Artificial intelligence and the atrophication of intellect and academic integrity

By Darryl Toerien

Snapshot

Darryl Toerien, a UK practitioner and author, follows up on his article from *Synergy* issue 1, 2024 with an exploration of Artificial Intelligence and its detrimental impact on academic integrity discussing ideas and concerns relevant to everyone in education.

This article was intended as an immediate response to an important and urgent question emerging from my article for issue one of *Synergy* for 2024, this time last year, 'As We Begin, So Shall We Go': FOSIL as Means to a 'Transcendent and Honourable End (2024). However, circumstances prevented me from doing so. I am grateful, therefore, to Susan for the opportunity to return to this question of AI and the atrophication of intellect and academic integrity, which will be addressed more fully in *Teaching Inquiry as Conversation: Bringing Wonder to Life*, a book that I am currently writing with Barbara Stripling for Bloomsbury Libraries Unlimited.

Recapitulation

There is an engineering adage that your system is perfectly designed to achieve the results you are getting. In the context of school, *results* has a broad and a narrow meaning. Broadly, results refers to the kind of students who graduate from school as expressed in a school's statement of purpose, which is its distinctive reason for being. Narrowly, results refers to the grades students graduate from school with. Ideally, grades should be *a* means to the end of graduating as the kind of student envisioned in a school's statement of purpose, which is unlikely to mention grades at all. In reality, however, grades tend to become the end of graduating, which, in turn, optimises school for grading, which, in turn, tends to reduce learning to memorisation and reproduction in tests—information storage and retrieval—for the purposes of grading. These powerful tendencies raise the question, then, of how a school actually produces the kind of students envisioned in its statement of purpose, especially through work in the classroom, which becomes pressing in relation to academic integrity.

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Integrity, or its lack, is a characteristic of the kind of person a student is, or is in the process of becoming. Unlike integrity, though, academic integrity depends on a range of skills that are part of a learning process, and specifically an inquiry-based learning process, that need to be systematically and progressively developed throughout a student's many years at school. Furthermore, these skills—such as sourcing relevant *and* reliable information, building personal knowledge and understanding from that information, and respectfully acknowledging the sources of that information, which are actually skillsets from

three interdependent stages of the inquiry process (Figure 1 | Click here to enlarge)—need to be developed in the context of subject area knowledge acquisition, and in collaboration between the classroom and the library.

