

Technostress in secondary education settings

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Teaching is considered a highly regulated profession in Ireland. Teachers employed in state-funded secondary schools are required to be registered with the Irish Teaching Council, while the Department of Education and Skills is responsible for the coordination of teachers' employment (Heinz et al, 2017). Employment relations within the sector are regulated by legislation and collective agreements reached between this government department and the main trade unions, the Association of Secondary Teachers of Ireland (ASTI), and the Teachers Union of Ireland (TUI) (Murphy et al, 2019). As a profession, teaching is viewed as one which has many advantages from a work-life balance (WLB) perspective, though research indicates that there is a need to introduce greater WLB policies and programmes for the teaching community (Miryala and Chiluka, 2012). International research argues that the commodification of education is contributing to the intensification of work and to greater performance management around teachers' work in other contexts (Fitzgerald et al, 2019; Frederickson, 2009; Merceille and Murphy, 2017). As such, the nature and context of work has changed and now shares more similarities with the private sector, in particular in relation to demands around working time, and the development of an "always on" culture (MacDowell and Kinman, 2017). The drivers for this can be viewed as symptomatic of broader societal changes brought about through enhanced technology (Mullan and Wacjman, 2019; Moore, 2017).

In many ways the rollout of ICT in schools has followed the adoption of ICT in the wider economy and society. While the benefits of technology are championed it has also been argued that the impact of ICT on work practices can lead to a form of work extension. Over the last decade we have seen the emergence of 'tech-' driven schools which operate primarily on the use of devices - most usually tablets - as the primary

learning resource in classrooms. Currently, in Ireland this expectation is dependent on the policy of each individual school (Marcus-Quinn and Hourigan, 2017). For example, in a typical 'tech-driven' school it is possible to furnish staff with a complementary device as part of the school's contract with an external technology provider. However, the provision of devices to all teachers in Ireland is certainly not mandated by the DES and is dependent on the internal policy of any given school. Hence, for many 'bring your own device' (BYOD) is still a reality. Currently, many teachers are still using personal devices such as phones, laptops, visualisers and wifi speakers, although this is gradually being phased out due to recent GDPR legislation (Dunne et al 2020).

Technostress

The term technostress was first defined in the mid 1980's by Brod as the "inability to adapt or cope with new computer technologies in a healthy manner". Brod (1984) considered technostress as: firstly, the difficulty in accepting computer technology and secondly, the over identification with technology. In the context of Covid-19, the time for such planning was limited. It is this second part of Brod's definition that we are focussing on in this paper. Information communication technology (ICT) changes require planning and sensitivity with regard to the manner in which change is introduced and implemented (Ragu-Nathan et al., 2008; Atasoff and Venable, 2017). The need for rapid ICT change amid Covid-19 is clearly at odds with this recommendation. The speed at which changes were introduced arguably increased the risk of technostress for all parties involved in the secondary education setting. The idea of technostress has been simply defined by Weil and Rosen (1997) as mental stress from technology. Tarafdar, Ragu-Nathan, and Ragu-Nathan (2007, 2008, 2011) have explored the concept of technostress and have defined technostress as "stress caused by an inability to cope with the demands of organizational computer usage" and classifying technostress creators into five subfactors. These are: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty.

Table 1: Technostress subfactors

Technostress Subfactor	Definition
Techno-overload	ICT's potential to force people to work more and work faster
Techno -invasion	ICT's potential to invade non work aspects of a person's life due to the ability to be reached anytime, anywhere, making individuals feel like they are always connected.
Techno-complexity	ICT's potential to create anxiety for individuals when complex communication systems and jargon are used.
Techno-insecurity	A situation where individuals feel their job or role is threatened by technology
Techno-uncertainty	The uncertainty caused by the rapid change and upgrading of technology resulting in an employee's existing knowledge becoming outdated and constant retraining being required.

