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Sous la direction de
Florent MICHELOT et Simon COLLIN

Préface de
Daniel Peraya

La compétence numérique en contexte éducatif

Regards croisés
et perspectives internationales



Presses de
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Catalogage avant publication de Bibliothèque et Archives nationales du Québec et Bibliothèque et Archives Canada

Titre : La compétence numérique en contexte éducatif : regards croisés et perspectives
internationales / sous la direction de Florent Michelot et Simon Collin.

Noms : Michelot, Florent, 1982- éditeur intellectuel. | Collin, Simon, 1982- éditeur intellectuel.

Collections : Formation à distance (Presses de l'Université du Québec) ; 15.

Description : Mention de collection : Formation à distance = Distance Learning ; 15 | Comprend
des références bibliographiques.

Identifiants : Canadiana 20240025369 | ISBN 9782760561465 (PDF)

Vedettes-matière : RVM : Technologies de l'information et de la communication pour l'éducation. |

RVM : Connaissances en informatique. | RVM : Technologie éducative.

Classification : LCC LB1028.43.C635 2024 | CDD 371.33/4—dc23

Financé par le
gouvernement
du Canada

Funded by the
Government
of Canada

Canada

SODEC
Québec 

Révision

Michèle Beaudoin et Riham Alkhakaf

Conception graphique

Marie-Noëlle Morrier

Mise en page

Florent Michelot

Image de couverture

iStock

Dépôt légal : 4^e trimestre 2024

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Imprimé au Canada

N6146-1 [01]

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Metaliterate Digital Content Creators

Using Open Pedagogy and Metaliteracy to
Support Integrated Learning

Trudi E. JACOBSON

Dimensions covered

Producing content via digital technology; developing and mobilizing information literacy; collaborating via digital technology; mobilizing digital technology for personal and professional empowerment

Keywords

Metaliteracy; open pedagogy; metacognition; learner as producer

School levels covered

Postsecondary education

Summary

The challenge of implementing the *Digital Competency Framework (DCF)* lies in providing consistent opportunities for learners to become competent in the areas it encompasses. While individuals might gain some familiarity with a subset of the twelve dimensions in scattered classes or on their own, they need to be introduced to these sub-competencies in a thoughtful, integrated, and supportive manner. This chapter will focus on four of the *DCF*'s dimensions, with one of them, *Producing Content via Digital Technology*, as the foundation for this analysis. It examines two pedagogical approaches, open pedagogy (OP) and metaliteracy, explores the connections between them and the four *DCF* dimensions, and suggests their potential value in providing a learning environment that can support integrated learning. The chapter concludes with an example from one of my own courses, in which students learn how to contribute content to Wikipedia. This overview from praxis provides a sense of what students might learn and accomplish when elements highlighted in the *DCF*, metaliteracy, and open pedagogy are combined. This approach suggests that students may need scaffolding to work successfully on complex projects that address the goals of these dimensions, scaffolding that can be provided by the application of metaliteracy in an OP environment.

Le *Cadre de référence de la compétence numérique* (ministère de l'Éducation et de l'Enseignement supérieur [MEES], 2019 ; ci-après «le *Cadre*»), comprenant douze dimensions (sous-compétences) d'importance capitale, a été élaboré en tenant « compte des dernières recherches et pratiques innovantes en éducation » (MEES, 2019, p. 8). Chaque dimension comprend deux exemples concrets de la façon dont elle pourrait s'intégrer à une situation pédagogique, l'un illustrant ce que ferait la personne apprenante, et l'autre, la façon dont un instructeur ou un professionnel approprié pourrait faciliter le développement de la dimension par les personnes apprenantes. Ces exemples constituent un point de départ pour générer des idées adaptées à toute une série de disciplines. Cependant, le défi consiste à fournir aux personnes apprenantes des occasions constantes de devenir compétentes dans ces domaines. Bien que les personnes puissent se familiariser avec un sous-ensemble des douze dimensions dans des classes dispersées ou par elles-mêmes, elles doivent être initiées à ces sous-compétences d'une manière réfléchie, intégrée et encourageante. En outre, cette introduction doit reposer sur des pratiques pédagogiques qui restent constantes grâce à des activités d'apprentissage étayées. Idéalement, les douze dimensions devraient être regroupées de manière à permettre aux personnes apprenantes de s'immerger dans des expériences holistiques à mesure qu'elles se familiarisent avec les sous-compétences et acquièrent de la confiance dans celles-ci. Le *Cadre* note que les compétences peuvent être combinées et que « le cadre doit pouvoir s'adapter à l'innovation technologique » (MEES, 2019, p. 8). Il insiste également sur la nature individuelle et itérative du développement continu des compétences (MEES, 2019).

The *Digital Competency Framework (DCF)* includes twelve vitally important dimensions (sub-competencies) and was developed taking “into account the latest research and innovative practices in education” (MEES, 2019, p. 8). Each dimension includes two concrete examples of how it might fit into a pedagogical situation, one illustrating what the learner would do and the other how an instructor or appropriate professional might facilitate learners’ development of the dimension. The examples provide a starting point for generating ideas suitable for a range of disciplines. Yet the challenge lies in providing consistent opportunities for learners to become competent in these areas. While individuals might gain some familiarity with a subset of the twelve dimensions in scattered classes or on their own, they need to be introduced to these sub-competencies in a thoughtful, integrated, and supportive manner. This introduction should rest on pedagogical practices that remain consistent through scaffolded learning activities. Ideally, the twelve dimensions would be grouped in ways that allow learners to become immersed in holistic experiences as they gain familiarity and confidence with the sub-competencies. The *DCF* notes that competencies can be combined and that “the framework must be able to accommodate technological innovation” (MEES, 2019, p. 8). It also stresses the individual, iterative nature of continuous competency development (MEES, 2019). There are two pedagogical approaches that can provide the milieu for such integrated learning to take place: open pedagogy (OP) and metaliteracy. Open pedagogy has the potential to provide a consistent immersive educational experience that blends learning opportunities with real-world applications. Abstractions become vivid through the need to put concepts into practice.

