Students' and parents' perspectives on emergency e-learning in kindergarten and compulsory education

Jeannine Vassallo, Gary Lee Doublet Meagher, Nadine Zammit, Louis Grech,
Elizabeth Refalo, Ethan James German
Ministry for Education

Abstract
This paper explores how students and parents of students attending kindergarten and compulsory education experienced emergency remote education delivered during the period when schools were closed to reduce the spread of COVID-19. Understanding this unprecedented context has the potential to shape post-pandemic education and future e-learning efforts. Data was collected through an online questionnaire featuring closed- and open-ended questions. The paper explores the students' and parents' or guardians' experiences and opinions on the teaching and learning provided. Additionally, it analyses the influence of school sector, school level, and previous access to educational support on this experience. The findings suggest that e-learning allowed students to continue their education but highlighted certain existing educational inequalities and created new ones.

Keywords
E-Learning, compulsory education, emergency online learning, covid-19 pandemic, user perception

Introduction
In March 2020, schools in Malta were closed abruptly to control the spread of the COVID-19 virus, and, consequently, education switched to e-learning. As society undergoes the fourth industrial revolution, educational institutions are encouraged to tap into technology to provide stable, innovative, and flexible learning solutions (Schwab, 2016). While Malta had been developing its educational digital infrastructure, the pandemic triggered the first large-scale use of e-learning instead of the traditional face-to-face method.[1] This paper

Contact: Jeannine Vassallo, jeannine.vassallo@gov.mt

focuses on student engagement with and adaptation to e-learning, considered from the perspective of the students themselves and that of their parents.[2]

Background

An effective e-learning solution is one that provides inclusive access, promotes learner engagement, and delivers an attractive and high-quality learning experience (Zawacki-Richter, Bäcker, & Vogt, 2009; United Nations, 2020). The digital infrastructure, instructional design, e-learning capabilities, and social dynamic need consideration (Tay, Lim, Nair, & Lim, 2014).

While purposely developed e-learning models preceded 2020 (Salmon, 2013; Debattista, 2018), efforts to urgently reduce the rate of transmission of COVID-19 meant that e-learning substituted traditional learning with little pre-planning (Puentedura, 2013). All parties needed to rapidly adapt with their current resources, leaving the full potential of e-learning untapped. The forthcoming sections introduce factors, within and outside the education system, that needed to be adapted and that may have impacted the e-learning experience.

Digital infrastructure

A digital infrastructure provides the technological requirements for e-learning. The online platform is the student-educator interface in e-learning, allowing for uninhibited bilateral or collective discussions (Dhawan, 2020). It also offers the educator a host of functionalities with which to manage logistics and facilitate administration, communicate, store learning materials, and conduct and grade assessments (AlBashaireh & Ming, 2018; Kaewsaiha & Chanchalor, 2020).

Since 2012, Malta's Ministry for Education has been investing in digital infrastructure, including a virtual learning environment. However, this system was aimed at supporting traditional learning and was not designed as a fully-fledged e-learning platform. Nonetheless, Malta's investment in digital infrastructure helped expedite the shift.

Educators' adaptation to e-learning

Following the emergency closure of schools, educators were encouraged to promote their students' learning through online means (MEDE, 2020a). This was

unprecedented for most educators, with one study indicating that only 5% of teachers in Malta had taught online prior to the COVID-19 pandemic, while 63% had never engaged in online teaching or learning (Busuttil & Farrugia, 2020).

MEDE provided training on online teaching and e-learning platforms (DDLTS, 2020). Although 35% of teachers received prior training that helped them navigate the COVID-19 context, many felt that they required further training (Busuttil & Farrugia, 2020). Guidelines (MEDE, 2020a) were provided to help educators communicate effectively online and to support parents and children to engage in e-learning, at a time when educators were still grappling with e-learning themselves. To smoothen educators' transition to e-learning, these Guidelines allowed flexibility surrounding platform use, e-learning type, and schedule (Sciberras & Schembri, 2020; Busuttil & Farrugia, 2020; MEDE, 2020a).

Syllabi

Digital literacy is a horizontal objective of Malta's education plan (Ministry for Education & Employment, 2014). However, more consideration of the impact of e-learning and digital literacy on syllabus content, learning processes, and assessment methods is warranted (Debattista, 2015). Although the impact of school closures on syllabi fulfilment in Malta is yet to be studied, the presence of certain factors indicates that a reduction in syllabus coverage is likely. First, syllabi designed for traditional learning, as Malta's are, may not be appropriate for e-learning (Sawarkar, Sawarkar, & Kuchewar, 2020). Second, teachers were inexperienced with and unprepared for teaching online (Busuttil & Farrugia, 2020). Finally, Guidelines instructed teachers to prioritise important aspects of syllabi (MEDE, 2020b).

