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Unique Ethical Challenges for the 21st Century
Online Technology and Virtue Education

Matthew Dennis and Tom Harrison*

ABSTRACT: Living well in the 21st century will present human beings with a unique set of demands and ethical challenges, many of which will require a rapid response to developments in the online space. Online activities increasingly permeate our practical lives. Although there is every indication that this activity will intensify, even experts on digital technology recognise that the precise effects of future emergent technology will be uncertain and remains unknown. We argue that education directed at the cultivation of cyber-*wisdom* and other cyber-*virtues* provides our best chance of creating a moral vocabulary that can guide us towards living well in the 21st century. The aim of this article is to offer the first outline an educational model, founded on neo-Aristotelian theory, that illustrates how these qualities could be cultivated through moral education.

KEYWORDS: virtue, cyber-wisdom, digital technology, human flourishing, education.

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1. Introduction

It can seem as if the digital world presents us with a perpetual phantasmagoria of immoral or morally dubious human activities. Moral education, broadly constructed, has been slow to wake up to the impact of new and emerging technologies on our ethical lives. From parents to teachers, from education theorists to policy makers: few believe themselves to be competent guides to educate others on navigating the ever-changing digital space. To date, a single article on the topic has been published in the *Journal of Moral Education* (Chang & Chou, 2015), for example, and there is remarkably little in the education literature elsewhere. Despite a recent joint report by The British Academy and the Royal Society claiming that the '*promotion of human flourishing*' should inform how we teach new data-driven technologies, there has been no philosophical reflection on what this means (cited by Burr et al., 2020). Literature in the philosophy of technology has also only dealt with digital well-being and what we could term our 'cyber-education' in passing. The first thematic review on this topic largely focuses on social issues; for instance, it passes over the impact of emerging technology on individual virtue and character development. It confines discussion of the digital well-being of children and adolescents to a few paragraphs (Burr et al., 2020, pp. 7–8). Nevertheless, there are signs this situation is changing. Ethicists and moral philosophers, along with moral psychologists and social scientists, are increasingly drawing attention to character-related concerns in science and technology studies (STS) and the philosophy of technology. While there is still little discussion of how we can *educate* for digital well-being and cyber-wisdom, a character orientated approach is slowly gaining ground. Most prominently, Shannon Vallor (2016, 2012, 2010) argues that our capacity to flourish with new technologies is best understood through the lens of the virtue tradition, and her early work on this topic initially inspired others to offer virtue ethical accounts of technology from various philosophical traditions (Brey et al., 2012; van de Poel, 2012; Verbeek, 2012). Similarly, technological applications of character-inspired approaches have recently been offered by Coeckelbergh (2009), Danaher (2019, 2018), Dennis (2020, 2019), Harrison (2016a, 2016b), and Elder (2017, 2014). Only by understanding digital well-being as a newly emerging set of concerns that affect human character, these theorists contend, can we counter the pressing ethical challenges that emerging technologies require us to face.

The aim of this article is to contribute to a character-orientated approach to digital well-being in moral education, especially for young persons. This comprises two things: first – most urgently – we sketch how children and adolescents could be educated in what we call *cyber-wisdom* (Harrison, 2016b) to allow them to live more prudently with online technologies. Inspired by the Aristotelian quality of *phronesis*, cyber-wisdom is conceptualised in this article as a meta-virtue that coordinates and operationalises the other virtues. Second, we argue that the virtue tradition offers educators much-needed future-proofing against pernicious online phenomena that are yet to emerge. To do this, we circumscribe the conditions under which new ethical and technically-orientated challenges could be addressed in practice, before showing how these practices could be bolstered using theoretical resources from virtue education.

We begin by noting, with Vallor, that rule-based approaches of Kantian ethics and consequence-based ones of the Utilitarian tradition are badly equipped to help us navigate the precipitous and ever-changing moral terrain of the 21st century. We do not claim that these traditions have no role in guiding us, however, but that the serious moral challenges that we encounter online – and those that emerging technology will inevitably precipitate in the future – require a supplementary approach. This approach aims to show the effectiveness of character-based concepts

in dealing with obstacles to living well online, to eschew the pitfalls of current approaches, and to demonstrate how educators can focus on the cultivation of cyber-*virtues*, especially cyber-*wisdom*. We end the article by laying out how these qualities of character could be integrated into a system that would offer a more comprehensive moral education for the 21st century.