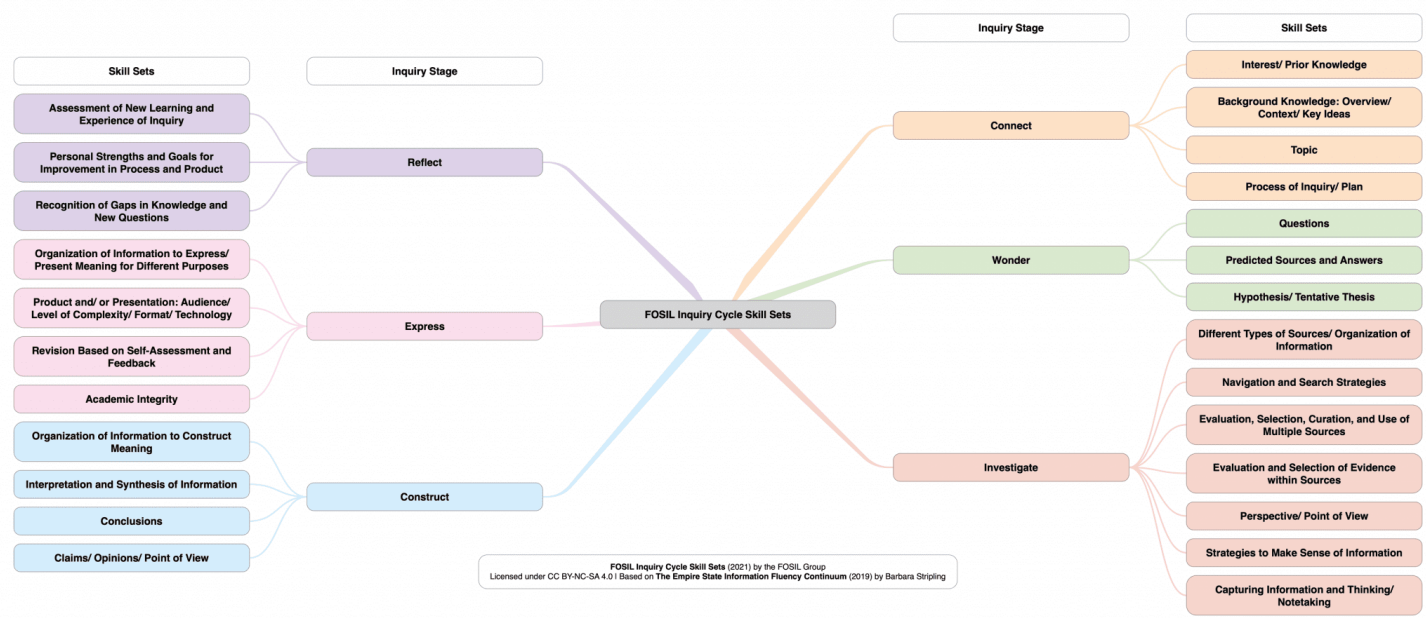

Figure 1: *FOSIL Inquiry Cycle Skill Sets*

In a school optimised for grading, there are unlikely to be many, if any, meaningful opportunities to develop these increasingly critical skills in this way, which is necessary for students to grow in their willingness *and* ability to act with academic integrity, which includes but is not limited to not cheating in tests. In this sense, academic integrity is a specialised matter of integrity, and one that we share responsibility with our students for developing, in that:

- We take responsibility for enabling students to act with academic integrity, which includes showing them through our teaching and behaviour how to do so, *and* giving them meaningful academic/ curricular opportunities to develop in their ability to do so.
- Students take responsibility for acting with academic integrity to the extent that they have been enabled to do so—that is, they know what to do, are able to do so, and are routinely expected to do so.

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Furthermore, and this brings me to the specific concern of this article, in schools where there is a strong tendency to reduce learning to memorisation and reproduction in tests for the purposes of grading/ graduating, memorisation and reproduction is better suited to machines, and the more powerful our machines become at memorisation and reproduction, and the more pervasive/ invasive, the greater the temptation will be to (ab)use them. I do not think it is an exaggeration to then say that AI makes the development of academic integrity, and by extension integrity, very difficult, if not practically impossible. To gain some appreciation of this perfect storm, some historical perspective is necessary.

Resistance is futile. Long live the Resistance!

The earliest formative influence on my development as a school librarian was Jesse Shera's *The Foundations of Education for Librarianship* (1972), which I picked up for £2 in a second-hand bookshop. The following passage (pp. 177, emphasis added) remains enduringly prophetic:

> Increasingly, research **as a method of instruction and an environment for formalized learning** is being introduced into undergraduate as well as graduate programs. This undergraduate research, or more properly, **inquiry, has its own characteristic information needs, though academic librarians generally have given these requirements slight attention, while the faculty has tended to ignore them almost entirely.** This neglect may doubtless be attributed to the fact that the instructors themselves were not properly encouraged in the use of the library in their own undergraduate years. The textbook and the reserve collection, which in the final analysis is only a kind of multiple text, have too long dominated undergraduate, and even graduate, instruction. The teacher's own mimeographed reading lists and bibliographies have been imposed between the student and the total library collection, largely because the typical faculty member does not trust either the bibliographic mechanisms of the library or the competence of the librarians, while the librarians, for their part, have never developed a theory of the role of the library in the student's intellectual experience. **This neglect has been intensified by the absence of any real communication between teacher and librarian, both have paid lip service to the library as a 'learning center,' and having said that satisfied their sense of obligation with a short course or a few lectures on 'How to Use the Library.'**