Instructional design and e-tivities

Instructional design involves analysing students' learning needs and implementing effective methods to enable maximum learning (Debattista, 2018). This ensures proper e-learning structure, navigation, clear objectives, and learning outcomes, incorporates assessment exercises and regular feedback, and delivers engaging content (Hall, 2002; Debattista, 2018). Good instructional design ensures engagement through well-planned content and tasks through which teaching and learning take place (Salmon, 2013; Hall, 2002). This creates

a positive learning environment by presenting e-tivities attractively through multimedia and allowing for student interaction (Kim, 2020; Ionescu et al., 2020). This helps children remain motivated, focused, and engaged in e-learning (Ionescu et al., 2020). Contrastingly, unattractive instructional design can cause learning breakdowns, despite children's curiosity and excitement about digital applications (Sharkins, Newton, Albaiz, & Ernest, 2016; Dong, Cao, & Li, 2020). Moreover, while e-learning may be particularly beneficial to visual learners, educators teaching online must also ensure that they reach other learning styles (Zapalska & Brozik, 2006; Pinchot & Paullet, 2014; Fendler et al., 2016).

Home workspace

The school is purpose-built and finished so that its environment orients students towards learning (Lynch, 2016; Cooper, 2018), so much so that it can affect students' progress by 16% to 25% (Berry, 2002; Barrett et al., 2015). E-learning shifts workspace management to the learner's domain, with access to a dedicated space associated with learning being optimal for home learning (K12 Academics, 2021; Goetchius & Acree, 2020). In Malta, over 85% of 15-year-old students and 90% of 8-, 10- and 12-year-olds had access to a quiet workspace to study prior to the pandemic (Cefai & Galea, 2016; OECD, 2020). This indicates that their home workspace may have been suitable for e-learning (Busuttil & Farrugia, 2020).

Digital divide

Digital inequality refers to inequality of technical means, use autonomy, skill, and support, or a combination of these (Stiakakis, Kariotellis & Vlachopoulou, 2009). The COVID-19 pandemic increased inequality of technical means since reduced access to public networks was detrimental to those without paid networks (Kardefelt-Winther et al., 2020).

During the pandemic, increased inequality of technical means led to inequality of education access. Children from low-income families did not have the technical means for e-learning and often their families did not have the necessary skills to support their education (Eurochild, 2020). By October 2020, an estimated 10% of pupils in the world's most developed countries and up to 32% of pupils in EU Member States were deprived of e-learning for months due to inequality of technical means (Radosavljevic, 2020; European

Parliament, 2020). A learning loss of this magnitude will be detrimental to labour productivity, growth, and competitiveness, jeopardising students' future incomes and creating further inequality (European Parliament, 2020).

In Malta, data from 2015–2018 shows that over 90% of 10-, 12-, and 15-year-olds claimed to have access to a computer for schoolwork, and less than 5% of children lacked internet access in 2018, while 2% of households lacked a fixed broadband connection in 2019 (Cefai & Galea, 2016; Malta Communications Authority, 2019; OECD, 2020). Despite this, families who had the resources may have needed to alter their use by managing or increasing their digital resources to meet the higher digital demands of each family member.

To address inequality of technical means, the Ministry for Education provided 123 laptops or tablets and internet connections for a year to 238 households (MFED administrative data). Parents needing to become conversant with e-learning technology were offered training by the Directorate for Digital Literacy and Transversal Skills or by their respective schools (MFED administrative data). However, the immediacy of the pandemic precluded the delivery of adequate training for those with deeper digital literacy needs (Eurochild, 2020). While the repercussions of ubiquitous e-learning are yet to be seen, these efforts aimed to make inroads towards providing equitable access to learning.

Adult supervision and support

In traditional learning, parents' involvement in their child's educational journey is associated with higher academic success (Barnard, 2004; Chen et al., 2019). The increased student autonomy and responsibility that comes with e-learning made parents' role even more imperative (Bhamani et al., 2020; DCLE, 2020, cited in Busuttil & Farrugia, 2020). Parents may have needed to mediate between the child and the e-learning platform to ensure adequate use and engagement, to answer the child's questions, and to mitigate any emotional distress (Greer, Rowland, & Smith, 2014, cited in Chen et al., 2019; Wang et al., 2020). Therefore, parents supporting their children's learning activities promote bonding and improved learning (Bhamani et al., 2020).

However, the abrupt closure of schools disturbed parents' routine and added the responsibility of their children's learning (Bhamani et al., 2020). Identifying

the challenges faced by parents needing to support children with e-learning is important for optimisation of the method (Apriyanti, 2020). Such challenges include parents' inability to help children (because of lack of time, skills, or focus), children being unable to follow e-learning, feeling bored or lacking focus and will for e-learning, being distracted by items in the household, or lacking understanding of the subject matter (Apriyanti, 2020; European Commission, 2020). The extent to which different families adapted to these challenges created inequality in adult supervision and support of children. Children whose parents lacked the skills and time to support their e-learning were more likely to have poorer e-learning experiences and outcomes (Dong, 2020).

E-learning and disability

It is well established that children with disabilities thrive in mainstream schools, given the appropriate differentiated learning. Although e-learning removes physical barriers, disability access needs to be woven into the design of e-learning systems through multidisciplinary collaboration (Guglielman, 2010; Ellis, 2011). Although the emergency situation afforded limited time to quality-check platforms for accessibility, collaboration between teachers and Learning Support Educators (LSEs) during e-learning is possible and can provide positive outcomes for all students, including those with disabilities (Sciberras & Schembri, 2020). In Malta, 68% of teachers having an LSE in the classroom claimed ongoing collaboration between the two professionals while delivering e-learning (Busuttil & Farrugia, 2020).