2. The Case for Upgrading Moral Education for the Digital Age

Not only do the Internet and the digital devices though which we produce online content offer a vantage point onto many kinds of age-old vices, they create healthy conditions for new vices and moral misdemeanours to emerge. One reason for this is because traditional moral wrongs gain an increased weight and severity when their consequences are no longer locally restricted but have an Internet-enabled global reach. Both kinds of moral erring should keenly interest 21st-century ethicists. Although questions about the impact of the Internet on moral wrongdoing are complex and under-researched, literature over the last two decades has provided a strong indication that the Internet has changed our understanding as to what is and what is not morally acceptable (see for example; Cocking & van den Hoven, 2018; Livingstone, 2014; Suler, 2004). Consequently, some moral questions that ethicists had thought were provisionally settled must be re-examined in the light of the new digital context in which they occur. Additionally, today's ethicists must now attend to morally questionable actions that would be impossible without the Internet. Cyberbullying, trolling, online humiliation, revenge porn, and digital harassment must be understood as objects of ethical concern. These issues need urgent ethical attention as they are rapidly blighting the lives of many of us. Clearly, they can have a pernicious (often devastating) effect on those who are the victims of these crimes, but rather more obliquely, they can even blight the lives of the perpetrators insofar as these individuals often act with little understanding of the consequences of their actions and can quickly regret an action that was effectively done at the click of a trackpad. Furthermore, these harms are often permanent. Of course, they create a scar in the lives of the victims, but they also create indelible black mark against the names of those who act immorally (although not necessarily illegally). Emerging technologies could be said to provide the conditions for a new kind of moral misery on a scale, and with a pervasiveness that seems to be unprecedented.

In their recent study on the moral problems of emergent technology, Dean Cocking and Jeroen van den Hoven introduce us to what they call the 'many faces of evil online' (2018, p. 1). For those of us who are not *au fait* with the latest developments in digital technology (or do not have teenagers to keep abreast of them), it is shocking reading. The authors begin their analysis with a fast-paced tour of some of the most dreadful and appalling behaviour that the Internet has facilitated. Hackers who installed flashing images onto the Epilepsy Foundation of America website to deliberately trigger photosensitive epilepsy patients (2018, p. 1); the Vlogs of the Martin family that went viral after the parents 'pranked' their 9-year old child and reduced him to tears (2018, p. 9); so-called 'happy slappings' of randomly chosen pedestrians by teams of youths who then share the material on YouTube (2018, p. 11); video blackmail and homophobic shaming (2018, p. 12); unwanted celebrity when the child star of the video did not – indeed, could not – consent to their image making them globally infamous (2018, p. 13); the group glorification of life-threatening conditions such as anorexia or bulimia (2018, pp. 16–17); and multiple forms of online radicalisation (2018, pp. 25–28). These are only a selection of a veritable treasure trove of 21st-century vices that Cocking and van den Hoven unearth to illustrate their contention that the online world presents us with a radically new set of moral harms. Their study does not only claim that these specific harms need a new moral

vocabulary, but that ethicists need to understand that the digital world has created a 'moral fog' that obscures and complicates the moral terrain upon which many of us now conduct our lives.[1]

While it is not Cocking and van den Hoven's aim to offer solutions to their diagnosis of the moral state of the Internet, in the next section we explore how virtue ethics is well suited to addressing this need, especially accounts of character development that have already been influential in the philosophy of education. This is not to say that a virtue ethical approach would be able to combat the rampant vices of the online world alone. As mentioned above, we believe that the observation of rules and the awareness of the likely consequences of our online conduct should both play a part in how we orientate ourselves online, but that these two strategies need to be supplemented by the character-based approach of the virtue tradition.

3. Rival 21st Century Ethical Theories

Cocking and van den Hoven's account of moral fog describes a key feature of 21st century life. They are right to say that we often err morally because the digital environment in which we conduct many of our activities does not allow us to discern which moral rule to apply in any given case, while often occluding the severity (and the permanence) of the consequences of our online behaviour. Cocking's and van den Hoven's moral fog could be said to engender what Vallor terms 'acute technosocial opacity', a similarly disorientating feature of 21st century digital life (2016, p. 6). Compared to moral fog, the effect of technosocial opacity is even further reaching; it does not just limit our ability to *discern* the appropriate moral rule on which to act, but cuts us off from, in Vallor's words, 'identify[ing], seek[ing], and secur[ing] the ultimate goal of ethics – a life worth choosing; a life lived *well'* (emphasis in the original; 2018, p. 6). Taken together, both analyses present us with an aggregate of problems for 21st century ethics. On the one hand, the conditions of the online environment hampers how we can respond to moral problems. On the other, our understanding of what it is to live well is distorted by a technologically induced lack of clarity about what this means.