Now while Shera was writing about academic librarianship in the US in the late 1960s and early 1970s, he was also describing a persistent reality of school librarianship—regarding the library as a learning centre, which it only is by virtue of inquiry (Callison & Preddy, 2006, p. 601), we largely must get by, if lucky, with 'a short course or a few lectures on 'How to Use the Library.' There is much that needs to be said across time and space about similarities and differences, and causes and consequences, but that is beyond the scope of this article. Suffice it to say that this reality continues to neutralise efforts, by then already well underway,

> 'to center education in the learning process rather than the teaching process, to encourage initiative and independence on the part of the student, and to bring the student to grips with original thought as expressed in books and other media' (Sheehan, 1969, p. 98).

This is the ground that we have lost to learning as memorisation and reproduction in tests, and that we must reoccupy if we are to create the conditions necessary for the systematic and progressive development of academic integrity, and by extension, integrity. And it is this reoccupation that AI makes practically impossible, and again, some historical perspective is necessary if we are to fully appreciate this perfect storm.

The enshittification of search

Cory Doctorow (2025) succinctly described the process of online platform decay, which he terms *enshittification*, in his recent Ursula Franklin Lecture, and his use of Google in this instance to illustrate the process of enshittification is doubly apt, although the process is by no means limited to Google.

- **Stage One:** Be good to end users; lock in end users. During this stage, Google "minimized ads and maximized spending on engineering for search results, even as they bought their way to dominance, bribing every service or product with a search box to make it a Google search box.' Google acts as a monopolist to its end users, which derives from its dominance as a seller. I refer to this as *good old search*.
- **Stage Two:** Things get worse for end users; things get better for business customers (advertisers and web publishers). During this stage, 'an ever-larger fraction of a Google results page is given over to ads, which are marked with ever-subtler, ever smaller, ever grayer labels. Google uses its commercial surveillance data to target ads to us.' Google acts as a monopsonist to its business customers, which derives from its dominance as a buyer. It is important to note that at this stage, which in the case of Google is 2019, Google *deliberately made search worse* by 'reducing the system's accuracy so you had to search twice or more to get to the answer, thus doubling the number of queries, and doubling the number of ads.' I refer to this as *enshittified* search.
- **Stage Three:** Business customers also get locked into the platform, dependent on those end users. During this stage, 'Google claws back all the value in the platform, save a homeopathic residue calculated to keep end users locked in, and business customers locked to those end users.' Google becomes enshittified, with 'every query serving back a blob of AI slop, over five paid results tagged with the word AD in 8-point, 10% grey on white type, which is, in turn, over ten spammy links from SEO shovelware sites filled with more AI slop.' I refer to this as *enshittified AI search*.

This process of enshittification—which is the inevitable consequence of deliberate choices to enshittify in a regulatory environment that allows those choices due to 'the fourfold collapse of competition, regulation, interoperability and worker power'—is the reason Doctorow (2024) argues elsewhere that 'even if you think AI search could be good, it won't be good [because it is too] easy to cheat.' Now of course, Doctorow is talking about it being too easy for Google to cheat us, but by this stage, and by definition, *enshittified AI search* is practically inescapable, so it *also* becomes too easy for us to cheat…but we are getting ahead of ourselves. So, while we *will* need to give some thought to how we respond to *enshittified AI search*, especially in school, our practical problem actually stems from stage 1, which is a failure to teach even *good old search* systematically and progressively as part of learning process aimed at

> '[centering] education in the learning process rather than the teaching process, [encouraging] initiative and independence on the part of the student, and [bringing] the student to grips with original thought as expressed in books and other media' (Sheehan, 1969, p. 98),

and this is exacerbated by the breakdown in communication between the classroom and the library.

There are two broad, interrelated reasons for this.