This chapter will focus on four of the *DCF*'s dimensions that I have found to combine well, with producing content via digital technology serving as the foundation for this analysis. I link that dimension with three others: *Collaborating via Digital Technology*, *Developing and Mobilizing Information Literacy*, and *Prioritizing Digital Technology for Personal and Professional Empowerment*. Hegarty's conception of OP (2015) will be used to introduce the core elements of OP, consider how OP might help to achieve *DCF*'s goals (labelled elements) and emphasize the importance of scaffolding for this potentially unfamiliar and initially challenging instructional approach. Metaliteracy is the third core component of the examination. Metaliteracy is an overarching literacy for today's online, collaborative information environment, but it is more than that. It is also a model for becoming an effective, reflective learner and participant – in the widest sense of the term – in the information environment (Mackey & Jacobson, 2011, 2022). It scaffolds both the *DCF* and OP while offering important new insights. At the end of the chapter, all the elements considered here are explored in the setting of an undergraduate course.

The *DCF* focuses on digital competency – “a set of skills necessary to the confident, critical, and creative use of digital technologies to achieve objectives” – that is applicable to work, personal life, and civic settings (MEES, 2019, p. 7). It identifies particular attributes of digital competency that need to be developed: adaptability to new technological innovations, the importance of digital competency for professional development and lifelong learning, and its contribution to citizens' autonomy in judging and using digital technologies (MEES, 2019).

The *DCF* rests on two of the twelve dimensions: *Ethical Citizenship* and *Technological Skills* (MEES, 2019). It is designed to accommodate technological innovation, allow for the blending of competencies, and be iterative in its implementation (MEES, 2019). It is adaptable to a variety of disciplines.

The four framework dimensions that are emphasized in this chapter are:

- 4. *Developing and Mobilizing Information Literacy*. This dimension mixes the traditional conception of information literacy in the sense of bibliographic instruction, being able to find appropriate sources and organizing those sources with newer components appropriate to an updated digital focus. These newer components include understanding the effects of information overload and filter bubbles. This dimension also directly incorporates metacognition: “Adapting a reflective attitude toward information and its uses, cognizant of the context in which it has been produced and acquired as well as of the purpose for which it is being employed” (MEES, 2019, p. 16).
- 5. *Collaborating via Digital Technology*. This dimension includes individuals looking for chances to collaborate and co-create through the auspices of digital platforms, using the most appropriate digital collaboration tools, and having the ability to work well with others (MEES, 2019).
- 7. *Producing Content via Digital Technology*. This dimension looks for individuals to create and/or co-create digital content. It emphasizes the need to select the best tools for the purpose, and to act ethically when creating content (MEES, 2019).
- 9. *Mobilizing Digital Technology for Personal and Professional Empowerment*. This element of the competency involves being aware of and able to use appropriate technologies to integrate into the workforce, able to be adept

with digital technology in one's work or career, and the ability to stay current with developments in technology. This last component is aligned with the ability and desire to be a self-directed learner (MEES, 2019).

Together, these dimensions of the competency paint a picture of effective learners as ethical, collaborative, informed digital information producers. This set of abilities and dispositions do not necessarily come easily to all individuals, and the *DCF* considers methods for introducing aspects of the dimensions into teaching and learning situations. It is vital that there be holistic learning experiences rather than approaching the dimensions as discrete elements. There are many ways to develop activities and assignments to address combinations of different dimensions. However, students may need scaffolding to work successfully on complex projects that address the goals of these dimensions.

The digital competency in question

Developing and Mobilizing Information Literacy

1. In what ways is information literacy more than simply a set of skills?
2. What does metacognition contribute to this literacy?

Collaborating via Digital Technology

3. Why does metaliteracy emphasize collaboration in our digital environment?
4. Which of the metaliterate learner roles play an important part in collaboration?

Producing Content via Digital Technology

5. How does awareness of the metaliterate learner roles help individuals become effective information producers?
6. The learning domains of metaliteracy are also important in becoming an ethical information producer. How does each domain components of metaliteracy?

Mobilizing Digital Technology for Personal and Professional Empowerment

7. What elements of metaliteracy align with lifelong learning?
8. How does editing Wikipedia tie together metaliteracy, lifelong learning, producing content, and effective information use?

1 Background

I taught a university-level information literacy course from 2000 through 2021. The course naturally underwent numerous revisions during that time, with the inclusion of core components of metaliteracy (Mackey & Jacobson, 2011) being one of the primary drivers of change. It was vital to us that students expand their conception of the academic focus of information literacy to the knowledge, abilities, and self-awareness needed to navigate a world driven by information (accurate and not) and collaborative content creation. In 2019, I completely revised the course, implementing key elements of open pedagogy and metaliteracy to encourage students to take on the role of an information producer in a collaborative environment. Producing information that only

I would see did not introduce students to the real-world environment in which they would be, or already were, creating content. Our goals were for students to recognize themselves as content creators and to become more reflective as they did so, both individually and collaboratively. I would like to clarify that although the *DCF* was not explicitly a core foundation for my course (I taught in New York State), the four framework dimensions specifically included in this chapter provided the backbone of the course, as is evident in these goals.