Methodology

This paper outlines the results of a survey carried out among students and their parents regarding their experience of emergency e-learning while schools were closed due to COVID-19 (13 March–26 June 2020). The survey tool, an online questionnaire comprising open- and closed-ended questions in English and Maltese, was designed by the Ministry for Education's Research Unit in March 2020.

Online surveys require no contact between individuals, particularly relevant during a time of social distancing, and facilitate distribution among a large population (Kabir, 2016). Heads of all State, Church, and Independent Schools teaching compulsory education were encouraged to invite students and their parents to participate in the survey.

Data collection took place on 30 June–19 July 2020 using Microsoft Forms. Participation was voluntary and parents with multiple children were instructed to fill in one questionnaire per child. Privacy and anonymity were upheld by not requiring personal details, not collecting IP addresses, and not asking for any identifiable information. Data were cleaned to ensure that the responses analysed pertained to people attending Kindergarten to Year 11 in a school in Malta.

Analysis

Data were explored using SPSS. Open-ended questions were coded thematically to enable statistical analysis. They were coded by one researcher and checked by a second. Disputes were discussed and agreed upon prior to analysis.

Additionally, closed-ended data were tested to find whether school sector, school level, and professional educational support impacted students' and parents' subjective experience of e-learning. Hypotheses were tested through contingency analysis, conducted separately for students and parents, for which only the statistically significant results ($p<0.01$) will be presented in this paper.

Limitations

The study's limitations could have reduced the response rate and omitted certain cohorts most likely to be unable to engage with e-learning, thus losing valuable opinions. Limitations include:

- Non-probability sampling error since survey's distribution was at the Heads of School's discretion. The number of respondents per College varied, with certain Colleges being under-represented. It is unclear whether this stemmed from gatekeeping or because of other literacy and technological factors, both of which are more predominant in certain regions (NSO, 2020).

- Sampling error is also present since participants could forward the survey to others outside the cohort. In fact, the invitation to the study was, without the Research Unit's authorisation, posted on a social media group, potentially eliciting responses from untargeted

participants. While the data was cleaned, human error may persist. Some parents filled a single questionnaire for multiple children, rather than one per child as instructed.

- Content limitations exist as the study focuses on students and their parents. Additionally, although parents' educational and digital levels impacted their experience of e-learning (Dong, 2020), these were not gauged in the questionnaire.

- The post-hoc timing of the questionnaire may have introduced recall bias and precluded an understanding of how people coped with e-learning at different timepoints.

- Participant, acquiescence, and habituation response bias may also be present.

Results and discussion

This section presents and discusses the results collected through a survey on the perspectives of students and parents of students in kindergarten and compulsory education regarding their experience of emergency e-learning while schools were closed to reduce the spread of COVID-19. The Research Unit received 5894 responses from participants identifying as pertaining to Kindergarten to Year 11 (see Table 1). Parents comprised 83%.

Most student respondents attended Church Schools, while parents whose children attended State and Church Schools were almost equally represented. Most student respondents attended Middle/Secondary level,[3] while most parents had children in Primary School. Ten percent of student respondents claimed to have received educational support in academic year 2019/2020.

E-learning readiness

The emergency school closure meant that different parties were not equally prepared to participate in e-learning (Busuttil & Farrugia, 2020). Despite this, 94% of students and 90% of parents claimed that students had engaged in e-learning and around two thirds reported finding it easy to follow (68%) or to help their child follow e-learning (61%). This high participation rate and ease

of transition indicate a level of preparedness for e-learning that preceded the pandemic.

Table 1: Distribution of respondents

	Students (N=998)	Parents (N=4,897)
School sector		
State School	40%	40%
Church School	48%	39%
Independent School	11%	20%
Undisclosed	1%	1%
School level		
Kindergarten	-	8%
Primary School	14%	53%
Secondary School	84%	37%
Multiple children and levels	-	2%
Missing	2%	-
Additional professional educational support		
Yes	10%	18%
No	89%	81%
Missing	1%	1%

Students' digital proficiency, gauged on ability to send an email prior to starting e-learning, indicates that Secondary School students were more digitally competent to engage with e-learning than Primary students, with almost all Kindergarten students lacking this ability [Students: X2 (1, N=829) =108.8, p=.000; Parents: X2 (2, N=2813) =872.9, p=.000]. While around 10% of Secondary students and parents disagreed with the above statement, 40% of Primary students and parents and 96% of Kindergarten parents disagreed.

Additionally, students receiving educational support were less likely to agree with the above statement [X^2 (1, N=927) =11.9, p=.001; 44% vs 53% without support), while parents whose children attended Church Schools were more likely to agree [X^2 (2, N=1297) =56.7, p=.000; 46% State, Independent vs 60% Church]. These differences point towards certain cohorts being more digitally prepared for e-learning than others (OECD, 2020).

Consistent with other studies (Cefai & Galea, 2020; PISA, 2020) most parents and students (80–85% respectively) agreed that students had a quiet place at home for e-learning.