The first reason for our failure to teach *good old search* systematically and progressively within a learning process has to do with the instructional program of the school library and the instructional identity and role of the school librarian. The *IFLA School Library Guidelines* reflect a shift in instructional focus from information literacy in the first edition (2002) to developing media and information literacy (MIL) skills within an inquiry process in the second edition (2015). The *Guidelines* establish a developmental trajectory for the school library that remains inspirational and aspirational. The guidelines also lay the groundwork for instructional collaboration between library-based teachers and classroom-based teachers on 'how to influence, orient, and motivate the pursuit of learning using a process of discovery that encourages curiosity and the love of learning' (2015, p. 43), which recalls broader efforts referenced above 'to center education in the learning process rather than the teaching process, to encourage initiative and independence on the part of the student, and to bring the student to grips with original thought as expressed in books and other media.' As the *Guidelines* go on to highlight,

> 'skills must be introduced progressively through stages and levels, [with the] school librarian [taking] a leadership role in ensuring there is a systematic approach to teaching an inquiry process that is guided by a school-based continuum of media and information skills and strategies' (p. 43).

This requires us to have a sound instructional model of the inquiry process *as well as* a continuum or framework of MIL [and other] skills, which presents us with our first series of practical challenges:

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- Establishing/ maintaining a clear distinction between information literacy and inquiry while also articulating their dynamic relationship.
- Identifying/ developing a sound instructional model of the inquiry process within which to develop MIL [and other] skills.
- Establishing/ maintaining a continuum or framework of developmentally-appropriate [MIL and other] skills.

When developing FOSIL in 2010, I searched long and hard for a sound instructional model of the inquiry process that was undergirded by a PK-12 framework of developmentally-

appropriate skills—cognitive and metacognitive, emotional, social and cultural, many of which are technology-dependent by definition or in use—before finding the New York City Information Fluency Continuum (NYCIFC). The NYCIFC was developed out of Barbara Stripling's model of the inquiry process in 2009, and was then endorsed for use in New York State in 2012 as the Empire State Information Fluency Continuum (Stripling, Empire State Information Fluency Continuum, 2012, 2019), with the continuum of skills being reimagined in 2019 'to adapt to the changing information, education, and technology environments, as well as the increasing diversity in our student populations.' What makes the NYCIFC / ESIFC unique, and exemplary, is that the developmentally-appropriate skills of the Continuum are integral to the stages in a learning process *because* they are the skills that enable that learning process, and the value of this cannot be overstated—skills, which include MIL skills, which include those related to *good old search*, occur naturally in a logical process that is directed at the acquisition of subject knowledge, and are developed systematically and progressively over the course of student's time in school. Contrast this with *either* sound instructional models that give little to no thought to a framework of developmentally-appropriate skills, *or* skills/ groups of skills that lack overall coherence, even if arranged into a developmentally-appropriate framework, because they are not integral to a logical process.

And then to this must be added, as Barbara Stripling (2017) reminds us, structuring teaching around this continuum or framework of

> 'concrete...skills that students must develop at each phase of inquiry over their years of school and in the context of content area learning (p. 52).

This means that to effectively develop these skills, which include those related to *good old search*, they need to be taught and practised systematically and progressively within a learning process that is directed towards the acquisition of disciplinary knowledge. This, in turn, requires close and effectual collaboration between classroom-based teachers and library-based teachers, which is likely in a school that is trying to 'to influence, orient, and motivate the pursuit of learning using a process of discovery that encourages curiosity and the love of learning,' but unlikely in a school that is optimised for memorisation and reproduction in tests, which leads us to the second reason.

The second reason for our failure teach even *good old search* systematically and progressively as part of learning process is that even if we had (1) a sound model of the inquiry process with (2) an integrated PK-12 framework of developmentally-appropriate skills that (3) included those skills related to *good old search*, it is likely that we had to make do with 'a short course or a few lectures on 'How to Use the Library'.' The practical outworking of this situation was that *good old search* (Google) for purposes of 'research' led invariably to Wikipedia. Now while Wikipedia raised early epistemological concerns for me—questions around what we know and how we know, especially in a digital environment—my real concern with Wikipedia was that the content of many/ most of the articles was inaccessible to many/ most students, especially in the time that they had been given. This increased the likelihood that students would copy & paste what looked relevant, often without attribution—learning as information [storage and] retrieval—which classroom-

based teachers were likely accepted, often without consequence. Library-based teachers no doubt did our best in the time that we had been given, reminding students not to rely solely on the Wikipedia article, to check and consult the article's references, and to cite, or at least reference, their sources, which students invariably never did, often without consequence. This is instructionally ineffective on all levels, so it is unsurprising, although still disappointing, to recall the following from the influential 2008(!) University College London / CIBER briefing paper, *information behaviour of the researcher of the future*:

> It seems that a new divide is opening up in the US, with the better-equipped students [in terms of their information skills] taking the prizes of better grades. At the lower end of the information skills spectrum, the research finds that intervention at university age is too late: these students have already developed an ingrained coping behaviour: they have learned to 'get by' with Google. (p. 23)

It is important to note that 'getting by' with Google—*good old search* followed by copy and paste without attribution, which is plagiarism—becomes second nature, for students. It is also important to note that, by and large, students are simply getting away with what they can get away with, and who can blame them—after all, academic integrity takes work, and not the kind of work that learning as information storage and retrieval rewards. This is why we witness during this period the problematic growth of the anti-plagiarism industry as exemplified by Turnitin. And this is why we also witness during this period the rise of the equally problematic plagiarism industry as exemplified by academic paper mills, and the ensuing arms race between plagiarism and plagiarism-detection, which deals reactively and negatively with the symptoms of a much deeper and more fundamental educational problem. These, then, are the conditions that produce the perfect storm that is *enshittified AI search* specifically, and AI more generally.

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Resistance is even more futile. Long live the Resistance!

Now, objections to AI, especially in education and particularly in schools, are so many and varied that dealing with them properly would require an article of its own. In lieu, I offer the following 'summary' by Helen Beetham (2025), Lecturer in Digital Education at Manchester University:

> 'No, it doesn't matter how destructive generative AI turns out to be for the environment, how damaging to knowledge systems such as search, journalism, publishing, translation, scientific scholarship and information more generally. It doesn't matter how exploitative AI may be of data workers, or how it may be taken up by other employers to deskill and precaritise their own staff. Despite AI's known biases and colonial histories, its entirely predictable use to target women and minorities for violence, to erode democratic debate and degrade human rights; and despite the toxic politics of AI's owners and CEOs, including outright attacks on higher education – still people will walk around the herd of elephants in the room to get to the bright box marked 'AI' in the corner.'

My objection to AI in this article, remember, is that AI is the perfect storm that, *practically*, ensures the atrophication of intellect, and also academic integrity, with the added consequence of compromising the professional integrity of educators, both classroom- and library-based.

By way of illustration, even as I write this very article in Microsoft Word, Microsoft Copilot is tempting me to let it [and its programmers] rewrite what I am writing. And when I search, Copilot is tempting me to let it search for me. And when I attempt to read what I have found, or more likely what Copilot has found for me, then Copilot is tempting me to let it summarise it for me, which I am then tempted to copy & paste without attribution, likely without consequence in day-to-day teaching and learning, until, suddenly and unexpectedly, the stakes are failingly high. This situation is the techno-educational environment that we, as a Microsoft 365 school, have created for us and our students, and staff and students in Google Classroom schools are unlikely to fare any better. In such an environment, we have made AI, and its consequences, unavoidable, and excusable.

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I offer some troubling observations towards a conclusion, which is really only an invitation to join an ongoing conversation that is as difficult as it is important.