As well as what we initially termed the 'perpetual phantasmagoria of immoral or morally dubious human activities', the online space is difficult to navigate with the conceptual resources of Kantianism and Utilitarianism precisely because of the 'moral fog' and 'technosocial opacity', mentioned above. Vallor's remedy for this problem is well known. She claims that we need a 'profile of *technomoral* virtues for 21st century life' (emphasis in the original; 2016, p. 10). Vallor defines technomoral virtues as 'alignments of our existing moral capacities' that are 'consistent with the basic moral psychology of our species' (2016, p. 10), but the character traits she proposes as candidates to take on this task are not as comprehensive as is required.[2] The details of these character traits has attracted some plausible criticism from authors invited to contribute to a symposium on Vallor's 2016 book (McRae, 2018, pp. 277–282; Curzer, 2018, pp. 283–292; Howard, 2018, pp. 293–304). These critics

[1] While Cocking and van den Hoven focus on the dangers of moral fog, it should also be noted that the social disruption that this phenomenon causes could also be said to have upsides. Changing the technological conditions of social norms can allow new norms to arise, including those that have salutatory and beneficial effects. Take the example of virtual friendships. Online technologies provide the conditions for many kinds of relationships that would simply not be possible in a non-online world. See Kristjánsson (2019), Bülow and Felix (2016), and Briggle (2008). Thank you to an anonymous reviewer for encouraging us to think more deeply about this.

[2] Vallor lists her technomoral virtues as: '1) Honesty. 2) Self-Control. 3) Humility. 4) Justice. 5) Courage. 6) Empathy. 7) Care. 8) Civility. 9) Flexibility. 10) Perspective. 11) Magnanimity. 12) Technomoral Wisdom.' (2016, p. 120)

claim her account does not entirely do justice to the character traits we need to flourish online. Nevertheless, even if we do not agree with Vallor's account of the technomoral virtues completely, we can still accept her claim that a character-based approach is the best way to orientate ourselves (and navigate within) the strikingly new environment that the online world confronts many of us with.

It is important to state, at this juncture, that we are calling for a character-based approach to educate in the ethical use of emerging technologies, but we do not think we should limit the moral concepts applicable to online behaviour to only virtue-based ones. In fact, when thinking of how we should act online, there is much sense in Bernard Williams's remark that '*we need as many concepts to describe it as we find we need and no fewer*' (our emphasis; 1985, p. 19). Deontological and utilitarian moral theories have an important role to play in our conduct online, but neither theory offers a comprehensive account that can outline moral behaviour online, nor can they do so together. For example, there may well be merit in a parent imposing external rules[3] when giving a child their first smartphone. It is surely sensible to impose these external rules in this case, but rules alone are often not enough, as they must be applied in a way that aligns with the moral purpose of the rule concerned. This can be illustrated if we think of how rules can govern morally appropriate smartphone use. In this case, rules act as overarching guides that aim to restrict screentime or prevent us viewing content. These kind of rules are often useful ways of instilling how we use technology, even if they only act as a propaedeutic to a more sophisticated and nuanced set of moral behaviours. On their own, rule-based restrictions on a child's screentime, for instance, are not enough to teach a more salutary relationship with online technology. Rules can be easily circumvented, even within the classroom environment, and can be avoided altogether when the school bell rings, during holidays, or in an unrestricted home environment. Rather, rules are best employed to lay necessary foundations upon which a more resilient character-based attitude towards technological artefacts can be built. Building such a character-based relationship with technological artefacts will guide behaviour in a wide variety of environments. It will guide our actions even when a rule cannot be enforced. Most importantly, at least if studies on the perseverance of character traits are to be believed, a character-based relationship with technology may even prove to be life-lasting.

