Conforming & Confirming Competence

Developing a Globally Comparative Digital, Media and Information Literacy Model for Jamaica and the wider Caribbean

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The Digital, Media and Information Divide

The Fourth Industrial Revolution builds on the microprocessor and Internet revolutions and accelerates the emergence of a digital society. It is characterised by ubiquitous data connectivity, storage, and processing capability. These capabilities have a variety of manifestations – artificial intelligence, autonomous vehicles, natural language translators, smart cities, digital currencies, precision agriculture and so on - that are continuing to evolve as is normal in the formative innovation stages. As the advanced economies - the USA, Europe, and China - build out the ecosystems necessary to support the widespread deployment of these nascent technologies, even labour markets on the periphery will likely undergo shifts in the kinds of skills for which livable wages may be earned. This is likely to happen within the next 5 to 15 years, and persons who do not re-skill are likely to face technologically induced unemployment or severely depressed wages (Brynjolfsson, 2018; Brynjolfsson, 2021)

The Jamaican Context

Jamaica suffers from high economic inequality, but the division between the have and the have-nots extends beyond financial means and access. This divide is also present in how citizens consume media, access information and take advantage of digital services and tools. While a section of the citizenry navigates a deluge of information and media via a myriad of international cable television stations and online media outlets, the rest of the society has limited access to or adoption of the predominant 21st century delivery channels for information distribution and information services (Jamaica Observer, 2021). However, despite this divide citizens possess very little formal preparation for evaluating media and information sources or for functioning as producers rather than mere consumers of media and information.

According to the World Development Report (2021) by the World Bank Group, nearly 70 percent of persons who do not use the internet or are incapable of taking advantage of increasingly accessible digital technologies in low and middle-income countries, are being held back by deficiencies in digital literacy. Similarly, the GSM Association's 2016 report, "Connected Society: Digital Inclusion in Latin America and the Caribbean" asserts that nearly two-thirds of Jamaicans who have access to mobile broadband are not using it because they lack digital skills (Sharma, 2016). The disparity between access and use is further supported by Jamaica's ICT Access ranking of 81 in the world whereas Online e-participation is ranked 118 (GII 2019).

The World Economic Forum's Global Competitiveness Report (GCR) 2019 states that Jamaica's ICT Adoption is ranked 93rd in the world, whereas its major trading partners fall between the 9th and 35th ranks. The GCR notes that even within its income group, Jamaica's rank is particularly weak. Provision in the Jamaican public sector correlates with that in the private sector. The Social Progress Index 2019 notes that Jamaica is ranked 119th in the world for "Access to online governance" which even for its income group, is particularly weak.

The need for a Digitally Literate Citizenry

The need for human capital development to support economic transformation is more persuasive. As Yuval Harari asserted at Davos 2020, citizens who lack digital skills are vulnerable to becoming economically irrelevant in the global economy (Harari, 2020). Unfortunately, recent research on the digital skills of the upcoming entrants to the workforce (currently in secondary school) suggests that they do not have the requisite skills (Golding 2018).

This economic environment challenges Jamaican firms to adopt digital technologies to enhance operational efficiencies as well as to use digital technologies to offer new digital value propositions (Ross et al., Designed for Digital, 2019). For these digital transformations to succeed, these organisations' board members, top management teams, and employees all need to be digitally literate. That is, these Jamaicans need to be able to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies (UNESCO, 2018). These competences are essential for the improvement of productivity at the level of the individual employee and entrepreneur, enterprise, sector, and country.

It is not an exaggeration to assert that Jamaica is now at a critical inflection point where deliberate and sustained effort is required to bridge the widening digital divide in order to ensure that the accelerated deployment of digital ecosystems become enablers rather than barriers to inclusive and sustainable development.

Introducing DMIL

Digital Media and Information literacy (DMIL) is a composite concept that combines a range of interrelated digital, media and information competencies (knowledge, skills and attitudes). It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy". The core component of the proposed unified DMIL Framework is the competency model which was developed as a synthesis of two highly regarded and widely adopted UNESCO global frameworks for digital, media and information literacy - the Digital Literacy Global Framework and the Global Media and Information Literacy Assessment Framework (see Appendix A). The aim of the DMIL Model is to meet the new literacy needs of Jamaica and Jamaicans wrought by the ongoing media and technology evolutions (Clayton and Green 2018; Golding 2018; Ojanperä, Graham, and Zook 2019)

The unified DMIL competency framework provides a reference standard for digital, media and information literacy that can support curriculum development and assessment in training and education contexts, as well as occupational / job standards for transversal digital skills in the workplace and training interventions for specific sectors developed in compliance with established NCTVET standards. This initial version of the DMIL Model and Framework are intended to not only be responsive to local needs, but to allow global comparability so that Jamaica may better align its education, training and skills development efforts to protect and

enhance the welfare of the Jamaican people in a globalised knowledge society (Coward & Fellows, 2018).