While the details of this course, provided at the end of the chapter, are particular in that the focus is Wikipedia editing, this model of integrating elements from the *DCF*, metaliteracy, and OP might be combined in a number of different ways applicable to a variety of disciplines. More information is provided in the OP in the *Praxis* section of this chapter. The other *DCF* dimensions may also be considered in the light of metaliteracy and OP but were not the focus of the course.

2 Metaliteracy's Connections with the Digital Competency Framework

Metaliteracy enhances learning experiences to develop digitally competent citizens in two ways. First, metaliteracy is a pedagogical model that empowers learners as information producers in collaborative digital environments (Mackey & Jacobson, 2022). The goals and learning objectives of the approach emphasize the roles and characteristics that learners take on as they develop a metaliteracy mindset. The second purpose is the scaffolding that it provides when OP is used. It helps learners to become aware of their responsibilities and the potential available to them – not just in a learning situation but in life more broadly. It also involves four learning domains, each of which plays an important role in learning.

Metaliteracy evolved from information literacy at a time when information literacy was still characterized as skills-based, as defined in the *Information Literacy Competency Standards for Higher Education* (American Library Association, 2000). Conceptions of information literacy around 2010 did not integrate multiple information formats nor consider the impact of the evolving aspects of the social Web. Metaliteracy recognizes that “[i]nformation is not a static object that is simply accessed and retrieved. It is a dynamic entity that is produced and shared collaboratively” (Mackey & Jacobson, 2011, p. 62). Compare the following characterization of metaliteracy with the *DCF*'s focus on the four dimensions of learners being considered in this chapter: “[t]his is an important shift in emphasis from consumer to producer that challenges learners to not only acquire these vibrant forms of content but also create them actively as individuals and in collaboration with other participants” (Mackey & Jacobson, 2022, p. 3).

Before explaining the components of the metaliteracy model in more detail, consider these quotes from undergraduate students in a course, described in more detail later in the chapter, that combined information literacy, metaliteracy, and OP. The course project was to enhance a Wikipedia article. The learning curve was steep, as students only had seven weeks to become familiar with the two literacies and the extensive Wikipedia rules before applying them in most public environments. This student quote illustrates how metaliteracy informed the OP project:

Metalitera[c]y is kind of like learning about how we learn. In today's age of technology, metalitera[c]y tries to give us a framework that helps us [to]

understand ourselves as learners and [...] to navigate the ever-changing landscape that is information sharing and learning. This idea is something that actually helped us when it came to finding information for our articles as well as editing them. By being aware of myself as a learner, I was able to look outside of myself as just a student and see that I am also a researcher, a participant, a translator, a teacher and a producer of information. As a result, I was more aware of what my roles were and how I learn and was able to comprehend things easier. This helped me with my article because I was able to have a better understanding of the information I was reading or looking for and comprehend it better. (Devin Ogden, personal correspondence, February 26, 2021)

The author of this quote is aware of himself as a metaliterate learner. His knowledge of the varied roles impacts his understanding of the responsibilities in this OP learning situation. Seeing oneself in all these roles transforms students – they no longer are primarily inhabiting the role of student. Their outside responsibilities propel them into roles they may continue to inhabit throughout their lives. It is clear from this student's words that metaliteracy is not only a subject to study but also a supportive structure during the learning experience.

A second student recognizes that the content he is creating is improved by the quality of the research process and that there is value in learning as he creates meaningful content. He also notes a mind shift based on an understanding of metaliteracy and information literacy.

The most exciting part about going through the weeks is just enjoying the process of creating new information. It has been exciting to go through the extensive process of finding legitimate sources, finding where an article needs the most work, receiving/giving feedback through peer review, and ultimately, just trying to produce the best content possible on a topic. It is always exciting to learn new things as well. Previously, I had not known the exact term for the things I do on a daily basis in my everyday life (information literacy and metaliteracy). Being aware of these terms and understanding the implications, it is exciting to take on information from a whole different perspective. (Benjamin Aviles, personal correspondence, February 27, 2021)

It is insufficient when striving for digital competence that one simply creates information. One must produce quality information. While creating information supports learners to gain digital competence, learners must produce quality information, especially for open spaces such as Wikipedia. They must also reflect on the roles and responsibilities that all authors, regardless of format, have, considering their own motivation, their audience, their approach, and more.

The *DCF* recognizes that it is not just a matter of what one knows (cognitive learning domain) and is able to do (behavioural). It acknowledges the need for learners to feel confident in what they are doing. This aligns with the affective, or feeling, learning domain emphasized by metaliteracy. The inclusion of lifelong learning as a goal upholds the position that learners need to assess what they do and do not know and what they need to know beyond their current abilities and knowledge. This is a component of the reflective or metacognitive learning domain. These four learning domains – affective, behavioural, cognitive, and metacognitive, are all key to metaliteracy, as are learner roles, characteristics, and learning goals. Combined, they

lead to the development of a metaliteracy mindset. “The expanded awareness of oneself as an active learner in social settings prepares individuals to produce and publish information with disparate modalities” (Mackey & Jacobson, 2022, p. 3). This, in turn, propels the *DCF* dimensions at the heart of this chapter.

