Capturing career information use in everyday life: introducing the CIEL conceptual framework

Marina Milosheva, Edinburgh Napier University, School of Computing, Edinburgh, UK, m.milosheva@napier.ac.uk

Hazel Hall, Edinburgh Napier University, School of Computing, Edinburgh, UK, h.hall@napier.ac.uk

Peter Robertson, Edinburgh Napier University, School of Applied Sciences, Edinburgh, UK, p.robertson@napier.ac.uk

Peter Cruickshank, Edinburgh Napier University, School of Computing, Edinburgh, UK, p.cruickshank@napier.ac.uk

Paper presented at the Information Seeking in Context (ISIC) Conference hosted by the Humboldt University of Berlin on 26-29 September 2022 in Berlin, Germany

Abstract

Introduction. Everyday career information use is not fully addressed by extant theories, models, and frameworks. In this paper, a conceptual framework of career information behaviour and career information literacy in everyday life is presented.

Methods. Over the course of 2021, a literature review of everyday life career information use was completed. As part of this review, a search for boundary objects was performed, and thematically similar conceptual contributions were mapped.

Analysis. An analysis of the integral components of ten theories, models, and frameworks relating to information behaviour, information literacy, information practice, and career development was performed with a view towards the development of a conceptual framework.

Results. A conceptual framework consisting of two key components – topography and way of life – was devised following analysis. The framework provides insight into the means by which individuals experience career information in everyday life, and the means by which they navigate career information environments.

Conclusions. The conceptual framework presented in this paper is applicable to the development of novel career information literacy theories, models, or frameworks, or the modification of extant conceptualisations.

Keywords: information literacy, information behaviour, information practices, career, everyday

Introduction

Career information literacy – framed as a life skill that enables individuals to process career information in a rapidly changing world of work in personally meaningful and democratic ways – is an emerging area of interest for careers scholars and information literacy researchers (e.g. Arur & Sharma, 2022; Zalaquett & Osborn, 2007). At present, however, there is little conceptual and empirical work to inform future research on career information literacy. While there is a good availability of information behaviour theory and information literacy frameworks in general (e.g. Vakkari, 2008; Webber & Johnston, 2017), few make specific reference to employability or career. For example, a graduate employability literacy lens for SCONUL has been developed (Goldstein, 2015), but more work to establish a conceptual basis for the study of employability and career information processes in context is needed. In response to this need, a conceptual framework of career information use in everyday life is developed as part of an on-going doctoral project. The insights presented introduce novel conceptual tools for the exploration of contextualised information activities in relation to everyday experiences of *career*.

The importance of teaching information literacy skills has been recognised for quite some time in the field of career development, and means of integrating information literacy instruction within career services have been explored in prior research (Hollister, 2005). More recently, there has also been growing interest into the digital aspects of information literacy in the context of career development. The internet has changed the context in which individuals manage their careers, and the prevalence of digital technologies is associated with an increased availability of online information, hence digital literacy skills are needed for effective career management in the digital age (e.g. Hooley, 2012; Hooley, 2017). In Library and Information Science, these new developments have also attracted scholarly attention. Initial research in the areas of career information literacy and employability information literacy has been conducted (e.g. Lin-Stephens et al, 2019; Mawson & Haworth, 2018). In neither Career Studies, nor Library and Information Science, however, are everyday, contextualised experiences of career information use given much consideration. In the former, career information literacy tends to be seen as a desirable competency of career counsellors, rather than one to be instilled in those who use career services to make career decisions (e.g. Zalaquett & Osborn, 2007). In the latter, career information literacy tends to be viewed as a set of generic and transferable skills (i.e., graduate outcomes) that can be scaffolded through higher education interventions (e.g. Lin-Stephens et al, 2019). Thus, not much is known about the performance of everyday career information behaviours in the community, nor the deployment of career information literacy competencies for the purposes of self-directed career development. The research presented in this paper contributes to the development of knowledge of career information behaviour and career information literacy by presenting a conceptual framework to guide and facilitate future research in these areas.