Access to e-learning

Students varied in terms of the technology they accessed e-learning from, with two thirds engaging in e-learning through laptops (see Table 2), while 31% of respondents in Years 4–6 claimed to have used the school tablet. The number of different software programs mentioned reached 62, among which Microsoft Teams, Zoom, and email clients were most prevalent. 45% of parents and 67% of students reported e-learning through multiple platforms, which added to the learning curve introduced by the emergency e-learning.

Provision

Students differed in the style and extent of e-learning they reported being provided with. E-learning was delivered through a combination of synchronous and asynchronous methods (53%), synchronous lessons aligned with the regular school timetable (42%), or solely asynchronously (5%). Children attending State Schools were more likely to be offered asynchronous learning, while those attending Independent Schools were more likely to engage in synchronous learning. The majority of students, namely 63%, confirmed having the opportunity to engage in a lesson asynchronously if they had missed it synchronously, reducing educational losses, with students attending State Schools being most likely to be able to do so [X^2 (2, N=886) =20.6, p=.000; 72% State vs 63% Independent and 56% Church Schools).

On e-learning engagement time, only 22% of parents claimed that their children spent 15 hours a week e-learning, while 46% of children indicated spending 4 or more hours daily. Students and parents associated with

Independent Schools were more likely to report spending longer hours on e-learning [Students: X2 (8, N=931) =113.0, p=.000; Parents: X2 (10, N=4390) =1070.8, p=.000]. Secondary School students and parents were more likely to report longer hours[4] [Students: X^2 (4, N=919) =71.4, p=.000; Parents: X^2 (10, N=4259) =456.5, p=.000].

Table 2: Respondent distribution by device used to access e-learning

	Students	Parents
Device used for e-learning		
Laptop	64%	57%
Desktop	12%	9%
Personal tablet	6%	12%
Smartphone	7%	5%
School tablet	4%	6%
Other/undeclared/missing	7%	11%
Most widely used platforms		
Microsoft Teams	80%	62%
Zoom	39%	30%
Email	31%	23%
MySchool	35%	15%
Klikks	11%	10%
YouTube	13%	7%
Facebook	6%	6%
ClassDojo	1%	5%
Skype	8%	4%
Edmodo	10%	3%

Following the instruction, aimed at preventing a complete educational hiatus, for teachers to prioritise syllabus content (MEDE, 2020b), just under one third of respondents indicated that students were offered e-learning for all subjects, with inequalities present between different school sectors and levels. Kindergarten students were more likely to cover all subjects while e-learning, while Secondary School students had the least subject coverage [X2 (6, N=4259) =128.6, p=.000]. Within Independent Schools, 66% of students and 50% of parents stated that they learned all subjects, while only a quarter of respondents from other sectors claimed so, with the largest proportion (around 40%) claiming almost all subjects were offered [Students: X^2 (6, N=929) =103.7, p=.000; Parents: ^{2} (6, N=4390) =307.4, p=.000].

The reduced subject and time allotment may indicate that most children received less than the traditional entitlement (see the Agreement between the Government of Malta and the Malta Union of Teachers 2018–2022). However, one must exert caution about the implications of reduced direct instructional time since an e-learning schedule and pace of learning differ (Sun & Chen, 2016). Additionally, respondents may not have included time spent working independently or receiving homeschooling from parents in their e-learning time estimates (Greenhow, 2020).

Learning process

Participants' feedback expresses appreciation for teachers' efforts, which enabled teaching and learning to continue despite school closures, commending teachers for swiftly learning new skills and adapting teaching resources for e-learning (Busuttil & Farrugia, 2020). Each of the teaching and learning variables received positive feedback from the majority of respondents. Nevertheless, each of these variables received a negative response from 15–25% of students or parents, indicating that a sizeable minority felt there had been inadequate support for e-learning.

Particularly, one third of Secondary students disagreed that teachers shared material that encouraged e-learning participation, making them twice as likely to disagree as Primary students [X2 (1, N=917) =11.9, p=.001; Secondary 29%, Primary 15%]. One third of Secondary School parents disagreed that students had received adequate material to thoroughly learn the subject matter [X2 (1,

N=2830) =62.9, p=.000; Kindergarten: 14%, Primary: 22%, Secondary: 34%]. While this may be because of increased demands and expectations of teaching and learning at higher levels, it points towards difficulties with mastering the material in higher levels.

Teachers also sought to ensure individual students' understanding by addressing questions, reminding students of pending submissions, and correcting work. Secondary School parents were more likely to claim that teachers had reminded students to submit work [X2 (2, N=2830) =92.3, p=.000; Kindergarten: 40%, Primary: 63%, Secondary: 75%], perhaps because Secondary school educators were more concerned about the impact of the hiatus on children's learning outcomes and prospects. About half the participants claimed that parents were contacted, which is crucial in ensuring that parents are informed adequately enough to supervise and support accordingly. Students attending Church Schools were less likely to agree [X^2 (2, N=842) =9.2, p=.010, Church: 46%, State and Independent: 55–57%].