Adapted from Tarafdar, Ragu-Nathan, and Ragu-Nathan (2007;2011)

Spillover effect: examples of technostress amid the impact of Covid 19 on teachers

Recent work by researchers in Ireland has highlighted the additional stresses experienced by educational stakeholders, when working remotely in order to provide continuity of learning during the pandemic (Mohan et al, 2020; Devitt et al 2020; Hourigan, 2021; Marcus-Quinn, 2021). Teachers primarily reported a huge increase in workload within the online environment. Technostress was reported across a wide range of experiences, with particular reference to upskilling for those with very basic digital skills. This level of techno-uncertainty resulted in the provision of introductory ICT courses for teachers provided by the PDST

(Professional Development Service for Teachers) Technology in Education division. The technical invasion into teachers' homes was another factor to consider, with the pressures of 'camera on' policies reported in some schools exerting pressure on teachers and students from lower socio-economic backgrounds alike. As aforementioned, administrative load emerged as a primary source of stress for teachers. As many schools strove to maintain their school timetables, additional duties such as pastoral care increased as schools tried to establish contact and support with families unable to engage with online classes. Emergency meetings after school time were also an additional factor as teachers scrambled to deal with additional emails and messages across different platforms from students requiring support. In addition, collegial support in the form of ad hoc training sessions was also a feature of how teachers supported each other, often taking place at weekends or long after classes had ended.

Spillover effect: technostress and the impact of Covid 19 on students

Techno-invasion was noted as being particularly problematic in this domain. Before the school closures across the world, some households had a digital policy in place with a clear set of rules for the use of devices in the home (Hayman and Colman, 2016, Chen and Garrison, 2020). Some parents also had family media plans (Korioth, 2016) that included screen time limitations and a curfew for the use of Wi-Fi. Households with plans in place were in a better position to navigate through the first few weeks of the school closures, where many teachers and students reported that they found themselves in an "always on" mode. During the first few months of Covid-19 both social and traditional media outlets reported on teachers, parents and students feeling particularly stretched due to this intense techno-intrusion.

The pandemic also created a huge hidden extra digital administration load for students. Many students found that it was also harder to effectively reference from the book when they were using photos of text and teachers anecdotally reported that student management of materials was difficult, with some students effectively using a camera roll as a copybook. In this new world order, this practice demands a whole new set of organisational and management skills which has not been required or nurtured before now. Parents also face some of this extra administration load. Instead of a hastily written note from a parent to excuse a student from class or to explain an absence, parents now have to write an email or log in to a school app and respond to an absence notification. This type of communication is more formal and notifications from school could potentially get lost in the ocean of online communication traffic. However, there is evidence in the literature to support such communication as having a positive impact on parental involvement and classroom management (Cheng and Chen, 2018).

During the physical school closures, another issue that many reported on social media was the modification of existing school timetables, which contributed to substantial techno-overload. There was a tension around the perceived value of synchronous and asynchronous teaching (Ferdig et al, 2020). During the early stages of the closures, many parents and students felt that they should be receiving synchronous teaching, with many stakeholders assuming that even haphazard synchronous teaching was superior to meticulously planned and recorded asynchronous activity. In fact, the best practice in such a complex and fast-paced environment led to increasing reports of techno-insecurity. This continues to be a divisive topic. The fact that in an effort to try and meet the educational needs of all students, many school principals removed a number of non-exam subjects from student timetables, including physical education (Dunton et al. 2020; Mohan et al 2020). Reducing subjects in the curriculum that were not seen to be central was seen as necessary during this time of crisis in order to allow students adequate space to adjust to their new learning environment. This additional time would have been of immense help to students as they navigated the additional administrative tasks synonymous with learning, preparing and submitting working online.

In September 2020 when the schools reopened in Ireland it was possible to identify aspects of these aforementioned sub-factors as outlined in Table 2. What we can see is an emerging and fluctuating post-lockdown spectrum of technostress experiences. We can identify an independent and separate range of roles and identities that both students and teachers must assume. School cultures of 2020 are completely unrecognisable from the school environment of 2019. Clearly, these levels of techno-overload and techno-complexity are unsustainable. Teachers and students simply do not have the cognitive capacity to work in this manner without support from the Department of Education and Skills. Clearly, issues of technostress and the right to disconnect have emerged as crucial themes when considering the wellbeing of education stakeholders, particularly students, teachers and families. Such factors are presently having a profound effect on reshaping the educational landscape, particularly regarding the demands of remote teaching and learning.