Similarly, parents and teachers should encourage children to think about the long-term consequences of their online actions, their so-called digital legacies. This may prove challenging because it can be difficult to get a child to grasp the importance of what is temporally distant, whether this is next year or next week. Nevertheless, focusing on how online activity affects the long-term development of one's character can be an excellent prism through which we can perceive what the 'right' virtuous action is, in any online situation. Our call is for educators to draw on the principles of deontological and consequentialist theory if and when they serve a useful purpose, but to add a full and rich understanding of the power of character to transform our lives on line to these principles. So what advantages does a character-based account of the online virtues hold? And, how might this approach be translated into a new moral educational framework that can be used by teachers?

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[3] For Kant, externally imposed rules differ from the internally imposed rules of the Categorical Imperative. Nevertheless, in the case of teaching rules pertaining to the use of technology, externally imposed rules are the most useful for young people and adolescents. As Kant would acknowledge, forming an internally imposed rule requires sophisticated cognitive abilities, which require the appropriate level of development. We would like to thank one of our anonymous reviewers for asking us to clarify this distinction.

4. Cyber-Wisdom

Building on Vallor's account of the *techno-moral* virtues, outlined above, we contend that a better approach to the ethics of online technology would be to show how we can apply existing virtues to online behaviour by focusing on cyber-*wisdom*. Doing so allows us to make use of the rich scholarship on *phronesis*, while modifying this notion so that it applies to the digital environment. Cyber-*wisdom* is no flashy moniker to circumscribe the exercise of this virtue in the modern world: as we will see, it regulates the existing moral virtues in new and important ways.

First and foremost, cyber-*wisdom* is a product of thinking how Aristotle's virtue of *phronesis* could apply to our digital lives. Like its Aristotelian forebear, the term might be contested and it is important to spend some time here detailing how we define cyber-*wisdom*. We take inspiration from the Aristotelian account of *phronesis* as primarily outlined in *Nicomachean Ethics*, Book VI. It has been argued that Aristotle's ideas on *phronesis* outlined here are not helpful from an educational perspective (Kristjánsson, 2015a, pp. 88–89). The original conception of *phronesis,* therefore, needs updating and augmenting to render it useful for present purposes. In its simplest form, like Aristotelian *phronesis*, cyber-*wisdom* enables us to do the right thing, at the right time, in the right way – but applies this to our conduct in the online environment (Harrison, 2016b).

Below we summarise the qualities of cyber-*wisdom* that would be needed to attune it to the demands of the 21st century. By doing this we draw on a rich history of recent scholarship on *phronesis* (including notably, Darnell et al., 2019; Ferkany, 2019; Jubilee Centre, 2017; Kristjansson, 2015a, 2015b; Schwartz & Sharpe, 2010; Russell, 2009; Hursthouse, 2006).

We can define cyber-*wisdom* as:

i) A complex and multi-component construct similar to *phronesis;*

ii) An intellectual virtue but also more than an intellectual virtue. It is the overall quality of knowing what to do and what not to do when the demands of two or more qualities clash. It is the quality of knowing how to hit the so-called 'sweet spot' of any particular virtue to ensure there is not a deficiency or excess. It is the quality of knowing the acceptable course of action in any given online situation. It requires that we possess intellectual character virtues including discernment, critical reasoning, and good judgement, while also knowing how to apply these in online interactions. It is, therefore, a meta-virtue that orchestrates the other virtues and applies them in practice;

iii) A flexible quality that can respond to the uncertain online terrain that children and young people will inevitably encounter in the 21st century. Cyber-wisdom (like *phronesis*, but unlike an intellectual virtue such as *sophia*) is not concerned with the universal or unchanging, but is about applying practical reasoning in specific and unique online situations. Those who possess the quality are better able to make good judgements that are informed by the specifics of the dilemmas they face;

iv) A moral quality, as distinct from, say, cleverness. Cyber-wisdom is about putting correct moral judgements about online conduct into practice with the goal of enhancing behaviour online;

v) A paradigmatically human quality that is honed over time, through experimentation and critical reflection on action. We develop the quality through our experiences of living online and by sometimes making mistakes and learning from them. Those who possess

the quality must also have habituated virtues that are in accordance with moral behaviour.