Lower levels of agreement were noted regarding whether e-learning enabled interaction and peer-learning. Primary School students were more likely to agree that e-learning allowed students to inquire and discuss [X2 (1, N=917) =8.5, p=.004; 78% Primary vs 64% Secondary]. Most Primary School students agreed that e-learning allowed them to learn from their classmates (74%), while most Secondary School students (57%) disagreed [X^2 (1, N=917) =13.8, p=.000].

Student respondents were more likely than parents to agree that students remained focused while e-learning. Students and parents associated with Independent Schools [students: X^2 (2, N=929) =21.8, p=.000; 75% State, 62% Church, 56% Independent Schools; parents: X^2 (2, N=2934) =23.3, p=.000; 52–54% Church and State, 41% Independent] were least likely to agree. Furthermore, parents of children in Secondary Schools were almost twice as likely to agree with this statement as those with children in Kindergarten [X2 (2, N=2830) =40.6, p=.000; Kindergarten: 35%, Primary: 47%, Secondary: 57%]. This may point towards e-learning being more age-appropriate for older children.

Table 3: Respondent agreement on the learning process

	Respondents who 'Agree'	
	Students	Parents
Students focused when doing work online	67%	51%
Teachers reminded students to submit their work	74%	67%
Teachers shared material that encouraged e-learning participation	73%	76%
Teachers gave students all the information necessary to understand the topics	76%	73%
E-learning allowed students to ask questions and share their ideas	66%	55%
Teachers answered students' questions clearly	87%	85%
E-learning enabled students to learn from their classmates	42%	34%
Teachers provided challenging tasks to practise what students had learned online	75%	-
Students always submitted their online work in a timely manner	81%	76%
Teachers provided feedback on students' work	85%	79%
The school/teachers contacted parents about the individual student	51%	55%

Support

Consistent support is crucial for successful access to and engagement with e–learning (Salmon, 2013; Debattista, 2018). Support is even more imperative when e–learning is conducted with children who are experiencing it for the first time, who have not chosen it, and who have had little preparation to adjust to it (Ionescu et al., 2020). Children needed their parents' help to access and administer and understand educational content (Dong, 2020).

On technical support, 27% of parents and 20% of students claimed that they did not experience any technical problems requiring support, while 40% of respondents reported 'always' having access to technical help. A small but sizeable minority felt that no such help was available (8% of students and 5% of parents).

On curricular support, while teachers remained important contact points, many parents recognised the need to shoulder a larger responsibility in mediating between the child and the school to ensure educational continuity (Bhamani et al., 2020). This support role required parents to make adjustments and, at times, make difficult decisions which would impact their children's ability to continue their education, and to do so successfully (Bhamani et al., 2020). Almost all parents reported encouraging their child to follow e-learning and most agreed that they monitored, supervised, and supported their child's studies and progress. Parents whose children attended Independent Schools were least likely to agree that they monitored their children [X^2 (2, N=2934) =41.9, p=.000, 80% Independent vs 88–91% Church and State], while those whose children attended State Schools were most likely to spend plenty of time helping their child with assigned tasks [X^2 (2, N=2934) =42.7, p=.000, 71% State vs 57–61% Independent and Church]. This may be because educators who delivered longer hours of synchronous learning retained their role as main educational reference points (Nikmah, Azimah, 2020), while parents whose children had little or no synchronous learning felt a larger impetus to compensate as asynchronous learning requires more independence (Farros, et al., 2020).

Additionally, parents whose children attended Kindergarten were more likely to monitor [X^2 (2, N=2830) =91.2, p=.000; Kindergarten: 96%, Primary: 93%, Secondary: 81%] and spend plenty of time supporting their children to carry out tasks given through e-learning [X^2 (2, N=2830) =314.6, p=.000; Kindergarten: 87%, Primary: 77%, Secondary: 46%]. Parents whose children had been receiving professional educational support [X^2 (1, N=2934) =16.6, p=.000, 72% with vs 62% without support] were most likely to make the same claim. This could be because age and learning disability make it more difficult for children to work independently, placing larger demands on parents to bridge the gap between the school and their children.

Three in four students reported having support within the household. Primary students were more likely to claim so [X^2 (1, N=917) =13.3, p=.000; 88% Primary vs 73% Secondary]. This could be because the curricular demands of Secondary School decreased parents' confidence in their ability to adequately support their children's education [X^2 (2, N=2830) =131.1, p=.000; Kindergarten: 83%, Primary: 78%, Secondary: 59%].

To fulfil this role of primary educational support agent, parents needed to re-establish their roles and seek a new work-life balance. While several families managed to offer their children support, at a cost to their personal and economic well-being, other families were unable to accommodate the required support. Indeed, 12% of students disagreed with two of the three support variables,[5] while 3% disagreed with all three, making these children among those at risk of being unable to participate in certain e-tivities or of stopping their engagement with e-learning altogether (Salmon, 2013).