Firstly, this situation compromises us ethically. For example, as Matthew Cheney (2024), Assistant Professor and Director of Interdisciplinary Studies at Plymouth State University, points out, if there is even one ethical problem with AI, 'then the conclusion must be that there is no ethical use of AI.' This ethical compromise has profound professional consequences for us as teachers *who are also* librarians

Secondly, ethical concerns aside, if possible, this also compromises us epistemologically. If AI can be untrustworthy, which it often is—see, for example, AI Search Has A Citation Problem (Jaźwińska & Chandrasekar, 2025), and AI-generated answers even come with an accuracy health warning—we are allowing, if not actively encouraging, our students to rely on what we know is likely an unreliable source. In fact, if our earlier encounter with Wikipedia taught us anything, it is that our students will not, except in highly controlled circumstances, consult more than the first, most convenient source. With Wikipedia, however, we are at least dealing with an open source 'encyclopedia…of all human knowledge' (Wikipedia Editors, 2025), and one that is being actively edited by, to borrow a term from Jonathan Rauch (2021), a 'reality-based community of error-seeking inquirers' (p. 108). This epistemological compromise has profound professional consequences for us as teachers who are also librarians, and perhaps even more so *because* we are also librarians.

Thirdly, ethical *and* epistemological concerns aside, if possible, this also then compromises us educationally. As I have argued in this article, we simply do not, *practically*, have the instructional means at our disposal to effectively teach *good old search*, let alone *enshittified AI search*, or *enshittified AI* more broadly, within a learning process that is directed towards the acquisition of

disciplinary knowledge. This atrophies the intellect in complex ways. For example, Christopher Newfield (2025), Director of Research at the Independent Social Research Foundation, writes:

> My root worry about AI has always been that while it was making machine learning better, it was also making human learning worse. I am not alone in this. Teachers, who are responsible for helping students think, were increasingly furious about what AI was doing to the student brain.
>
> A week before ChatGPT was released, Jane Rosenzweig, director of Harvard College's Writing Center, made what should be an obvious point: 'Writing—in the classroom, in your journal, in a memo at work—is a way of bringing order to our thinking or of breaking apart that order as we challenge our ideas. If a machine is doing the writing, then we are not doing the thinking.'
>
> …
>
> I learned during my decades of teaching university-level writing that students can mostly find a general topic that interests them. But they struggle with the next question: what do you want to say *about* your topic? What's your thesis, your claim, about it? This stage turns out to be very hard, and the simple reason is that it's where independent thinking has to happen. It's where the student diverges, however slightly, from what has already been said. If a GPT product is available, the student—or anyone, myself included—will be tempted to use it to skip this thinking stage.

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In school, especially one that is optimised for grading, students using 'a GPT product'—which not only *is* available, but is *unavoidably so*—are likely to give in to the temptation to use it to skip not only this thinking stage [that is writing], but also the thinking stages that are searching and reading. The consequences of this cognitive offloading to AI are potentially grave for critical thinking, and so for learning—see, for example, AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking (Gerlich, 2025). Furthermore, students learning to 'get by' with AI in this way are also likely learning to get away with using AI without attribution, mostly without consequence. And even if they do reference AI, they are referencing what Ulises A. Mejias (2025) calls a 'plagiarism machine,' which is why he goes on to say that 'the core of Gen-AI is incompatible with academic integrity.' This educational compromise—the atrophication of intellect *and* academic integrity, and by extension, integrity—has profound professional consequences for us as teachers and as librarians in terms of how we, collectively as a school, remain true to our stated purpose, which is our distinctive reason for being (see, for example, in the case of Blanchelande College, Figure 2 below | Click here to enlarge).

… the atrophication of intellect and academic integrity, *and* by extension, integrity—has profound professional consequences for us