Table 2 Technostress subfactors

Technostress Subfactor	Teacher Context	Student Context
Techno-overload	Erosion of work/life balance.Temporal boundaries deactivated. Pressures from students to provide feedback on electronically submitted work.	Modification of timetable.Extended learning time. Varying expectations with regard to work submission.
Techno -invasion	Out of hours contact by the Department of Education Out of hours contact by students No digital curfew. Availability for emergency meeting. Camera off/on policy	Out of hours contact by teachers. No digital curfew. Availability for digital training sessions. Camera off/on policy.
Techno-complexity	Too many apps for teaching; learning and administration . Pressure on novices to adapt quickly to digital teaching. Lack of time and support to trial apps. Lack of experience in trialling apps for feedback.	No clear communication policy. Multiple email accounts (school; personal; parental; external provider.) Lack of time to learn how to integrate apps. Inconsistency with device and task.
Techno-insecurity	Professionalism undermined due to inexperience with remote teaching. Ability to deliver feedback threatened by lack of digital expertise.	Pressure to submit high quality work may have resulted in plagiarism issues due to unmonitored use of the digital solutions. Pressure on non-exam years to perform well in order to have good results on file.
Techno-uncertainty	No time to develop teaching methodologies appropriate to remote learning. Reduced access to models of best practice due to social and professional isolation.	No time to develop learning strategies to adapt to remote learning. Limited opportunity to work in groups for peer learning opportunities.

Adapted from Tarafdar, Ragu-Nathan, and Ragu-Nathan (2011)

Conclusion

Between March and August 2020 there was a proliferation of surveys and national media coverage in relation to how Covid-19 has impacted the work-life balance for teachers and students. One of the most comprehensive was carried out by Ireland's Economic and Social Research Institute (Mohan et al, 2020). They surveyed school leaders on their experience of addressing the challenges arising from the sudden switch to remote learning. This research highlighted that the ability of schools to act "was impacted by schools' prior adoption of technology, and the level of access to digital technologies and broadband availability in their catchment areas". In Ireland, the Education Act (1998) is a key policy document in Irish education, emphasising the rights, roles and responsibilities of key stakeholders, including parents, teachers and pupils in schools (Harrison et al, 2016). There is an impetus on all stakeholders to begin to shape regulation in regards to technology use which will ensure better outcomes for teachers, students and parents. These arrangements risk becoming normalised as part of the career path of young teachers. Wilmore and Beetz (2001) point to the important role of school principals in the successful adoption of technology in schools. In the wake of Covid-19 this role is critical in enforcing and/or establishing policy which supports the healthy adoption of technology outside of school hours by both teachers and students. In addition, workers will continue to have ongoing changes to job functions that require continual skill acquisition and decisions related to career development, by extension. Atanasoff and Venable (2017) argue the phenomenon of technostress can be expected to continue. In education, this means that policies need to be developed which support the teachers in mainstream in acquiring these skills. As such, a coordinated policy from the Department of Education and Skills and the Teaching Council is required, such that responsibility for development is not placed solely at school or teacher level.

References

- Atanasoff, L., & Venable, M. A. (2017). *Technostress: Implications for adults in the workforce. The career development quarterly*, 65(4), 326-338.
- Brod, C. (1984). *Technostress: The human cost of the computer revolution*. Reading, MA: AddisonWesley
- Chen, M.L. and Garrison, M.M., 2020. *Technology and sleep. In Technology and Adolescent Health (pp. 231-247)*. Academic Press.
- Cheng, Y.H. and Chen, Y.C., 2018. *Enhancing classroom management through parental involvement by using social networking apps. South African Journal of Education*, 38(1).
- Devitt, A., Bray, A., Banks, J., and Ní Chorcora, E. (2020). *Teaching and Learning During School Closures: Lessons Learned*. Dublin: Trinity College.
- Dunne, C., Marcus-Quinn, A., and O Dalaigh, C. 2020. *Report of the Independent Review Group on the Use of Tablet Devices in Ratoath College*. Available <https://ulir.ul.ie/handle/10344/9686>
- Dunton, G., Do, B. and Wang, S., 2020. *Early Effects of the COVID-19 Pandemic on Physical Activity and Sedentary Behavior in US Children*.
- Ferdig, R. E., Baumgartner, E., Hartshorne, R., Kaplan-Rakowski, R., & Mouza, C. (2020). *Teaching, technology, and teacher education during the covid-19 pandemic: Stories from the field*. Waynesville, NC, USA: Association for the Advancement of Computing in Education (AACE).
- Fitzgerald, S., McGrath-Champ, S., Stacey, M., Wilson, R., & Gavin, M. (2019). *Intensification of teachers' work under devolution: A 'tsunami' of paperwork. Journal of Industrial Relations*, 61(5), 613-636.
- Fredriksson, A. (2009). *On the consequences of the marketisation of public education in Sweden: For-profit charter schools and the emergence of the 'market-oriented teacher'*. *European Educational Research Journal*, 8(2), 299-310.
- Heinz, M., Keane, E. and Foley, C. (2017) *'Career Motivations of Student Teachers in the Republic of Ireland: Continuity*