Table 4: Respondent agreement on student/parent support

	Respondents who 'Agree'	
	Students	Parents
Students could get help from the people they live with when they got stuck while learning online	76%	-
Parents encouraged their child to engage with online learning	-	98%
Parents monitored and supervised their child's studies and progress regularly	-	88%
Parents spent plenty of time helping their child do the tasks assigned online	-	64%
Parents felt confident in their ability to help their child with assigned tasks	-	70%
Teachers helped whenever the student encountered any difficulties	86%	81%

Social inclusion

E-learning could help to alleviate social isolation and loneliness at a time of social distancing (Valls-Carol et al., 2020). Indeed, 60% of students agreed that e-learning helped them maintain their friendships, with Primary students being more likely to agree [X2 (1, N=917) =13.8, p=.000; 74% Primary vs 57% Secondary]. However, the large minority of students who disagreed with this statement indicates that while most students acknowledged the social aspect of e-learning, the way in which e-learning was conducted may have fallen short of enabling sufficient contact and interaction between students.

Curriculum coverage

Most participants agreed that students had learned new topics online (students: 86%: parents: 73%). Parents who reported longer hours of e-learning were more likely to agree [X^2 (5, N=2935) =76.9, p=.000] such that while around half of those reporting less than 1 hour a week agreed with this statement, this rose to over three quarters in parents reporting a minimum of four hours.

Nonetheless, the majority of respondents (students: 64%; parents: 81%) felt that e-learning fell short of delivering the amount of learning normally covered in class, with Secondary School students being more likely to believe so [X^2 (1, N=917) =8.0, p=.005; Secondary: 66%; Primary: 53%].

Appetite for learning

Most students and parents concur that e-learning did not increase students' interest in the subject matter, with 68% and 78% respectively disagreeing with this statement. This may be because educators and school leaders did not have adequate time and preparation to focus on the most effective instructional design for their students and thus move beyond the substitution phase of e-learning (Salmon, 2013). Students attending State Schools were more likely to claim being more interested in the topics because they were taught online [X^2 (2, N=927) =11.0, p=.004; 38% State vs 28–30%), while parents of children attending Independent Schools were least likely to claim that their children were more interested [X^2 (2, N=1297) =28.6, p=.000; 14% vs 21–26%]. Students receiving educational support and their parents were more likely to claim that e-learning had increased students' interest in the subject matter [Parents: X^2 (1, N=2784) =55.8, p=.000; 34% with vs 19% without support; Students: X^2 (1, N=925) =24.1, p=.000; 54% with vs 29% without support). Indeed, most students who engaged with online learning reported that they like e-learning and traditional learning equally (54%), while 26% prefer traditional learning and 20% prefer e-learning. This lack of preference indicates that e-learning neither sufficiently alienated nor enticed students. Having said that, the emergency e-learning was not a perfected version and therefore subsequent e-learning iterations may reap the benefits discussed in the literature (Salmon, 2013).

Collateral benefits

Asked whether e-learning helped students in any aspect, respondents appreciated that e-learning enabled students to continue with their learning despite the school closure. Some respondents highlighted that children learned better online than they did in class, while others claimed that e-learning had taught children skills that would benefit them in the future, both as students and as individuals, such as time management skills and taking responsibility.

Respondents felt that e-learning had expedited the acquisition of IT skills, particularly among Primary School students [X^2 (1, N=912) =14.3, p=.000; Primary: 90%, Secondary: 75%].

Table 5: Top ways in which e-learning has been beneficial to students

	Students %	Parents %
Continued learning from home	8 (N=491)	8 (N=1644)
Independent & responsible	75 (N=934)	55 (N=2935)
IT skills	77 (N=934)	82 (N=2937)
Learned better online	16 (N=491)	5 (N=1644)
Work/Time management	56 (N=930)	37 (N=2936)
Check own work	72 (N=930)	50 (N=2935)

Students rated the secondary benefits of e-learning more highly than parents did. While three quarters of students claimed that e-learning had taught them to study independently and check their own schoolwork, only half the parents agreed. Parents whose children attended Independent Schools were least likely to agree that e-learning had taught children to check their own work [X2 (2, N=1298) =18.9, p=.000; 51% State vs 52% Church vs 41% Independent], while those of Secondary School children were most likely to agree [X2 (2, N=2830) =127.9, p=.000; Kindergarten: 25%, Primary: 43%, Secondary: 61%].

A small minority of students (56%) agreed that e-learning had taught them to manage their time, while most parents disagreed (64%). Primary School students were more likely to agree with this statement [X2 (1, N=0=911) = 6.6,

p=.010; Primary: 66%, Secondary: 54%], while parents of Secondary students were most likely to make the same claim [X2 (2, N=2830) =135.2, p=.000; Primary School students were more likely to agree with this statement [X2 (1, N=0=911) = 6.6, p=.010; Primary: 66%, Secondary: 54%], while parents of Secondary students were most likely to make the same claim [X2 (2, N=2830) =135.2, p=.000; Kindergarten: 22%, Primary: 31%, Secondary: 44%].

E-learning challenges

Transitioning to e-learning, as any abrupt or involuntary change, was not always easy.

Reflecting on reasons for not engaging in e-learning, most dropouts claimed that they had not been offered any online learning or found it difficult to follow, closely followed by those claiming that they were easily distracted by the home environment. Contrastingly, most parents whose children dropped out of e-learning claimed that the student did not like how e-learning was done. They also cited having to share devices between multiple family members and difficulties coping with multiple responsibilities, such as juggling multiple children's e-learning demands and e-learning while working.

