2016, p.2). Conducted in schools in India, their 2016 study considered the effects on reading and mathematics results of a methodology referred to as "Teaching at the Right Level". The study found that, after just

¹ "es imprescindible ayudarlos a crear metas a largo plazo y a replantearse sus objetivos", (p.353)

50 days of intervention, “students can catch up from close to the lowest achievement levels in India to the level of learning of the third highest achieving state in the country” (Banerjee et al., 2016, p.28).

Taking the essential points of these studies we can identify the following key factors that can mitigate the impacts of disaster and “lost learning”:

- development of skills that support resilience
- positive school environment
- using assessment to support teaching and learning
- goal-setting
- differentiation

Guidance on key factors that can mitigate the impacts of disaster and “lost learning”

The IB education philosophy, curricula and curriculum frameworks provide a range of strategies to mitigate the impacts of lost learning. Given the challenging circumstances, it may be necessary to revisit and to reinforce what is already in the core of an IB education; to facilitate this process, a quick reference table is provided that identifies where guidance can be found in IB documentation.

Please note: the final column identifies the section of the Programme Resource Centre (PRC) where the guidance can be found; the guidance could be relevant to more than one programme.

Key factor	Reference	Section of PRC
Skills that support resilience	Diploma Programme “Approaches to teaching and learning” website. Section “Approaches to learning”, sub-section “Self-management skills”, sub-section “Affective Skills”	DP & CP
	Diploma Programme “Approaches to teaching and learning” website. Section “Approaches to teaching”, sub-section “Teaching the DP with the ATL in mind”	DP
	Approaches to learning, inquiry and service teacher support material. Section A, Example 4.	MYP
Higher levels of social competence	Diploma Programme Approaches to teaching and learning website. Section “Approaches to learning”, sub-section “Social skills”	DP & CP
	Approaches to learning, inquiry and service teacher support material. Section C, Examples 5, 6, 7 & 8.	MYP
Sense of autonomy or self-efficacy	PYP: From principles into practice. Section “The learner”, sub-section “Learner Agency” (Self-efficacy) pp.2-3	PYP
	Diploma Programme Approaches to teaching and learning website. Section “Approaches to learning”, sub-section “Self-management skills”	DP & CP

	Career-related Programme: From principles into practice. Section "Approaches to teaching and learning in the career-related programme" pp. 68-69	CP
Goal-setting/sense of purpose, hope or meaning	PYP: From principles into practice. Section "Learning and teaching", sub-section "Assessment". (Co-constructing learning goals and success criteria) p.72	PYP
	Approaches to learning, inquiry and service teacher support material. Section C, Example 12.	MYP
Differentiation	PYP: From principles into practice. Section "The learning community", sub-section "A community of learners" (Further reading - Grouping and regrouping) pp.7-8	PYP
	MYP: From principles into practice. Section "Action: Teaching and learning through inquiry", sub-section "Differentiation" p.68	MYP
Assessment	PYP: From principles into practice. Section "Learning and teaching", sub-section "Assessment". (Students) pp.71	PYP
	MYP: From principles into practice. Sections: "Action: Teaching and learning through inquiry" pp.76-79 & "Principles of MYP assessment" pp.79-80	MYP
	Diploma Programme assessment: Principles and practice. Section "Principles of Assessment" pp.3-6	DP & CP
	Career-related Programme: From principles into practice. Section "Assessment in the Career-related Programme" pp.63-64	CP
Positive school environment	Programme standards and practices - Standard 02: Environment	IB Education
	Meeting student diversity in the classroom. Section: "Moving beyond labels to removing barriers to learning" pp.5-7	IB Education
	MYP: From principles into practice. Section "Creating learning environments" p.75	MYP
	MYP: Social and emotional learning teacher support material. Section "In practice"	MYP
	PYP: From principles into practice. Section "The learning community", sub-section "Learning environments" p.38	PYP

In addition to the above guidance, the IB has developed additional support for schools during the Covid-19 crisis; Covid-specific support can be found here:

<https://www.ibo.org/covid-19-support/>.

Conclusion

Amid all the additional challenges, it is reassuring to note that “the wider evidence base indicates there are opportunities to mitigate negative impacts on child academic achievements through positive multilevel school strategies” (Gibbs et al., 2019, p.1410); many of the required strategies are already in place in IB schools.

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