Now that we have introduced cyber-*wisdom,* we shall briefly explain which other cyber-*virtues* we believe we should be focusing our educational efforts on. Previous research has shown that the virtues of honesty and compassion are the most pertinent to children living well with digital technologies, as they relate to their most pressing online concerns (Harrison, 2014). The virtue of honesty is a key component of cyber-*wisdom* because of the many moral misdemeanours that stem from misrepresenting ourselves online (catfishing, trolling, etc.). There is much evidence to show that people consistently seek to embellish their online personas (Ogba et al., 2019; cf. Vazire & Gosling, 2004, Vazire et al., 2010), even without straightforwardly lying about who they are. Indeed, much online architecture is designed to implicitly nudge us into doing so. Identity construction has become big business as evidenced by the popularity of apps such as Facetune, SnapSeed, and VSCO. The very premise of these apps is that we want to augment reality in some way. In a broader way, honest conduct online affects issues as diverse as online plagiarism, fake news, and intellectual piracy. These are online versions of age-old vices, of course, but how we apply honesty in this digital context is especially important if we consider how dishonesty in the digital world often has far greater consequences. Gossip or slander, for example, have far greater chance of having life-altering consequences when they are disseminated online (Cocking & van den Hoven, 2018, pp. 1–18).

Similarly, the virtue of compassion is linked to persistent moral concerns that are reported by parents, teachers, and children (Peterson, 2017). Lack of compassion is at the root of cyber-bullying, trolling, and revenge porn. Recent research shows that cyber-bullying is rife in the UK, with surveys suggesting that at least 20% of teenagers are bullied online. A recent meta-analysis of studies showed that those who experience cyber-bullying are 2.3 times more likely to self-harm, 2.1 times more likely to exhibit suicidal behaviour, and 2.5 times more likely to attempt suicide than average (John et al., 2018). At its core, cyber-bullying is the expression of unkind and uncaring behaviour online – vices that stand to be eradicated if we can better teach how compassion applies in online contexts.

Understanding cyber-*wisdom* as comprising a traditional virtues that have been modified to meet the demands of the digital world takes inspiration from empirically informed virtue ethicists such as Nancy Snow. She argues that new virtues:

> [S]hould be identified through study of how dispositions conducive to human good arise organically within forms of life. In this way, virtues remain grounded in what is good for humans, yet the anthropological turn recognizes that what counts as human good is now in flux because of science and technology (2019, p. 177).

Our reconceptualisation of *phronesis* and the virtues has both hermeneutical and pedagogical advantages. Rather than creating strikingly new virtues *ex nihlilo* – *à la* Vallor's technomoral character traits – updating existing virtues allows us to do two things. On the one hand, it isolates what the traditional understandings of the virtues have to add to living well, then it calibrates these virtues in line with the specific affordances of the online environment. On the other, it provides us with some useful resources for teaching these virtues. It is these teaching resources to which we now turn.

5. Educating for Cyber-Wisdom Through Character Education

So what conditions underlie the cultivation of the cyber-virtues and cyber-wisdom? How can educators, especially teachers and parents, be aided to carry out this task? In contrast to the extreme technological determinists of the past (Ellul, 1964; McLuhan & Fiore, 1967), today's virtue ethicists

dispute that the path of technology is predictable (Harrison, 2016; Vallor, 2016). In a similar vein to recent refutations of situationism (Alfano, 2016), virtue ethicists concede that although the effects of technology are powerful, we only have a partial ability to alter them in line with the demands of human flourishing. This means that educators should be encouraged to view digital technologies such as smartphones, laptops, and tablets as potential 'blank slates' that can be re-designed in ways that foster virtuous behaviour. While we have seen examples of how these devices can provide the conditions for moral erring, we need to hear the voice of educators in designing future applications in ways that promote moral excellence. For example, although the affordances that the online technology currently offers – such as the ability to communicate with others anonymously – might increase the likelihood of immoral behaviour, we can design in ways that prevent this.

In addition to influencing the design of technology, educators should focus on cultivating character virtues and wisdom that helps children become more critical and discerning *users* of the technology itself. We argue this is a task for moral education. Whilst there are different approaches to moral education, we suggest that the education of cyber-*wisdom* should become part of wider school-based approaches to Aristotelian-inspired character education.

Character education is a form of moral education that focuses on the development of virtues as stable dispositions with the aim of promoting human flourishing (Kristjánsson, 2015). As well as its well-documented rise in virtue ethics moral philosophy since the 1950s, this approach is increasingly used in education, especially within the UK education system (Arthur, 2019). While no longer exclusively Aristotelean in nature, there has recently been a growing awareness on the part of educative institutions that character education has a key role to play in education and pedagogic policy. For example, previous Secretaries of State for Education Nicky Morgan and Damien Hinds, as well as large-scale government institutions Ofsted and the Department for Education, have all prioritised character education in the last decade. Despite these efforts, there has been little interest in practically applying these educative techniques to the online environment; neither in pastoral education, nor in more specialised subjects like Information and Communication Technology (ICT) or Personal, Social, Health Education (PSHE). Filling this gap demands that we think imaginatively about the character traits that the current online environment requires, what affordances this environment creates, how it precipitates certain behaviours, and, most practically, how we can educate next generation of users to be able to flourish in an online environment.