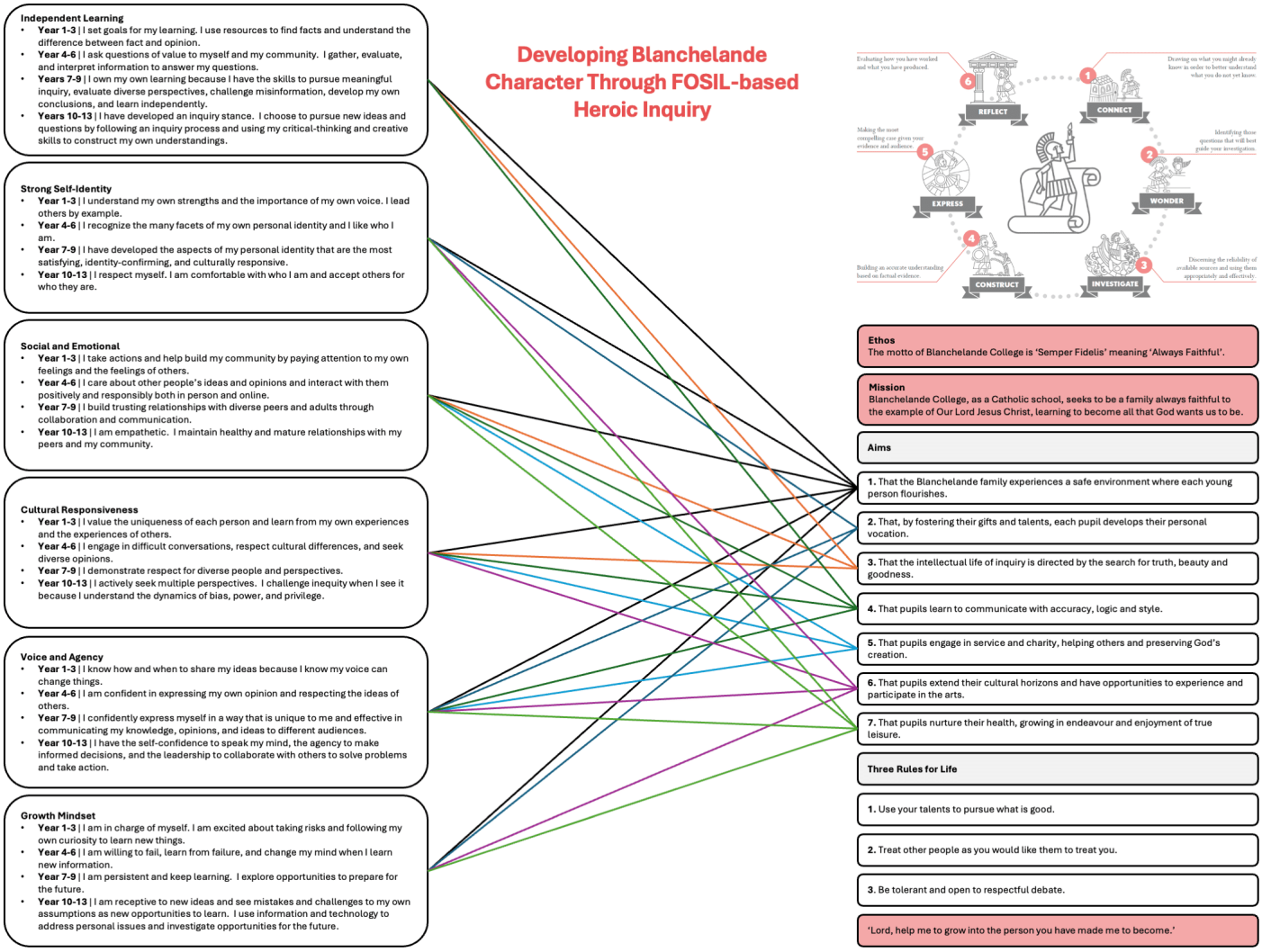

Figure 2: *Developing Blanchelande Character Through FOSIL-based Heroic Inquiry*

So, what to do in the face of odds that seem overwhelmingly stacked against us?

As Dallas Willard (1999) cautions us, reality is what we must deal with, and dealing with reality is the only true measure of success. This is why, as Marshall McLuhan (1996) reminds us, 'there is absolutely no inevitability as long as there is a willingness to contemplate what is happening' (p. 25). And, finally, as Tolkien (2020) comforts us:

> "I wish it need not have happened in my time," said Frodo. "So do I," said Gandalf, "and so do all who live to see such times. But that is not for them to decide. All we have to decide is what to do with the time that is given us." (p. 51)

The revolution, and the unfolding resistance that must now precede it, will not be televised brothers and sisters, because the revolution will be live.

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