The *DCF*’s focus on a particular type of competency, the digital one, indicates that it is narrower in scope than metaliteracy’s awareness of oneself as a reflective learner and a producer in multiple settings. Still, there is a significant overlap between the *DCF* and metaliteracy. These connections will be clear in the next section on OP. Metaliteracy’s applicability, regardless of discipline, has the potential to develop strategies for instruction that will support the goals of the *DCF*. At the same time, it extends the scope of the *DCF* in ways that will help learners become those confident, critical, and creative users of digital technologies. As noted by Fulkerson *et al.*, metaliteracy “recognizes the expanded abilities needed by an information literate person, and proposes a solution to the ever-expanding list of literacies, seeking to find common ground for those striving to be fully literate regardless of medium” (2017, p. 24).

3 Core Components of Metaliteracy

Metaliteracy rests upon four goals, each of which has a number of learning objectives. The four goals are:

- goal 1: Actively evaluate content while also evaluating one’s own biases;
- goal 2: Engage with all intellectual property ethically and responsibly;
- goal 3: Produce and share information in collaborative and participatory environments;
- goal 4: Develop learning strategies to meet lifelong personal and professional goals (Jacobson *et al.*, 2018).

The objectives that accompany the goals reinforce metaliteracy’s other three core components. Each objective is labelled with the applicable learning domain(s), whether affective (A), behavioural (B), cognitive (C), or metacognitive (M). Metaliteracy places emphasis on the less frequently considered metacognitive and affective domains. The learner roles, such as producer, teacher, and collaborator, lead to the last component, characteristics, which were developed from the roles. Some roles align directly with one learning objective, such as that of a teacher from goal 3.

- Recognize that learners are also teachers and teach what you know or learn in collaborative settings. (A, B, C).
- However, not all roles align this clearly with one learning objective and may be constructed from several objectives. One such example is the role of producer. Several of the pertinent learning objectives for that role are:
 - Differentiate between producing original information and remixing openly licensed content. (C) from goal 2.
 - Responsibly produce and share original information and ethically remix and repurpose openly licensed content. (B) from goal 2.
 - See oneself as a producer as well as a consumer of information. (A, M) from goal 3.

The characteristics also do not all accord one for one with the roles, though many do. For example, civic-minded, adaptable, and open do not correspond exactly with a role because the characteristics were crafted from the learning goals and objectives.

The Metaliteracy Learning Collaborative has developed aids for learners to facilitate their understanding of the core metaliteracy components. The characteristics are presented in a more detailed manner on the Metaliteracy.org website¹ and the roles include questions to assist learners to think about themselves differently².

Metaliteracy is one pedagogical model that is able to assist with the learning of the DCF. Another model is open pedagogy.

4 Open Pedagogy

Open pedagogy has the power to accomplish many of the framework's goals, particularly when scaffolded by metaliteracy. OP challenges the traditional model of education that viewed the instructor as the “gatekeeper and distributor” of information, a philosophy of education that developed in an environment radically different from today's (McCusker, 2014a). In this earlier environment, knowledge was scarce; thus, it made sense that it would be transmitted from the teacher to the learner. However, today, information is omnipresent, and it is much more important that the instructor helps students learn how to think analytically and critically. This abundance “has prompted a shift in the role of educators from being distributors of information to one of providing context for students and for nurturing/coaching students” as they engage with information and shape it into entities from which others can learn (Hogan *et al.*, 2015, Skill Sets for the New Economy and Society section).

Given that instructors need not primarily transmit information, they can now develop learning scenarios in which students are active researchers and producers of information and knowledge. This knowledge can then be shared with others (McCusker, 2014b). This seismic shift is essential for individuals to take on the responsibilities that will enable them to develop a metaliterate mindset and to become the citizens envisioned by the *Digital Competency Framework*.

Open pedagogy promotes this shift in approach. One succinct definition of OP is “the use and creation of Open Educational Resources combined with a high level of student autonomy and self-direction” (Bonica *et al.*, 2018, p. 9). The learning activities that exemplify open pedagogical practices and lead learners to create content of value to others rely upon students to:

- engage in research (DCF's *Informational Literacy* dimension);
- work collaboratively with others (DCF's *Collaboration* dimension);
- have the opportunity to gain a sense of confidence about what they are able to accomplish (DCF's *Empowerment* dimension).

These themes are present in OP and the DCF and are also important in metaliteracy. Connections between elements will be addressed later in the chapter, in the enumeration of open pedagogical attributes and in the section on examples.

¹ Cf. <https://metaliteracy.org/ml-in-practice/metaliterate-learner-characteristics>

² Cf. <https://metaliteracy.org/ml-in-practice/metaliterate-learner-roles/>

DeRosa and Robison characterize OP as using “OER [open educational resources] as a jumping-off point for remaking our courses so that they become not just repositories for content, but also platforms for learning, collaboration, and engagement with the world outside the classroom” (2017, p.117). Such a reconceptualization can take both instructors and students outside their knowledge areas and their comfort zones (Paskevicius, 2017). The scaffolding that metaliteracy provides helps to move instructors and learners toward new comfort zones with additional abilities, roles, and characteristics.

One element of OP that may cause some anxiety is the nature of the learning activities. OP relies on OER-based assignments that have been labelled with two names, either renewable or non-disposable, depending on the author. Seraphin *et al.* (2019) provide a detailed definition of non-disposable assignments. They define these assignments as any activity that:

- students are asked to engage in as part of an organized course;
- promotes student learning through the completion of the assignment;
- affords assessment of students’ learning of course objectives;
- provides impact or value outside of the traditional student-teacher dyad;
- results in a final component that is open (Seraphin *et al.*, 2019).