DigComp\DLGF

In this regard, the competence framework aimed at, shares the motivation to the European Digital Competence Framework for Citizens, also known as DigComp (Carretero, Vuorikari, and Punie 2017). DigComp was developed by the European Commission's science and knowledge service in response to the 2006 declaration by the European Parliament that digital competence for all European citizens is necessary for personal fulfilment, active citizenship, social cohesion and employability in a knowledge society.

Overview of DigComp Structure

DigComp is comprised of five top level competency areas; "Information and data literacy", "Communication and collaboration", "Digital content creation", "Safety" and "Problem solving". Each of these competency areas then contains between three and six individual competencies, making for an overall total of twenty one competencies within the framework. Digcomp measures these competences using eight proficiency levels which take into account the level of complexity of an associated task and the level of autonomy involved in the task's execution. As participants progress through each level of proficiency they are able to execute more complex tasks with an increased level of autonomy.

In 2018, UNESCO set out to develop a methodology to serve as a foundation for addressing Sustainable Development Goal thematic Indicator 4.4.2 "Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills." As a result of their extensive research of regional, national and sub-national frameworks across more than forty countries, with special attention to the needs of developing countries, they decided that an extended form of DigComp would be most appropriate as a global framework (Law et al. 2018).

The Extended DigComp - henceforth referred to as the Digital Literacy Skills Global Framework or DLGF - adds two Competency Areas to DigComp's original five in the form of"Devices and Software Operations", and "Career-related Competences". DLGF also adds five Competencies for a total of twenty-six. The framework also inherits from DigComp eight Proficiency Areas per (original) Competence for a total one hundred sixty-eight Proficiency Levels. The Proficiency Levels are defined as learning outcomes following Bloom's Taxonomy and are designed to support the development of curricular materials.

GMIL

The information and communication technology revolution of the past decades has birthed new opportunities but also widened inequalities within and among countries to engage with media and become part of the global knowledge society. UNESCO has tried to be at the centre of international thrusts to ensure that no-one is marginalised and everyone benefits from the recent media and ICT revolution. To serve that goal, UNESCO has promulgated the Global Media and Information Literacy Framework (GMIL). According to UNESCO, GMIL provides a strategic policy framework to ensure all citizens are equipped with media and information competences (Grizzle et al. 2013).

Overview of GMIL Structure

At the highest level of GMIL are three Components ("Access and Retrieval", "Understanding and Evaluation","Creation and Utilisation"), each of which has a corresponding Competency Element. Each Component / Competency Element is then broken down into four Subject Matters, to yield twelve Subject Matters in all. Each Subject Matter is then broken down into several (varies by Subject Matter) Performance Criteria, to yield one hundred thirteen Performance Criteria. Space limitations allow the distribution of Performance Criteria to be included in Table 5 but not the wording for each of them. The Proficiency Levels are generic to all MIL Components. According to UNESCO, these elements are targeted at all citizens, but in particular teachers in service and in training.

GMIL combines Media Literacy and Information Literacy with Information and Communication Technology (ICT) Literacy and Digital Literacy to empower people to take advantage of a wide range of ICTs and media. From this description there is clearly some overlap with the digital competences targeted by DLGF, necessitating some synthesis and de-duplication to make efficient use of both frameworks.

With these two frameworks serving as a foundation and driving rationale of the work i.e. the ability to appropriately guide policy and motive the private and public sectors alike towards growth, the research team examined the following questions:

Within the Caribbean context - and specifically for Jamaica:

- **RQa:** What is a feasible conceptual definition of skills required for "the digitally literate citizen"?
- **RQb:** How do the competences surrounding this phenomenon manifest?
- **RQc:** Can a unified model of the multifaceted nature of the phenomenon be articulated?
- **RQd:** What are the operational considerations for such a model?

Methodology

Design

To develop a unified Digital, Media and Information Literacy (DMIL) Framework that will inform and guide policy guidelines and tools to benchmark and support the development of necessary skills for Jamaica across a wide range of public/private sector entities and educational/training domains, it was necessary to adopt a multi-method approach of inquiry the study was designed as a descriptive model. The work thoroughly considered existing literature and conceptual definitions in order to identify and combine domains with sensitivity to the political, economic, social and technological context of Jamaica and the wider Caribbean as Less Developed Countries (LDCs).

Data gathered from the qualitative exercises were used to shape all considerations of measurement within the model and specifically how instrumentation may manifest upon the adoption of the framework.