and Change during Educational Reform and 'Boom to Bust' Economic Times' In: Helen M. G. Watt, Paul W. Richardson & Kari Smith(Eds.). *Global Perspectives on Teacher Motivation*. Cambridge : Cambridge University Press. Hourigan, T. (2021). "COVID19: Teaching and Learning Reflections from a Post-Primary Perspective" in *Ireland's Yearbook of Education 2020-2021*.

Hayman, S. and Coleman, J., 2016. *Parents and digital technology: How to raise the connected generation*. Routledge.

Harrison, K., Taysum, A., McNamara, G., & O'Hara, J. (2016). *The degree to which students and teachers are involved in second-level school processes and participation in decision-making: an Irish Case Study*. *Irish Educational Studies*, 35(2), 155-173.

Korioth, T., 2016. *Family Media Plan helps parents set boundaries for kids*. *American Academy of Pediatrics News*.

Livingstone et al (2018) *Parenting for a Digital Future: Survey Report 3 (2018): What do parents think, and do, about their children's online privacy? In the digital home, how do parents support their children and who supports them? Parenting for a Digital Future: Survey Report 1*

Marcus-Quinn, A., & Hourigan, T. (2017). *The potential of OERs for K-12 schools: why policy is crucial to success*. In *Handbook on digital learning for k-12 schools* (pp. 455-464). Springer, Cham.

Marcus-Quinn, A., Hourigan, T., & McCoy, S. (2019). *The Digital Learning Movement: How Should Irish Schools Respond?*. *The Economic and Social Review*, 50(4), 767-783.

Marcus-Quinn, A., Hourigan, T., & McCoy, S. (2020). "How Should Second-Level Schools Respond in an Era of Digital Learning?" in *Ireland's Yearbook of Education 2019-2020*.

Marcus-Quinn, A., (2021) "The Role of Technology and Online Learning in Higher Education" in *Ireland's Yearbook of Education 2020-2021*.

McDowall, A., & Kinman, G. (2017). *The new nowhere land? A research and practice agenda for the "always on" culture*. *Journal of Organizational Effectiveness: People and Performance*.

Mercille, J., & Murphy, E. (2017). *The neoliberalization of Irish higher education under austerity*. *Critical Sociology*, 43(3), 371-387.

Miryala, R., & Chiluka, N. (2012). *Work-life balance amongst teachers*. *The IUP Journal of Organizational Behavior*, 11(1), 37-50.

Mohan, G., McCoy, S., Carroll, E., Mihut, G., Lyons, S. and Mac Domhnaill, C., 2020. *Learning for all? Second-Level education in Ireland during COVID-19*. *Economic and Social Research Institute (ESRI) Research Series*.

Moore, P. V. (2017). *The quantified self in precarity: Work, technology and what counts*. Routledge.

Mullan, K., & Wajcman, J. (2019). *Have mobile devices changed working patterns in the 21st century? A time-diary analysis of work extension in the UK*. *Work, Employment and Society*, 33(1), 3-20.

Murphy, C., Turner, T., O'Sullivan, M., MacMahon, J., Lavelle, J., Ryan, L., ... & O'Brien, M. (2019). *Trade Union Responses to zero hours work in Ireland*. *Industrial Relations Journal*, 50(5-6), 468-485.

Tarafdar, M., Tu, Q., Ragu-Nathan, B.S. and Ragu-Nathan, T.S., 2007. *The impact of technostress on role stress and productivity*. *Journal of Management Information Systems*, 24(1), pp.301-328.

Tarafdar, M., Tu, Q., Ragu-Nathan, T.S. and Ragu-Nathan, B.S., 2011. *Crossing to the dark side: examining creators, outcomes, and inhibitors of technostress*. *Communications of the ACM*, 54(9), pp.113-120.

Weil, M. M., & Rosen, L. D. (1997). *Technostress: Coping with technology@ work@ home@ play*. New York: Wiley.

Wilmore, D., & Betz, M. (2000). *Information technology and schools: The principal's role*. *Journal of Educational Technology & Society*, 3(4), 12-19.

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