In 2015, Hegarty developed a model containing a set of attributes for successful OP, with OP built upon the creation and use of OER (Hegarty, 2015). There are other models available that overlap with and also provide variations on Hegarty’s. One such model, also from 2015, was developed in a manner exemplifying components of the *DCF*: it was created collaboratively via a Twitter conversation and published on a blog, an effective use of technologies in a manner that affirms the *DCF*’s goals (Reynolds *et al.*, 2015). Yet a third model is a learner-centred one that “could easily be re-used or re-mixed as a transformative open pedagogy” (Smyth *et al.*, 2016, p. 2201). Two chapters may serve as a valuable extension of the content here. The first analyzes the characteristics of several OP models and their connection with metaliteracy. The second examines the use of OP in courses from several disciplines (Mackey & Jacobson, 2022).

The following section will explore Hegarty’s model in some depth and connect it with both metaliteracy and the *DCF*. This will allow us to better understand the potential of OP, the scaffolding that will help students succeed in their new roles and responsibilities, and how these dovetail with the *DCF*.

Hegarty’s eight open pedagogy attributes are:

- Participatory Technologies
 - People, Openness, Trust
 - Innovation and Creativity
 - Sharing Ideas and Resources
 - Connected Community
 - Learner-Generated
 - Reflective Practice
 - Peer Review
- (Hegarty, 2015)

Let us consider these eight attributes to determine how they might inform educational practice to address *DCF* goals and how metaliteracy might play a role. Table 1 aligns OP's attributes with the *DCF*'s dimensions and metaliteracy characteristics.

Table 1

Connections between Open Pedagogy, the Digital Competency Framework, and Metaliteracy Characteristics

Open Pedagogy	Digital Competency Framework	Metaliteracy
Participatory Technologies	Digital Resources for Learning; Collaboration	Participatory
People, Openness, Trust and Peer Review	Inclusion and Diverse Needs	Productive
Innovation & Creativity	Innovation and Creativity	Collaborative
Sharing Ideas & Resources	Personal & Professional Empowerment	Open
	Collaboration	Adaptable
	Innovation & Creativity	Open
Connected Community	Collaboration	Participant
		Producer
Learner-Generated	Personal & Professional Empowerment	Collaborative
Reflective Practice	Reflection	Civic Minded
New Literacies (not from Hegarty)	Information Literacy	Adaptable
		Open
		Reflective
		Metaliteracy

Participatory Technologies. Hegarty notes that engaging in a participatory culture “where people are connected through social and networked media to share their ideas, knowledge, and resources” (2015, p. 5) does not come about due to OER but rather the media that make it possible to engage with others in just such a culture. This accords with the *DCF*'s *Collaboration via Digital Technology*. One of the examples given for this dimension is to have a collaborative project with classmates. This option would lend itself to projects that might include producing a website about a topic studied in a course or creating a collaborative textbook. However, consider the impact if it were a project that extends beyond one's own classroom. Why shouldn't the collaboration be with another Canadian school or one with another country?

More advanced students with additional subject knowledge or research abilities might become involved with a project such as editing Wikipedia. There is ample evidence of the benefit that non-disposable assignments provide to learners (Ball, 2019; Barnhisel & Rapchak, 2014; Lubicz-Nawrocka, 2018; Paskevicius & Irvine, 2019a). Such a project also addresses the other dimensions considered in this chapter: information literacy, content production, and personal and professional empowerment. New literacies are needed for individuals to succeed in a transformed learning environment (Ossiannilsson, 2018; Paskevicius & Irvine, 2019b). The process involved, including finding reputable sources for Wikipedia content, enhances learner confidence (Ball, 2019) and research abilities (McKenzie *et al.*, 2018). It also accomplishes one of the specified elements in the *Information Literacy* dimension, involving adjusting research results and making sure the produced content is ready for analysis (MEES, 2019).

Creating content for an open resource that will benefit others is a prime example of ethical citizenship, one of two major components at the heart of the *DCF*. “Behaving ethically, taking into consideration the social, cultural, and philosophical diversity of digital society. . .” (MEES, 2019, p. 13) well describes the abilities and behaviour required of Wikipedia editors, who must consider the diverse audience for the material they add to the resource. Wikipedia’s open and cost-free nature means that people from all over the world rely upon its content. One goal is to increase the representation of editors and the diversity of the content found in the resource. The *Collaboration* dimension notes the importance of contributing one’s strengths to the community. Improving Wikipedia content accomplishes this.

People, Openness and Trust. This set of attributes from the OP model overlaps with the *DCF*’s *Inclusion and Diverse Needs*, though that is not a dimension specifically being examined in this chapter. However, many elements of the *DCF*, such as *Collaboration* and the overarching *Ethical Citizenship* dimension, require elements from this attribute set. Hegarty notes that “in open networks. . . students’ willingness to learn is fragile, with participation and interactions unlikely to flourish unless an element of trust can be built” (2015, p. 5). She points out that encountering a negative situation can diminish trust not only in the technology being used but also in one’s colleagues (Hegarty, 2015).

One of Hegarty’s eight attributes is *Peer Review*, which is considered within this section, as it is strongly connected to openness and trust. If students are creating content for open platforms, they can expect that peer review may happen, whether desired or not. For example, an integral part of editing Wikipedia content is the expectation that peer review might happen at any time by any Wikipedia editor anywhere, a powerful form of peer review (Konieczny, 2014). Yet, it is one that causes consternation. In order for individuals to be comfortable participating in online communities and broadly creating visible online content, they need to be open to the idea of external reviews, whether formal or informal.