Sampling

Desk research covered solely external resources that were published by recognized and reputable sources as well as met at least two of the following inclusion criteria:

- Published within the decade beginning 2012
- Treated with technology and digital as situated within the context of development
- Focused on skills and the wider implications of how nations were categorised based on variety and proliferation of digital skills within their citizenry

In total 20 external resources were thoroughly reviewed and included in the work.

For the qualitative effort, purposive expert sampling was used to select leading minds and voices from the key associated industrial sectors of: Education; Cultural and Creative; Media and Communication; Computing and Technology; Business Outsourcing

Notably, particularly vulnerable communities such as the elderly, underserved and the differently abled were included in these consultations.

The qualitative effort identified seven (7) key informants, seven (7) industrial stakeholders and six (6) stakeholder groups for focus group consultation.

Notably Among the Key Informants were:

- Dr. Deborah Hickling-Gordon, Lecturer - Institute of Caribbean Studies, The UWI
- Prof. Daniel Coore, Professor - Department of Computing, The UWI
- Dr. Lennox Rowe, Senior Education Officer - Core Curriculum Unit, MOE; and
- Dr. Paulette Kerr, Campus Librarian - Mona Campus, The UWI

Some of the Industrial Stakeholders were: Broadcasting Commission of Jamaica; JAMPRO; Jamaica Technology and Digital Alliance; and The Ministry of Education, Jamaica.

Finally, other Stakeholder groups included: Community activists; Media and library specialists; Technologists; and Youth representatives.

Instrumentation

Key Informant Stakeholder interviews were completed using semi-structured interview schedules and Focus Group sessions were conducted using a Discussion Guide. Both sets of instruments were customised to ensure relevance to the subject.

Operations

Documentary research was executed by a single researcher. Summaries, including key insights, were presented to the team for review and those items achieving consensus were integrated into the thought surrounding the final model.

Conversely, interviews with the experts and representatives of industry bodies were scheduled directly with the targeted participant; while focus group sessions were arranged through representatives and “gate-keepers” of the specified communities. Each interview and focus group session was coordinated by at least two members of the team. One member would act as the lead investigator - driving the interaction and directly engaging the subject; whilst the other team member played the focused observer and note-taker, capturing observations of non-verbal responses and supporting the lead investigator through clarifying and probing questions.

Preliminary documentary research lasted approximately twelve (12) weeks, with iterations being undertaken up to another twelve (12) weeks following the first articulation of the unified model.

Interviews and focus groups stretched across a non-contiguous eight (8) week period.

Findings/Results and Discussion

The desk review highlighted that though the effort towards settling on a definition of the observed phenomenon of "digital literacy"/"digital competence" was remarkably tumultuous, the presenting arguments bore high commonalities. While the DLGF focused on data and operational competence and only thinly acknowledged the importance of media and information literacy; the GMIL framework gave precedence to media and information literacy and only thinly acknowledged the importance of data and operational competences.

Tables 1a and 1b show how these two models overlap in their operational definitions, and serve to highlight not only the opportunity for unification, but also the gap in both frameworks adequately treating with algorithmic competences that would be required for higher level functions in the digital landscape.

Table 1a - Competences of DLGF Completely Covered by GMIL Subject Matter Areas

DLGF Competence Area	DLGF Competence Title	GMIL Subject Matter
Information and Data Literacy	1.1 Browsing, searching and filtering data, information and digital content	1.1 Definition and articulation of a need for information, 1.2 Search for and location of information and media content, 1.3 Access to information, media content and media and information providers
	1.2 Evaluating data, information and digital content	2.2 Assessment of information and media content, and media and information providers, 2.3 Evaluation of information and media content, and media and information providers
	1.3 Managing data, information and digital content	1.4 Retrieval and holding / storage / retention of information and media content
Communication and Collaboration	2.3 Engaging in citizenship through digital technologies	3.3 Participation in societal-public activities as active citizen
Digital Content Creation	3.1 Developing digital content	3.1 Creation of knowledge and creative expression
	3.2 Integrating and re-elaborating digital content	2.4 Organization of information and media content
	3.3 Copyright and licences	2.1 Understanding of information and media

Table 1a details an examination of the twenty-six (26) competences of the DLGF as covered by GMIL subject matters. The investigation revealed that only seven (7) DLGF competences could be considered completely covered by GMIL subject matter areas. Another five (5) competences - not shown in the table - were considered as incompletely covered by the GMIL framework, while the remaining fourteen (14) competences shared almost no coverage with the GMIL subject matters.