Educating young people in cyber-*wisdom* requires that the school system urgently addresses this issue. It should be included in the more and less formal moral education offered by schools. This could be achieved through schools adding the teaching of cyber-*wisdom* to existing character education courses. A discrete subject would ensure that no pupil can leave school unaware that character matters, and that every pupil is able to apply virtues in both online and offline contexts. An alternative approach would be to integrate character-related approaches through the subjects, especially in those that already involve online activities. For example, a reinvigorated computer science curriculum could strive to ensure pupils do not simply learn about coding, but also learn about ensuring technology is developed with virtues in mind. In fact, such an integrated approach might have further benefits in the long term as it will help students to understand how technology might be designed in ways that embed ethics more closely within the design process (Calvo & Peters, 2013). In making the case for explicit activities that seek to cultivate cyber-wisdom, we recognise that there is an opportunity cost, particularly given perennial concerns about teachers' workload. Furthermore, we recognise that teachers may have a knowledge gap and not feel confident teaching about new technologies (Azarfam & Jabbari, 2012) and/or character education (Arthur et al., 2015).

Nevertheless, given the challenges with which the online world presents us, a focus on helping children to live more prudently with technologies is of upmost importance. To do this, space in the curriculum must be found.

6. An Emerging Model for the Education Cyber-Wisdom and the Cyber-Virtues

Although it is widely believed that character is largely passively assimilated, given the pressing concerns outlined in this article, we believe that educational activities need to intentionally aim at providing children with a language and grounding in basic virtue ethical principles. Children should be able to learn about morally right and wrong online actions from those around them, and, in particularly, their parents and peers. Given that virtue language and principles are not currently dominant in the discourse of most children's online lives, it is doubtful that they will be *caught* through a form of osmosis from those around them. Cocking, Van De Hoven and Vallor's concerns about moral fog and technosocial opacity, we believe, will further contribute to this problem. If we can't rely on children cultivating cyber-*virtues* and cyber-*wisdom* through the environments in which they grow up, then we must be more intentional in our educational efforts. Character *taught*, in this sense, might include one or more classroom-based lessons on the concept of cyber-*wisdom*. Such isolated efforts might have some benefits but are unlikely to be sufficient on their own. Taught approaches should also include a myriad of planned, conscious, experiential, and reflective activities that are aimed at cultivating and/or honing the cyber-*virtues* and cyber-*wisdom*. These might equally be *taught* through whole school, cross-curricula and extra-curricular activities as well as in the home and in the community. Further, deliberate efforts to teach cyber-*wisdom* won't guarantee success. Nor are they an end in themselves. The ultimate aim of 'teaching' about character, the cyber-*virtues*, and cyber-*wisdom* is to contribute to what has been called character *sought* (Jubilee Centre, 2017). Character *sought* is when children and young people habituate qualities of character that make it more likely they will formulate wiser moral judgements and seek out opportunities to try to make the *right* moral decision when faced with ethical dilemmas. They will do so not because they are following moral instruction or copying moral exemplars (if present), but because they autonomously choose to do so. Character *sought* is closely linked to the Aristotelian notion of habituation. In our understanding, children will hopefully already have habituated, through parenting and other formative experiences, some of the virtues and practical wisdom before they experience a taught cause. It is likely that these previously developed qualities have not been tested in the online environment which exposes children to a myriad of new moral dilemmas. The taught course should be aimed at helping children to reorient and reconsider the virtues and wisdom and deal with the moral demands of the online world.