The *DCF*’s *Collaboration* dimension confers not only the tools needed to foster such interactions but also an understanding of the importance of interpersonal skills in collaborative contexts. Building such skills leads to more harmonious relationships that will help to develop trust.

This attribute of OP aligns not surprisingly, with metaliteracy’s *Open* characteristic, as well as the behavioural and cognitive learning domains. The first metaliteracy learning objective below is behavioural, while the second is both behavioural and cognitive:

- participate conscientiously and ethically in collaborative environments (goal 3);
- effectively communicate and collaborate in shared spaces to learn from multiple perspectives (goal 4).

Interestingly, one would expect affective learning objectives, but there is a difference between interpersonal abilities, which are developed through one’s behaviour and thought processes, and the result, openness and trust, which are bound up with the affective learning domain. This argues for the ability to teach, learn, and practice that which will lead to successful open learning and, thus, to *Ethical Citizenship*. The following quote addresses cooperative learning, but it is also true of open

pedagogical environments and may be a component of the *DCF's Collaboration* dimension:

In a *cooperative* learning situation, students' goal achievements are positively correlated; students perceive that they can reach learning goals if and only if the other students in the learning group also reach their goals. Thus, students seek outcomes that are beneficial to all those with whom they are cooperatively linked. (Johnson & Johnson, 1990, p. 104)

Additional methods that might be used are Michaelsen's team-based learning (TBL) (Michaelsen *et al.*, 2002) or the Process-Oriented Guided Inquiry Learning (POGIL) method of teaching and learning (Moog & Spencer, 2008). While neither of these methods of teaching requires the use of technology, a learning experience might easily be designed that combines the technology and the method that fosters trust and collaboration. Hegarty also notes the importance of learner dialogue. TBL, POGIL, or similar learning approaches that foster dialogue, as well as collaboration and trust, might be considered to advance *DCF* goals.

A course might address the themes raised in the *People, Openness, and Trust* category by designing diverse activities and assignments in which students engage with their peers. If learners apply themselves conscientiously to reviewing the work of their colleagues, they will gain an understanding of the value of working with others through the new perspectives and knowledge that is shared.

Innovation and Creativity. Both Hegarty's OP model and the *DCF* value innovation and creativity. There is not an exact equivalent in metaliteracy, but when learners see themselves as producers, they may gain the confidence to also see themselves as innovators. The producer role encompasses a number of other roles, such as being a translator of ideas and formats or a publisher of new or remixed content. By developing the metaliteracy mindset associated with such roles, learners may well find their creativity sparked.

The characteristic of *Adaptable*, which connects with these affective and behavioural learning objectives from goal 4, also has some overlap with creativity:

- adapt to new learning situations while being flexible about the varied approaches to learning;
- adapt to and understand new technologies and the impact they have on learning.

There is another learning objective that connects with innovation and creativity. Interestingly, this affective and metacognitive objective was proposed by a student in a course I taught using open pedagogical practices – an example of student involvement in the creation of lasting, public content.

- challenge yourself to formulate ethical and novel approaches to build upon the ideas of others that you find exciting and engaging (goal 2).

This learning objective includes aspects of other elements of the *DCF* beyond *Innovation and Creativity*. *Content Production*, and *Personal and Professional Empowerment*, as well as *Problem-solving*, all touch upon elements captured in this single learning objective.

Sharing Ideas and Resources. Hegarty is referring to teachers sharing ideas, resources, and knowledge as they teach using OP. This might involve sharing

assignments, ideas for technological platforms, and broader practices. It encourages growth and self-reflection by instructors. It also encourages creativity by instructors as they adapt shared OERs to meet the needs of their own courses and students (Hegarty, 2015). All of these approaches provide a stronger learning experience for students. This OP attribute facilitates many of the *DCF*'s dimensions, particularly providing additional concrete examples that could be adapted in a variety of teaching contexts. It also promotes a *Collaborative Setting and Community* and will strengthen *Personal and Professional Empowerment* and, from beyond the four dimensions under consideration, *Innovation and Creativity*.

Connected Community. Hegarty notes that “a connected community is not only essential for collaboration and sharing resources but also it is an indication of a participatory culture,” one that requires social media or another technological system (2015, p. 9). The idea of collaboration is common in OP, the *DCF*, and metaliteracy. The *DCF* dimension is labelled *Collaborating via Digital Technology*. It encourages collaboration through the robust use of digital environments and further emphasizes developing interpersonal skills to serve the community. It also highlights co-creation.

Metaliteracy's *Collaborative* and *Civic Minded* characteristics and the Collaborator role mirrors the *DCF*'s emphasis on the *Participatory* characteristic that aligns with Hegarty's *Participatory Culture* attribute. This connected, collaborative community needs to be built carefully and requires care for the *People, Openness and Trust* attribute grouping.

Learner-Generated OP. *Learner-Generated OP* is built on the idea of allowing learners' choice, “opening up the process to empower students to take the lead, solve problems, and work collectively to produce artifacts that they share, discuss, reconfigure, and redeploy” (Hegarty, 2015, p. 9). Encouraging students to engage in such activities helps to prepare them for the *DCF*'s *Mobilizing Digital Technology for Personal and Professional Goals*. This dimension addresses digital technology autonomy in the workplace, for meeting professional aspirations, and for lifelong, continuing education (MEES, 2019).