The examination was reversed and it was found that of the twelve (12) subject matter areas treated with by GMIL, a total of six (6) of those subject matters were completely covered by DLGF competences and another four (4) were covered incompletely. Notably, the remaining two (2) subject matters that had almost no coverage by the DLGF were items 2.1 Understanding of Information and Media and 3.4 Monitoring influence of information, media, content, knowledge production and use as well as media and information providers.

Table 1b - Subject Matter Areas in GMIL Completely Covered by DLGF Competences

GMIL Component	GMIL Subject Matter	DLGF Competence Titles
Access and Retrieval	1.1 Definition and articulation of a need for information	1.1 Browsing, searching and filtering data, information and digital content, 1.2 Evaluating data, information and digital content
	1.2 Search for and location of information and media content	1.1 Browsing, searching and filtering data, information and digital content
	1.4 Retrieval and holding / storage / retention of information and media content	1.3 Managing data, information and digital content
Understanding and Evaluation	2.4 Organization of information and media content	3.2 Integrating and re-elaborating digital content
Creation and Utilisation	3.1 Creation of knowledge and creative expression	3.1 Developing digital content, 5.3 Creatively using digital technologies
	3.2 Communication of information, media content and knowledge in ethical and effective manner	2.1 Interacting through digital technologies, 2.6 Managing digital identity, 4.2 Protecting personal data and privacy

The articulation of the Digital Media and Information Literacy model takes advantage of these overlaps and gaps by largely adopting the DLGF and adding into that framework considerations for media and information literacy as well as more detailed algorithmic processing. The model presents the phenomenon as comprising a total seven (7) facets that shall hereafter be referred to as “competence areas” or “skill domains”.

The DMIL model is visualised in **Illustration 1**, demonstrating the conceptual relationship between the seven facets. These facets are further described as:

0 - Device and Software Operations
This competence area investigates the individual’s ability to identify and use hardware tools and technologies, as well as, to identify data, information and digital content needed to operate software tools and technologies. This competence area covers two (2) competences and is considered the foundational competence area, which must be satisfied in order for an individual to be considered as achieving literacy. See **Table 2**.

1 - Media, Information and Data Literacy
This competence area investigates the individual’s ability to articulate information needs and to store, manage, organise, locate and retrieve digital data, information, media and content. Further, it examines the aptitude for understanding the role, functions, norms and potential impact of media and information institutions and ecosystems. This competence area covers four (4) competences. See **Table 2**.

2 - Communication and Collaboration
This competence area investigates the individual’s ability to interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. The competence area also investigates the individual’s readiness to participate in society through public and private digital services and participatory citizenship. This competence area covers four (4) competences. See **Table 2**.

3 - Digital Content Creation
This competence area investigates the individual’s ability to give understandable instructions for a computer system as well as to create and edit media and digital content, and integrate the same into an existing body of knowledge while understanding how copyright and licences are to be applied. The competence further examines the prowess in monitoring shared media and content and the extent of knowledge concerning the importance of monitoring media ownership, public relations services and lobbyists. This competence area covers five (5) competences. See **Table 2**.

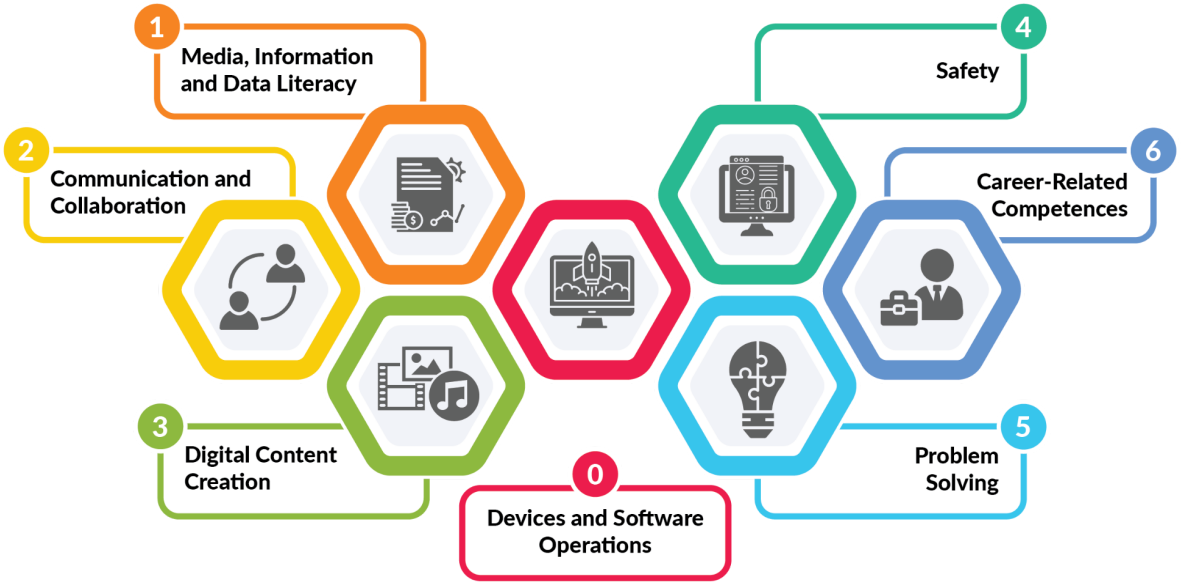
4 - Safety
This competence area investigates the individual’s ability to protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the