We have argued that the resurgent interest in character education in the UK and elsewhere provides a good vehicle for explicit and intentional efforts to cultivate cyber-*wisdom*. From this we propose that current pedagogical approaches to character education can be adjusted to focus on honing these qualities. So what are the core components that should be included in a curriculum designed for living well online? We propose four areas that contribute to developing the cyber-*virtues* and becoming cyber-wise should be priortised. These are virtue literacy, virtue motivation, virtue perception and reasoning, and virtue practice and reflection. Together they would form a new educational model (see Figure 1). These would modify the five of the components of virtue that are detailed in the Jubilee Centre's *Framework for Character Education* (2017). The diagram indicates how this is done:

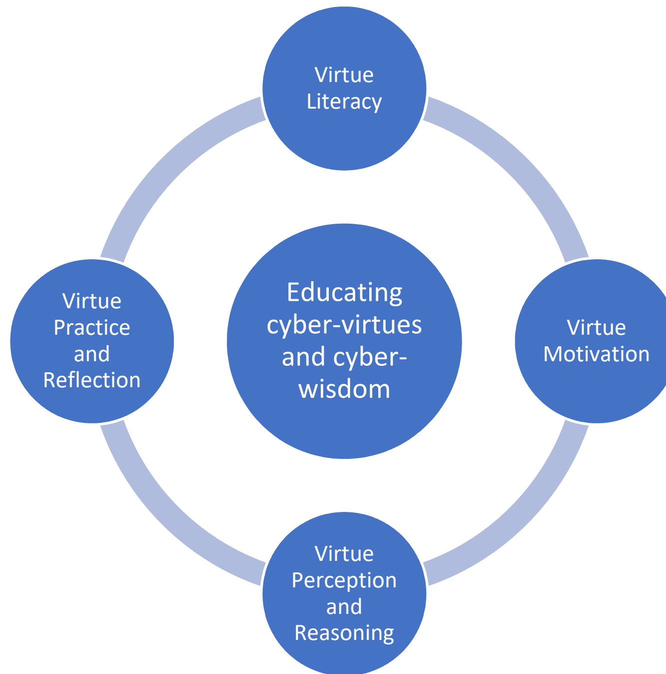

Figure 1: An educational model for the cultivation of cyber-*virtues* and cyber-*wisdom* in children and young people

Primarily, a taught course on online education must start with a focus on cultivating a 21st-century virtue literacy. This should aim at providing a thick, virtue-rich language, that children can use to evaluate and discuss their digital lives. The aim here would be to help children understand not only what cyber-*wisdom* and key cyber-*virtues*, such as honesty and compassion, mean, but more importantly, how they play out in the online space. Moral theory must be taught as part of this approach. This will help children to better understand the moral motivations behind their own and other people's online interactions. It will also show children 'under the bonnet' of the online (im)moral world – exposing the limitations of rule- and consequence-based approaches while highlighting why character matters. To do this, we recommend the use of stories to cultivate virtue literacy. There is a long tradition of using stories to teach moral character (Carr & Harrison, 2015), and evidence is emerging to show that targeted stories can enhance virtue literacy (Arthur, Harrison & Davison, 2014). Educators should adopt or develop stories that showcase how different moral theories, and virtue ethics in particular, affects our online behaviour. It is important that this focus on education for virtue literacy is closely tied to developing children's understanding of new technologies linked to the Internet and how the Internet 'works'. This means that children learn about character whilst learning about, algorithms, artificial intelligence, bio-technological innovations, and the Internet of things, amongst other topics. Character and coding are taught in combination. This will ensure that the development of virtue literacy is situated in the reality of young people's lives today and in the future.

Virtue motivation is a strong desire to act on the virtues. When interacting online (as well as offline), it is important that children are habituated to seeking the honest and compassionate course of action. This requires them to prize living online with virtue. It is the difference between them utilising the Internet for moral reprehensible behaviour such as bullying and using it for morally praiseworthy behaviour, such as running an online citizenship project. Educational efforts designed

to enhance moral motivation might be seen as contributing to what Kristjánsson has called 'a general blueprint of the good life' that can be conveyed 'through teaching: a consciously accessible, comprehensive and systematic – if also flexible and open-textured – conception of what makes a human life go well' (2015, p. 99). We suggest that exemplar and role models are utilised to engender a greater sense of moral motivation. Exemplar theory, applied to character education, can be a stimulus for eliciting greater virtue motivation through admiration and emulation (Zagzebski, 2017). For example, children might be introduced to Greta Thunberg to show how she used her trolls to gain greater support for her environmental campaign, or to Lizzie Velasquez who was inspired by online 'haters' to launch her own anti-bullying campaign. Further, technology itself can be used to introduce exemplars. For example, in Nigeria two separate projects are currently introducing moral exemplars through virtual reality (VR) and online gaming to secondary school students. The VR project seeks to foster empathy and compassion between members of different ethnic groups. It will offer an immersive experience where adolescents take the perspectives of exemplars from different tribes, to bring greater understanding and appreciation of their shared identity, challenges and aspirations.