It is natural that the *DCF*'s lens is more narrowly focused on digital competence. The goal of OP encompasses problem-solving, decision-making, and content creation. This wider scope is a critical area for metaliteracy. Goal 4 addresses developing learning strategies to meet one's own goals. There are nine learning objectives within this goal, and they encompass all four learning domains. These two examples from metaliteracy objectives connect well with an emphasis on *Learner-Generated OP* attribute. They provide evidence of metaliteracy's wider lens:

- i. value persistence, adaptability, and flexibility in lifelong learning (M);
- ii. adapt to new learning situations while being flexible about the varied approaches to learning (A, B).

If teachers were to use open pedagogical practices in their courses, they would be empowering students in a manner that exceeds that of the *DCF*. Metaliteracy provides the scaffolding that allows learners the space to grow and fail at times. A metacognitive learning objective from goal 4 is very pointed about this: “Recognize that learning is a process and that reflecting on errors or mistakes leads to new insights and discoveries” (Jacobson *et al.*, 2018). This metacognitive objective leads to the last of Hegarty's open pedagogical attributes, which she labels *Reflective Practice* (since *Peer Review* was incorporated into *People, Openness and Trust* for my purposes).

Reflective Practice. The importance of reflection is found in OP, the *DCF*, and metaliteracy. In the four dimensions of the *DCF* considered in this chapter, this learning domain is listed as an element of the dimension *Developing and Mobilizing Information Literacy*, which asks that learners adopt “a reflective attitude toward information and its uses, cognizant of the content in which it has been produced and acquired as well as of the purposes for which it is being employed” (MEES, 2019, p. 16). Metaliteracy places reflection throughout its model, with it being incorporated into 11 learning objectives out of 34. It is also a characteristic to be reflective, particularly in regard to learning and information. For example, from goal 1, which concerns evaluation, one objective is “Reflect on how you feel about information or an information environment to consider multiple perspectives” (Jacobson *et al.*, 2018).

5 Open Pedagogy in Praxis

The *Digital Competency Framework* includes concrete examples for implementing the twelve sub-competencies. Each of these includes one example in a learning context and one in a teaching context. These examples naturally focus on the dimension under consideration. However, it is important not to compartmentalize each scenario and each dimension. They need to be viewed holistically with learning opportunities where the different sub-competencies come together, a model that is to be found in the idea of a metaliterate learner (Mackey & Jacobson, 2022).

Reeves, Herrington, and Oliver (2022) consider authentic, constructivist student activities that involve a complex task that is the focus of the course rather than a supplement to it. Based on a review of educational theory and research, they define ten characteristics of authentic activities. Instructors might consider these characteristics in the light of open pedagogy, scaffolded by metaliteracy, as they are of value when designing learning opportunities that address the *DCF*.

- i. have real-world relevance
 - ii. are ill-defined
 - iii. are complex, requiring a sustained period of time
 - iv. provide students with the chance to apply different perspectives, using a variety of resources
 - v. provide the opportunity to collaborate
 - vi. provide a chance to reflect
 - vii. can be integrated and applied across subject areas and lead beyond domain-specific outcomes
 - viii. are seamlessly integrated with assessment
 - ix. create polished products valuable in their own right
 - x. allow competing solutions and diverse outcomes
- (Reeves, Herrington, and Oliver, 2002)

While their paper does not specifically reference open pedagogy, the overlap in characteristics and goals between authentic activities and OP’s renewable or non-disposable assignments is high. Seraphin *et al.* defined non-disposable assignments (NDAs) as an activity that:

- students are asked to engage in as part of an organized course
- promotes student learning through the completion of the assignment

- affords assessment of students' learning of course objectives
- provides impact or value outside of the traditional student-teacher dyad (Seraphin *et al.*, 2019)

They also note other requirements. NDAs require information collaboration and exchange, ongoing communication, and sharing beyond the teacher. They cite research that indicates that NDAs enhance intrinsic motivation, self-efficacy, and self-regulated learning (Seraphin *et al.*, 2019). The OP literature provides a number of examples of learning opportunities that incorporate many of the ten elements of authentic activities. These courses move away from assignments meant solely for the teacher's eye to renewable assignments meant for the benefit of a large group (Jhangiani, 2017).

NDA OP assignments can take many forms, a number of which address some or all of the four *DCF* dimensions included in this chapter. While this list provides a range of examples of NDAs used in psychology courses, they might be adapted for courses in a wide range of subjects:

- debate
- YouTube video
- podcast
- Twitter infographic
- public presentation of a student's research findings to the public using one of a number of platforms
- serve as a research consultant for a community organization (Seraphin *et al.*, 2019)

Katz and Van Allen provide a framework for designing non-disposable assignments. They provide an example of a pre-OP assignment followed by a redesigned version (Katz & Van Allen, 2020).

Included here is an example from one of my own courses, in which students learn to contribute content to Wikipedia. There are a number of Wikipedia-related OP articles that cover a range of disciplines, student levels, and approaches. This overview gives a sense of what students might learn and accomplish, but many other approaches with and beyond Wikipedia offer multifaceted learning situations that will address multiple dimensions of the *DCF*.

Numerous articles have been about using Wikipedia editing in OP learning situations (Aibar *et al.*, 2015; Ball, 2019; Bilansky, 2016; McKenzie *et al.*, 2018; Oregon State University *et al.*, 2022). There are a number of reasons for this. Wikipedia:

- is familiar;
- is omnipresent;
- provides unlimited opportunities to contribute to collected knowledge;
- engages students in an online community;
- is seeking more diversification in the writers and the scope to be a more balanced source;
- allows students autonomy in article selected.