This paper is structured as follows. First, the key themes covered in the paper are introduced in the context of a paucity of research into career information literacy, career information behaviours, and career information practices. Next, common methodologies for mapping boundary objects are introduced, and the methodological approach taken in this work is detailed. The tenets of ten specific theories/models/frameworks of information behaviour, information literacy, and career development are examined, and conceptual analogies across them are identified in the form of boundary objects. Finally, the rationale underpinning the formulation of two boundary objects – topography and way of life – is reported, and a diagrammatic representation of a proposed conceptual framework labelled the Career Information use in Everyday Life (CIEL) is presented. It is concluded that the framework represents an initial step towards the development of a general framework of everyday career information use.

Situating career information literacy in the context of the extant conceptual landscape

The broad theme of workplace information use has received considerable research attention (Nordsteien & Byström, 2018). However, research into information use specific to careers and employability is less abundant. For example, few studies address information seeking during job search with specific reference to social sources of information and information seeking in community settings (Mowbray et al, 2016). Only three published studies focus on career information behaviour (Julien, 1999; Hultgren, 2009; Stonebraker et al, 2019). These indicate multiple barriers to applying information as part of career decision-making processes, and specific information seeking strategies for particular contexts. In this work, the researchers highlight the importance of acknowledging the contextuality and sociality of everyday career information seeking.

As is the case for career information behaviour, career information literacy is also under-researched. Fewer than a dozen studies exist on this subject, and little is known about career information literacy in the context of everyday life (e.g. Lin-Stephens et al, 2019; Valentine & Kosloski, 2021). To date, only Arur and Sharma (2022) have studied socially situated career information literacy practices within multifaceted career information landscapes. While it is known that career decision-making processes are greatly facilitated by the development of knowledge about the self and about the world of work (Jenkins & Jeske, 2016, p.9), the means by which such knowledge is developed through information use, and the means by which information literacy skills enable such as information seeking, remain to be established.

In the exploration of new research areas, appropriate extant theories, models, or frameworks help govern reasoning. In the case of career information and career information literacy, however, two key factors (elaborated below) hinder the direct application of extant conceptualisations without any modification. In short, there is a need for more precise conceptualisations of everyday information behaviour and information literacy for application to the notion of career to aid research in this area.

The first factor is the distinction between 'information behaviour' and 'information practice' as two interrelated concepts. Some researchers adopt information behaviour as a general field of investigation that encompasses themes including information needs, information seeking, serendipitous uses of information, and information avoidance (Agarwal, 2015; Ford, 2015). Others deploy the term 'information practices' to allow for the investigation of everyday information behaviours and skills that are more disordered and unpredictable than suggested in some information behaviour models (Caidi & MacDonald, 2008; González-Teruel & Pérez-Pulido, 2020). Another approach is to study both information behaviour and information practices within the same programme of research to document information needs, seeking, use, sharing, and practices through a socio-cultural lens (Willson, 2019). In more philosophical treatments of the two themes, information behaviour research is shown to draw upon cognitive and individualised information processing perspectives, and is closely related to information retrieval, while information practice research is inspired by social constructionism adhering to the tenet that societal meanings are jointly constructed through social activity and mutual agreement (e.g. Bawden et al, 2007; Case & Given, 2016; Savolainen, 2007). Both perspectives make some reference to everyday processes. However, a different degree of importance of socially mediated and contextualised processes is attached to each of them. Thus the comparative explanatory utility of information behaviour and information practice relative to everyday information use processes is unclear.