Respondents who continued learning online also found some difficulties. They highlighted challenging/excessive homework as the biggest drawback. Being caught without access to enough devices was the main difficulty encountered by parents, while inadequate internet connection was the second most cited reason for both parents and students.

Strengths of e-Learning

Students and parents mentioned various positive aspects experienced in e-learning. Speaking of the positive highlights of e-learning, students prioritised factors leading to increased autonomy, while parents lauded efforts made by educators and schools to adapt to the unexpected situation.

Table 6: Distribution of challenges faced by drop–outs and those who continued e–learning

	Challenges faced by drop-outs		Challenges faced by those who continued e-learning	
	Students	Parents	Students	Parents
	% (N=63)	% (N=512)	% (N=936)	% (N=4147)
Nobody could help student access e-learning	11	3	6	5
Student found e-learning boring	13	3	-	-
Student did not understand the assigned tasks	14	4	12	8
Student did not have to learn online	18	4	-	-
Student did not have any help	19	4	-	-
Student did not like how e-learning was done	21	31	2	5
E-learning is not hands-on	21	5	-	-
Student got distracted easily at home	30	6	1	1
Student was not given e-learning	32	4	-	-
Student found it difficult to follow e-learning	32	5	-	-
Student found it difficult to cope with supporting e-learning & other responsibilities	-	8	-	-
Student was not asked to return their work	6	4	-	-
Inadequate internet connection	6	1	25	15
Challenging/excessive homework	10	1	44	17
Difficult to follow e-learning at teacher's time	-	-	13	
Had to share the device with others	-	8	13	22
Difficult to use the e-learning program	5	3	6	5

Table 7: Strengths of e-learning

Students	Parents
Comfort of home	School/teacher well organised/adapted
Increased well-being	Efficient communication and feedback
Flexibility	Learning and teaching effectiveness
Fewer distractions	Student/parent support
Social during pandemic	Regular/daily e-learning
Efficient communication and feedback	Resources
No uniform	Homework management
Continuation of teaching and learning	Recorded lessons

Recommendations

The pandemic offered a taste of what e-learning could be like for younger students, catching people digitally, formatively and socially unprepared. Understanding people's experiences sheds light on the educational continuation of children affected by school closure, and the potential for compulsory education to integrate e-learning to deliver equitable and inclusive learning that equips students with the skills necessary to be dynamic lifelong learners and be successful in their endeavours.

Respondents made several recommendations, aimed at addressing the challenges facing them while e-learning by improving provision, communication, teaching and learning and e-learning feasibility (Table 8). Parents were split in their opinion on how e-learning should have been provided during school closure. Some wished for traditional provision to shift to e-learning yet keeping the same structure and content, retaining a semblance of normality in an unprecedented scenario. Others preferred a diminished e-learning provision to reflect the peculiarity of the emergency situation.

Table 8: Distribution of Students and Parents' Recommendations

		Students % (N=407)	Parents % (N=1251)
Improved provision	Better organisation	5	7
	Set timetable	6	15
	Regular synchronous learning	22	41
	Recorded lessons	7	5
	Synchronous lessons for all subjects	28	31
Improved communication	Unique platform	10	10
	Better home-school communication	7	8
	Increased student support	8	8
Improved teaching and learning	Better lesson quality	35	27
	Better e-learning resources	10	6
	Assessment of and for learning	7	12
Improved feasibility of e-learning	Less pressure/reliance on parents	-	5
	Educate students/parents/teachers in skills necessary for e-learning	3	7
	More manageable homework	30	0

Additionally, this paper makes recommendations for policy, practice and further research with a view to embrace the fourth revolution within mainstream education.

Prepare national educational contingency plans for future emergencies:

- Develop a National Contingency Plan for Education that ensures minimum disruption and variance provision in emergencies. This would include Standard Operating Procedures for educators, parents and students, formulated with the involvement of relevant stakeholders;

Educational provision for children affected by school closure:

- Develop and implement measures that compensate for educational disparities between students caused by systemic variance in provision;

Integrate e-learning in mainstream education:

Policy

- Analyse current syllabi for their compatibility with e-learning with a view to tweak them to better embrace e-learning;
- Consider how blended learning can be used in mainstream education;
- Provide digital and instructional design training for educators to be able to make the best use of e-learning;
- Climb up the SAMR model, thereby enabling e-learning to bring added value to the traditional classroom and make e-lessons more enjoyable and interactive;
- Consider how e-learning can help engage children at risk of disengaging from education;
- Explore, with stakeholder involvement, how synchronous and asynchronous learning can complement existing mainstream education, enabling independent revision and study;
- Develop a framework for e-learning accessible to all, that considers age-appropriateness and developmental needs;

Research

- Evaluate the digital infrastructure and training needs of schools, school leaders, educators and students;

- Investigate how students with disability coped with the rapid response to emergency e-learning and whether there were any factors particular to them which facilitated or hindered e-learning;

- Collate e-learning good practices to guide future e-learning;

Training and Support

- Continue developing the digital infrastructure of schools and households, thereby facilitating access to and use of e-learning by both students and educators;

- Sensitise educators to e-learning by providing training on basic e-learning concepts and functions as well as on higher-order technical skills required by multimedia learning programs fit for e-learning;

- Extend training sessions to parents or care givers by way of improving e-learning-support capabilities at home;

- Consider the establishment of digital learning hubs which can be set up online;

- Establish mentorship programmes, including Peer-to-Peer Mentorship Programmes and Student-to-Student Mentorship Programmes.