It also has a mixed reputation, providing the opportunity for students to learn to assess several categories of information, that which they are discovering as they engage in research for their article, that which they find in Wikipedia, and that which they are

creating for the use of others. And very importantly, the Wiki Education program is available to post-secondary educators in Canada and the US. This program (<https://wikiedu.org/>) has created a helpful platform, training modules, and a dashboard that helps to make such participation possible for educators and students alike.

The course I taught was required for philosophy majors and offered under the auspices of the Information Literacy Department of the University at Albany Libraries. It was taken primarily by senior philosophy majors and a smaller number of juniors and seniors from other disciplines. The course was online, asynchronous, and lasted just seven weeks. It was challenging for students to learn about core elements of information literacy, metaliteracy, and Wikipedia editing in such a fast-paced course. However, the components were closely aligned, which allowed students to see the holistic nature of the course. Table 2, “Information Literacy, Metaliteracy, and a Non-Disposable Assignment in an OP Course,” provides an overview of how the pieces fit together and build to the final assignment.

Table 2
Information Literacy, Metaliteracy, and a Renewable Assignment in an OP Course

Course component	Metaliteracy	Information literacy	Wikipedia
Importance of information	<u>Evaluation of information online resource</u>	<u>Information has value frame</u>	
Quality research		<u>Online tutorials to increase capabilities</u>	Wikipedia training
Assuming new roles	<u>Questions connected to roles</u>	<u>Information creation as a process frame</u>	
Overcoming unease with new roles	Affective learning domain		
Wikipedia editing			Wikipedia training
Information ethics	<u>Giving credit online resource</u>	<u>Plagiarism 101 tutorial</u>	Wikipedia training
Peer review	<u>Individual creation of online resource</u>		Wikipedia training
Publication of new content	<u>learning domains</u>		Wikipedia resources
Reflection on learning	Metacognitive learning domain	Information has value discussion revisited	Connections and reflections discussion

The syllabus also contained the following text to inform students of some of our expectations.

I have designed this course around the following course and personal attributes:

- cultivating a growth (rather than a fixed) mindset;
- enhancing curiosity, inquiry, and perseverance;
- accepting challenges;
- encouraging “not-yetness”.

In other words, making space for learning opportunities that

- promote creativity and exploration;
- allow connections and personalization.

There are components of these desired attributes alluded to in the *DCF*, but because these items are not specific to the digital environment, they are broader in scope than the twelve *DCF* dimensions. However, other elements of the course do connect more directly with one or more of the *DCF* dimensions, as seen in table 3.

Table 3
Digital Competency Framework Aligned with OP Course Containing a Renewable Assignment

Course Component	DCF Dimension
Importance of information	Developing and Mobilizing Information Literacy
Quality research	Developing and Mobilizing Information Literacy
Assuming new roles	Mobilizing Digital Technology for Personal and Professional Empowerment
Overcoming unease with new roles	[Metaliteracy as Scaffolding]
Wikipedia editing	Collaborating via Digital Technology
Information ethics	Developing and Mobilizing Technological Skills
Peer review	Exercising Ethical Citizenship in the Digital Age
	Collaborating via Digital Technology
	Communicating via Digital Technology
Publication of new content	Producing Content via Digital Technology
Reflection on learning	Developing and Mobilizing Information Literacy

The students appreciated the opportunity to learn more about Wikipedia, to determine how much they should use it, and how to make this determination. They found the elements connected with metaliteracy and information literacy to elucidate their course project and add depth to it. It was important to them that they had some choice in selecting a topic to work on. This allowed students to assume the teacher role because their topic choice was one about which they had some knowledge. Throughout the course, there were discussions in which students were required to reflect on their learning process, including the domains and the roles they had been introduced to.

This is but one example of how metaliteracy and open pedagogy might work together to advance a selection of *DCF* dimensions. It shows, though, that a carefully designed course structure and attendant learning activities using these learning models have the potential to meet the competency approach that drives the *Framework*, while at the same time going even further. When instructors introduce it early in a course, it helps learners to reflect on their contributions as digital content creators, researchers, and collaborators, and to grow into these new roles that are central in open pedagogical environments and in their lives as citizens.

Conclusion

The goals of the *Digital Competency Framework* are notable not just for students, but for all learners. Reaching students is the most feasible way of impacting large numbers of people, and those who are able to put these new abilities into practice early in their lives. OP offers many benefits to learners in their quest not only for knowledge but

also for the mindset and abilities to succeed in a world that demands fluency in online and collaborative environments. There may be some trepidation in engaging with these new expectations. Metaliteracy is poised to provide the scaffolding needed for OP and the DCF through its goals and learning objectives, learner roles, characteristics, and four learning domains. Helping learners to develop a metaliteracy mindset and the tools to be self-directed learners, with and beyond the use of digital technologies, is a powerful way to develop ethical and responsible citizens.

Trudi E. Jacobson: How does digital competency play a role in my professional life?

I have gone through the same journey that I ask my students to undertake. I have long collaborated in professional contexts, which perhaps not all students have done, but new technologies have streamlined and expanded such collaborations and provided great scope for new ways to create and share content. I would not ask my students to contribute to Wikipedia if I had not already learned how to tackle this new type of collaboration. My metaliterate roles and the learning domains I encounter have expanded, just as I ask students to reflect on these same things. I want to make sure that I engage in lifelong learning, and thus, I have to recognize what the stumbling blocks might be for me.

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