environmental impact of digital technologies. This competence area covers four (4) competences. See **Table 2**.

5 - Problem Solving
This competence area investigates the individual's ability to identify needs and problems and to resolve conceptual problems and problem situations in digital environments. It extends to consider the individual's ability to use digital tools to innovate processes and products and to keep up to date with the digital and media evolutions. This competence area covers five (5) competences. See **Table 2**.

6 - Career-Related Competences
This competence area investigates the individual's ability to operate specialised digital technologies and to understand, analyse and evaluate specialised data, information, media and digital content for a particular field. This competence area covers two (2) competences. See **Table 2**.

Illustration 1 - The Digital Media and Information Literacy (DMIL) Competence Model



Of note, while the numerical designations of all other competence areas hold no significance to the priority of that area in relation to the others, the Device and Software Operations domain is designated as 0 because it is held as the foundational domain for digital skills and literacy. As such, an individual having competence in the other areas without competence in this domain is considered as not digitally competent/skilled.

The model further breaks down from the seven (7) competence areas/skill domains into twenty-six (26) individual competences. Similarly to the larger competence areas, the DLGF's model of components of competency was adapted for the DMIL. Table 2 shows the conceptual definition of each of the twenty-six (26) proposed competences in relation to the larger competence areas to which they belong.

The metrics associated with each competence has been considered and the current proposal totals seventy-eight (78) variables to measure the twenty-six (26) competences, or an average of three (3) variables per competence. A combination of ordinal value scales ranging from 0 through a maximum of 4 has also been proposed to measure the proficiency levels within each competence. The point values considered are where 0 represents "No Skills" and 4 represents "Above Average Skill".

Table 2 - Conceptual Description of Competence Areas and Competences

Competence Area	Competence Short Name	Description
0.0 Device and Software Operations	0.1 Physical device operations	**Competence Full Name:** Physical operations of digital devices To identify and use the functions and features of the hardware tools and technologies.
	0.2 Software device operations	**Competence Full Name:** Software operations of digital devices To know and understand the data, information and / or digital content that are needed to operate software tools and technologies.
1.0 Media, Information and Data Literacy	1.1 Accessing DMIDC	**Competence Full Name:** Accessing needed data, information, media and digital content as well as media and information providers To articulate information needs, to search for data, information, media and content in digital environments, to access and navigate among them. To create and update personal search strategies.
	1.2 Evaluating DMIDC	**Competence Full Name:** Evaluating data, information, media and digital content, their sources and providers

Competence Area	Competence Short Name	Description
		To analyse, compare and critically evaluate the credibility and reliability of sources of data, information, media and digital content. To analyse, interpret and critically evaluate the data, information, media and digital content.
	1.3 Understanding DMIDC	**Competence Full Name:** Understanding of information and media To understand principles and conditions necessary for media and information providers to fulfil their functions, recognize the impact of information and media content on oneself, understand the codes and genres of different media and information platforms, and the importance of advertisement in media and information providers.
	1.4 Managing DMIDC	**Competence Full Name:** Managing data, information, media and digital content To organise, store and retrieve data, information, media, and content in digital environments. To organise and process them in a structured environment.
2.0 Communication and Collaboration	2.1 Sharing / Interacting through DMIDC	**Competence Full Name:** Sharing and interacting through digital technologies To interact through a variety of digital technologies and to understand appropriate digital communication means for a given context. To share data, information, media and digital content with others through appropriate digital technologies. To act as an intermediary, to know about referencing and attribution practices.
	2.2 Citizenship through DMIDC	**Competence Full Name:** Engaging in citizenship through digital technologies To participate in society through the use of public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.
	2.3 Collaborating	**Competence Full Name:** Collaborating through digital