Conclusion

Emergency e-learning introduced an unprecedented educational context, where, without prior training, educators, students, and parents had to swiftly shift processes and practices designed for and accustomed to traditional learning to e-learning to avoid educational paralysis. This paper considered the viewpoints of Kindergarten to Year 11 students and their parents to understand the e-learning delivered and how its recipients adapted to it. Taking stock of e-learning provision, including variance therein, helps identify and plan for any necessary remedial services, while understanding end-user perspectives provides insights for developing effective and inclusive e-learning systems that reduce, rather than exacerbate, educational inequalities (Apriyanti, 2020; Kardefelt-Winther et al., 2020).

Students and parents appreciated educators' efforts to establish new teaching and learning relationships through e-learning, but opinions differed regarding how e-learning should have been provided in an emergency. However, most students, and four in five parents, expressed concern at what they perceived as e-learning failing to adequately substitute and cover the learning normally present in traditional learning. This could be because of unequal provision and the new demands that e-learning placed on families, which compounded existing inequalities and introduced new vulnerabilities. Addressing the factors underpinning these beliefs would enable e-learning to be better integrated into compulsory education.

Notes

1. Henceforth, traditional learning will be used to refer to learning within a physical classroom.
2. In this paper, 'parents' is used to refer to parents and guardians.
3. For brevity, this will henceforth be referred to as Secondary level.
4. Students and parents reported daily and weekly hours

<table>
<tr><td colspan="2"></td><td colspan="3">Sector</td><td colspan="2">School Level</td></tr>
<tr><td colspan="2"></td><td>State</td><td>Church</td><td>Independent</td><td>Primary</td><td>Secondary</td></tr>
<tr><td rowspan="2">Students' reported daily hours</td><td>Median</td><td rowspan="2">2-3</td><td>2-3</td><td rowspan="2">4-5</td><td>2-3</td><td rowspan="2">4-5</td></tr>
<tr><td>Mode</td><td>4-5</td><td>1-2</td></tr>
<tr><td rowspan="2">Parents' reported weekly hours</td><td>Median</td><td>4-6</td><td>7-9</td><td rowspan="2">>15</td><td>4-6</td><td>7-9</td></tr>
<tr><td>Mode</td><td>1-3</td><td>4-6</td><td>1-3</td><td>>15</td></tr>
</table>

5. The three student support variables were 'Was there anyone to help you when you found problems while using the online learning program?' (Negative answer options: 'No' or 'Hardly ever'), 'My teachers helped me when I got stuck while learning online.' and 'I could get help from the people who I live with when I got stuck.' (Negative answer option: 'Disagree').

Notes on contributors

Jeannine Vassallo is currently employed as Senior Manager within the Education Ministry's Research Unit. Jeannine has worked in the delivery, regulation, research and policymaking of welfare and education services and at the House of Representatives.

Jeannine holds a B.A. (Hons.) Anthropology (Melit.), M.Sc. Social Research (Edin.), M.Sc. Integrative Health and Social Care (Derby) and CMI Level 7 Extended Diploma.

Gary Lee Doublet Meagher B.Sc. (Communication Therapy), M.A. Interpreting Studies, has worked within education policy and research for the past 4 years and is currently employed as Manager II (Research) within the Ministry for Education's Directorate for Research, Lifelong Learning and Employability. His expertise lies in child development, developmental psychology, speech-language acquisition and use, as well as education policy.

Nadine Zammit B.Sc. (Hons.) Mathematics and Physics, PGCE Mathematics, works as a statistician at the Directorate for Research, Lifelong Learning and Employability within the Ministry for Education. With eight years' experience in the education sector, her field of expertise includes pedagogy and teaching STEM subjects.

Louis Grech Dip. Social Studies (Industrial Relations), is currently an Officer at the Research Unit in the Directorate for Research, Lifelong Learning and Employability within the Ministry for Education. His main field of expertise is Labour Studies, where he also writes reports for Eurofound on behalf of the Centre for Labour Studies (University of Malta), but his research experience spans over 15 years, also covering social care and education.

Elizabeth Refalo BA (Hons.) Social Policy, Pearson BTEC Level 3 Extended Diploma in Health and Social Care (Social Care) (QCF), works as a Statistician at the Directorate for 18 Research, Lifelong Learning and Employability within the Ministry for Education. Her area of expertise is social care and policy.

Ethan James German is currently reading for a B.Sc. (Hons.) Mathematics and Physics at the University of Malta, and is a trainee within the Directorate for Research, Lifelong Learning and Employability, where his competence in software QA, statistical simulations, data science, and physical modelling support the Research Unit's quantitative analysis capacity.

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