We need to undertake deliberate educational activities that seek to prepare and prime children to deal virtuously with ethical dilemmas relatable to their digital lives. These activities should focus on fulfilling two aims: honing virtue perception and honing virtue reasoning. Virtue perception is defined as '[n]oticing situations involving or standing in need of the virtues' (Jubilee Centre, 2017, p. 8). Here educators should be tasked with helping children notice the morally relevant and virtue-salient aspects of their digital lives. Virtue reasoning can only take place once a situation has been recognised to have a moral dimension to it. As mentioned above, reasoning involves making and justifying decisions based on virtue. Reasoning must also be reflective, allowing for the empowerment of the ethical self through autonomous decision making. Here, we recommend the use of ethical dilemmas in a taught course. For example, the *Making Wiser Choices Online* programme was designed to hone virtue perception and reasoning in 11–14 year olds. It was delivered through a structured four-week course and taught in computer science lessons and involved students exploring real life ethical dilemmas that relate to their interactions on social media. A trial of the programme showed that it improved the virtue perception and reasoning of those who participated in it, compared to a control group (Harrison, Burns & Moller, 2018). Another recent study has shown how online discussion boards that feature ethical dilemmas can contribute to moral reasoning (Hedayati-Mehdiabadi et al., 2019).

A taught course cannot be abstract, it must allow for experiential and reflective learning. Space and support should be given to children so that they can talk about their experiences of living with technologies in the 21st century. It is also important that children are exposed to examples where technology has been used to further the common good. Examples might include Facebook groups that have been set up to gain volunteers to regenerate local areas, or stories of adolescences who use TikTok to post 15 second videos about issues that matter, such as gun crime and climate change. These videos are getting download figures in the millions. Further examples could be gained from activities embedded in to the taught course that involve listening to children's own experiences of living online and hearing about the people they admire and who they believe possess the cyber-*virtues* and well-tuned cyber-*wisdom.* Children could be encouraged to keep a daily journal where they record their own or others real-life instances of the cyber-*virtues* and cyber-*wisdom* in practice, as well as where they have been found to be lacking. Activities that encourage formative self-evaluations of character and cyber-*wisdom* could be utilised here. Experiential learning and reflection are common pedagogical approaches in character education, and there is much to be learnt from

them which can be adopted and reapplied for the present purposes (Arthur et al., 2016; Lockwood, 2009).

Finally, it is worth saying something about how these components combine and contribute to a young person developing cyber-*wisdom*. The model rests on the hypothesis that young people who are able to: (1) know, understand, and talk about the cyber-*virtues* in their own and others online lives, (2) are motivated to act with the cyber-*virtues* in all their online interactions, (3) can perceive when an online situation stands in need of the cyber-*virtues*, and (4) have the ability to facilitate virtue reasoning, are more likely to act with cyber-*wisdom*. This is an empirical claim which needs testing in practice. Nevertheless, the claim is based on presumed *conceptual* links between understanding, perception, reasoning, motivation, and wisdom as laid out in an Aristotelian theory of virtue and practical wisdom (Darnell et al., 2019).

7. Concluding Comments

We have argued that literacy, motivation perception, reasoning, practice, and reflection, applied to the relevant virtues, can contribute to the cultivation of cyber-*wisdom* in children. Deliberate attempts to enhance these qualities will not, however, *make* children act with cyber-*wisdom*, or indeed, more virtuously (Blasi, 1980). The approach explored above will nevertheless contribute to a virtue-based moral education designed for 21st century living, in four key ways. First, it will bring awareness and raise the importance of virtue theory for a generation of young people to utilise throughout their lives. Second, it will counter concerns about 'technosocial opacity'. Third, it will provide children with some important tools that will hopefully pre-empt unvirtuous behaviour and actions and provide them a path through the 'moral fog'. Fourth, it will encourage children to reflect on their own expressions of character: the cyber-*virtues* and cyber-*wisdom*, related to new and emerging technologies. We end the article by calling for more theoretical, empirical, and practical research to test the claims we make above. This requires that funding is directed not just at developing new technology, but at developing new technological and educational interventions that will help educate the next generation of children to live well in an online world worth living in.[4]

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