Competence Area	Competence Short Name	Description
	through DMIDC	technologies To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of data, resources, media and knowledge.
	2.4 Netiquette	**Competence Full Name:** Netiquette To be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.
3.0 Digital Content Creation	3.1 Developing DMIDC	**Competence Full Name:** Developing media and digital content To create and edit digital content in different formats, to express oneself, including one's original thought, experimentation and/ or analysis, through digital means.
	3.2 Integrating DMIDC	**Competence Full Name:** Integrating and re-elaborating media and digital content To modify, refine, improve and integrate information, media and content from a variety of formats such as print, audio, and video, into an existing body of knowledge to create new, original and relevant media, content, and knowledge.
	3.3 Monitoring DMIDC	**Competence Full Name:** Monitoring influence of information, media content, knowledge production and use as well as media and information providers To establish monitoring means / mechanisms and policies / instruments for periodical assessment of the effectiveness of intended impacts, and make judgements on shared information, media content and knowledge, such as quality, impact, and integrity of practices. To understand the functions and role of institutions providing public

Competence Area	Competence Short Name	Description
		relations services and how these influence the audience and decision making.
	3.4 Copyright and Licences	**Competence Full Name:** Copyright and Licenses To understand how copyright and licenses apply to data, digital information, media and content.
	3.5 Programming	**Competence Full Name:** Programming To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.
4.0 Safety	4.1 Device Protection	**Competence Full Name:** Protecting devices To protect devices and digital content, and to understand risks and threats in digital environments. To know about safety and security measures and to have a due regard to reliability and privacy.
	4.2 Personal Protection	**Competence Full Name:** Protecting personal data and privacy To create, and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments and services. To protect one's own work, personal data, civil liberties, privacy and intellectual property in digital environments. To understand how to use and share personally identifiable information while being able to protect oneself and others from damages. To understand that digital services use a "Privacy Policy" to inform how personal data is used.
	4.3 Health Protection	**Competence Full Name:** Protecting health and well-being To be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies. To be able to protect oneself and others from possible dangers in digital environments (e.g. cyber

Competence Area	Competence Short Name	Description
		bullying). To be aware of digital technologies for social well-being and social inclusion.
	4.4 Environment Protection	**Competence Full Name:** Protecting the environment To be aware of the environmental impact of digital technologies and their use.
5.0 Problem Solving	5.1 Problem-Solving	**Competence Full Name:** Solving technical problems To identify technical problems when operating devices and using digital environments, and to solve them (from trouble-shooting to solving more complex problems).
	5.2 Needs Assessment	**Competence Full Name:** Identifying needs and technological responses To assess needs and to identify, evaluate, select and use digital tools and possible technological responses and to solve them. To adjust and customize digital environments to personal needs (e.g. accessibility).
	5.3 Creating with DMIDC	**Competence Full Name:** Creatively using digital technologies To use digital tools and technologies to create new information, media content or knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.
	5.4 Self-Assessment	**Competence Full Name:** Identifying digital competence gaps To understand where one's own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.

Competence Area	Competence Short Name	Description
	5.5 Computational thinking	**Competence Full Name:** Computational thinking To process a computable problem into sequential and logical steps as a solution for human and computer systems.
6.0 Career-related Competences	6.1 Specialized Operations	**Competence Full Name:** Operating specialised digital technologies for a particular field To identify and use specialised digital tools and technologies for a particular field.
	6.2 Specialized DMIDC	**Competence Full Name:** Interpreting and manipulating data, information, media and digital content for a particular field To understand, analyse and evaluate specialised data, information, media and digital content for a particular field within a digital environment.

It must be noted that this adoption and amalgamation positions the DMIL Competence Model as a superset of both GMIL and DLGF and therefore the materials that were developed on the basis of those frameworks can be adapted for use with the DMIL Competence Model. Whether for staff assessment or recruiting, education or training purposes, the DMIL Competence Model facilitates the recruitment of the wealth of existing materials.

The need for a well disseminated framework for guiding national skill-based initiatives was echoed clearly across the transcripts. Further interrogation of the data exposed three (3) major themes, each with minor themes of note.

The Learning Environment:
In general there was an expressed concern regarding the way people were educated and the resulting absence of mature critical thinking skills and deep integration of ICTs.

In addressing these concerns about the learning environment, the stakeholders noted that key considerations that must be represented in any model and therefore advocated for in the way said model is to be implemented, must include:

- A focus on higher level critical skills
- The deep integration of technology in teaching practice
- Opportunities for non-consequential assessment and reward-based achievement

Knowledge Standards:
In addition to the method of education, the content of what was necessary to be taught also rose as a major theme. This theme treated with thoughts surrounding what is considered the requisite knowledge and how it should be accessed and serve the nation. The strong sentiment was that education should not happen in a vacuum nor should the institutions of the same become so monolithic that a disconnect from employability emerges and is sustained. Instead, education should serve to bolster the nation's competitiveness and create a viable supply of talent for the nation's innovators and businesses.

To address these concerns the framework must facilitate the:

- Articulation of clear national goals and objectives
- Collection and dissemination of investor-attracting aggregate data
- Organisation and management of talent supply
- Agility of institutions

Knowledge Application:
Finally, this major theme confronts the "why" of education. There is the observation that students are pursuing skill acquisition in response to social convention rather than anything else. This leads to a disconnect, where the acquisition of academic certification serves only as means to an end rather than as a deeply entrenched demonstration of human inquiry. It was expressed that the framework must facilitate the emergence of a culture where students are convinced of the importance of the knowledge and competences they are acquiring by establishing a direct link between skills and future employment.

Therefore the implementation of the framework must actively and consistently demonstrate the:

- Utility of digital, media and information literacy for the student
- Utility of digital, media and information literacy for the average citizen
- Utility of digital, media and information literacy for the entrepreneur, especially within the creative and cultural industries

These results specifically allow us to respond to our original research questions summarily.

RQa: What is a feasible conceptual definition of skills required for "the digitally literate citizen"?

According to the newly articulated DMIL competence model, a digitally literate citizen is one who demonstrates competence across the seven (7) skill domains of: Device and software operations; Media, information and data literacy; [Digital] Communication and collaboration; Digital content creation; [Digital] Safety; Problem solving [within the digital domain] and; Career-related [digital] competences. Additionally, the individual must demonstrate at least moderate competence in the competence area of Device and software operations.

RQb: How do the competences surrounding this phenomenon manifest?

The seven (7) emergent skill domains may be expressed through twenty-six (26) competences and currently seventy-eight (78) metrics. These competences together cover three (3) major areas: operational efficacy and efficiency; data, media and information prowess; and computational and algorithmic thought and work.

RQc: Can a unified model of the multifaceted nature of the phenomenon be articulated?

The DMIL model is shown above in **Illustration 1**. DMIL represents both the unification of GMIL and the DLGF as well as the addition of key conceptual areas to address gaps in computational and algorithmic thought and work which were absent in the two pre-existing models. This unified model speaks to each of the seven (7) identified facets of literacy with the digital space.

RQd: What are the operational considerations for such a model?

The proficiency levels within the DMIL model are currently operationalized through seventy-eight (78) variables in a single instrument designed for deployment by the government in a census-type activity. This method mirrors what is currently done in the execution of the DLGF and GMIL, and is thought to be the most budget-friendly efficacious way of capturing the necessary data.

Beyond this, it is the hope of the research team that through the conceptual and operational articulation of the model, private interests will gain the ability to adapt parts of the instrument specific to their industries and use the model to assess the talent within their own spaces. In this way the DMIL model is expected to achieve pervasive use.

Strengths
As a superset of the DLGF and GMIL, the new DMIL model is entrenched in years of research and iterative improvement.

Weaknesses
Currently the DMIL model leans heavily on the validity of its predecessors - from conceptualisation of the phenomenon through item construction. The novelty of the model and its instrument provides an opportunity for further research to: (a) test the face validity and inter-item correlation of the new model; (b) examine its utility in policy formulation; and (c) investigate the ability to break the model into smaller parts to focus on specific industries and/or groups of people. This would necessitate the execution of a nationally representative survey (not necessarily a census) and the analysis of the data captured by the same.

Conclusion and Recommendations

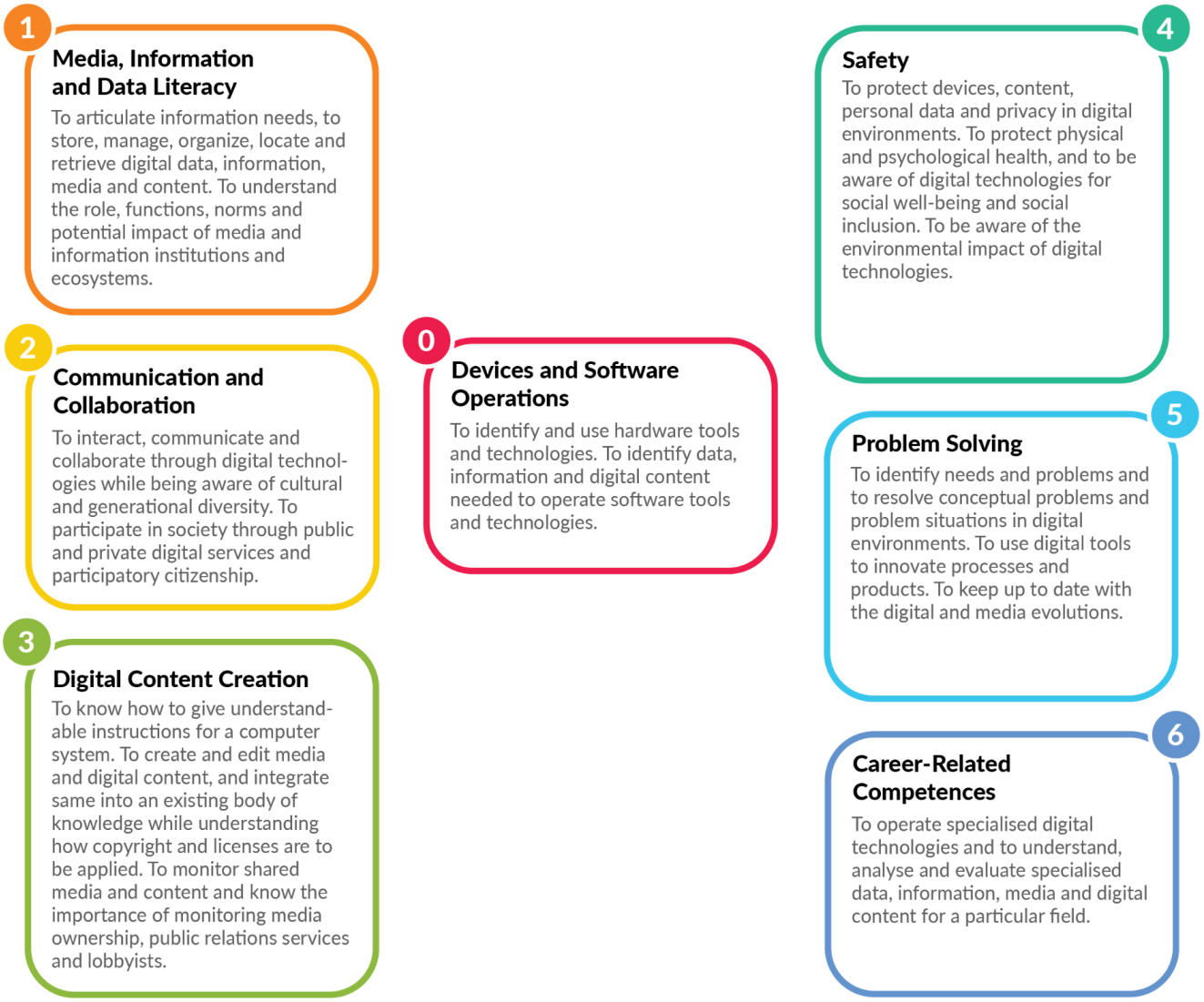
The current literature acknowledges the continued growing need to know the digital competence of our nation's citizenry. Larger, more cash-rich Developed Countries continue to confront this need with systematically crafted interventions such as GMIL and DigiComp, but neither intricately treat with the nuances necessary to avoid the threat of becoming "cybervassals" that Less Developed Countries like Jamaica face.

The need for a way to shape our response to the ever-evolving digital world around us is clear, and is current. Our experts, our students, and our citizenry know it even if they are unable to articulate it. While the wholesale adoption of an international framework may serve to stem the impact of the phenomenon of digital, the need for a model that treats with all the facets of the digital world that is able to fit into and even expand the current local policy framework is clear.

The Digital, Media and Information Literacy (DMIL) model and its competences (shown in **Illustration 2** below) are a direct response to the current knowledge of "digital" - identifying and addressing the three (3) major aspects of digital (operational efficacy and efficiency; data, media and information prowess; and computational and algorithmic thought and work) and adapting the seven (7) emergent competence areas expressed through the unification the DLGF and GMIL. The DMIL stands as a superset of proficiencies for the functional individual within the digital world.

The DMIL Competency Model allows communities (at any level from a single college to a nation state) to identify (by deploying a measurement instrument based on the Model) what kinds of knowledge deficiencies are reducing the social, economic, cultural and political freedoms of their members.

Illustration 2 - The Digital, Media and Information Literacy Model and its Competences



Despite the gaps filled by the introduction of the DMIL, there remains a great deal of work to be completed before the model can be considered as having met its own mandate.

The Broadcasting Commision of Jamaica (BCJ) has taken the first steps towards this by not only commissioning the work that lead to the creation of the framework, but also a national benchmarking survey using the framework to gain an understanding of the current proficiencies that can be expected of the Jamaican people.

It is further recommended that additional research be completed to examine the impact of the framework on how the most vulnerable groups can be handled through policy directed at those groups. These groups include: the differently abled; fisher folk and the elderly.

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