The second factor is the failure to address in full everyday career information behaviour and career information literacy in extant conceptualisations of information behaviour, information practice, and information literacy. Many of these have been developed for use in higher education, and are most applicable to the completion of linear information seeking tasks such as those performed during the completion of university assignments (e.g. Eisenberg & Berkowitz, 1990). Conceptualisations that model non-linear processes are highly specialised, and address information behaviour and information literacy separately (e.g. SCONUL, 2011; Savolainen, 1995). In addition, few make specific reference to work, employability, or career. The exceptions typically refer to information experiences in the workplace rather than information experiences beyond it (e.g. Bruce, 1997a). Thus, career information

processes that take place across diverse everyday life contexts are not fully accounted for. This is an important issue to address because career and employability are known to be linked to underresearched and under-theorised everyday life phenomena such as critical life situations and life transitions (e.g. Martouzkou & Sayyad Abdi, 2017; Willson, 2018). Furthermore, career information literacy differs substantially from information literacy for employability and the workplace (e.g. Milosheva et al, 2021a), and may benefit from bespoke conceptualisations. It would also be worthwhile to integrate the unique assumptions of career theories with the assumptions of information behaviour and information literacy conceptualisations. In doing so, a more complete understanding of everyday life career information use may be produced, taking into account the notion of career associated with individualised and lifelong meaning-making processes, as reflected in dozens of theories from Career Studies (Yates, 2020).

In the research reported below, the two factors are considered. The tenets of ten theories, models, and frameworks on information behaviour, information literacy, information practice, and career development were grouped thematically, and parallels between them sought. The purpose of the analysis was to clarify the principles of everyday information use outlined within them, and to seek interdisciplinary linkages between Career Studies and Library and Information Science so that a conceptual framework of everyday life career information use could be developed. This conceptual framework supports an on-going doctoral study of career information literacy and career information behaviour.

Method

The conduct of interdisciplinary research mandates the identification of commonalities across disciplines, holistic thinking, and equal consideration to disciplinary perspectives (Newell, 2013). The boundary object is a useful devise to support this as a conceptual or material tool – such as a text, map, idea, concept, person, or project – that communicates across different social worlds (Star, 1989; Nolin, 2009). It enhances communication between communities without compromising their autonomy (e.g. Star, 2010; Trompette & Vinck, 2009).

Methodologies for mapping boundary objects are diverse. In general, ethnography and case study research are popular methodological choices (e.g. Dar, 2018; Borgen, 2011). Such methods allow for the documentation of collaborative infrastructures, and exploration of the role of boundary objects and intermediary actors in applied practice (e.g. Marheineke et al, 2016). Literature reviews, systematic reviews, and citation analyses are commonly employed in studies of boundary objects within academic practice (e.g. Baggio et al, 2015; Enqvist et al, 2018). Since the stratification of knowledge in research communities is expressed in written academic texts, and in the conceptual tools that they use, it is appropriate to examine the meanings, origins, and patterns of use of common scientific concepts when identifying boundary objects in academic practice (Carpentier, 2020). In light of this, the central focus of this paper is the identification of tools for interdisciplinary conceptualisation across information behaviour, information literacy, information practice, and career development, with specific reference to everyday career information use.

Such conceptual tools are most readily identified in papers outlining the tenets of well-known theories, models, and frameworks. For this reason, in respect of the literature search reported here, particular attention was given to locating common conceptual units within extant theories, models, and frameworks in Career Studies and Library and Information Science. One complication inherent in such an approach is that each of these three types of conceptualisations is defined somewhat ambiguously, and associated with different claims regarding descriptive utility, explanatory power, and causality. For the purposes of this research, theories, models, and frameworks were defined as follows:

- Theories describe, predict, and explain phenomena. They may be embedded in research in one of two forms: (1) as quantitatively testable assumptions or (2) as lenses that permeate every

aspect of a study, and inform the interpretation of relevant literature (e.g. Collins & Stockton, 2018; Given, 2008).

- Models describe phenomena, but do not explain them. Their scope of explanation is more narrowly defined than that of theories; in them, deliberations of specific processes or specific aspects of a larger phenomenon may be presented (e.g. Nilsen, 2015).
- Frameworks, much like models, may describe, but not explain phenomena. Their scope is broader than that of models; they may contain depictions of complex structures or systems, inclusive of constructs and relationships between constructs (e.g. Nilsen, 2015).

It should be noted, however, that research may be imbued with different assumptions – epistemological, ontological, or methodological – that guide researchers' interpretations of theories, models, and frameworks, and of the conceptual units within them. Such interpretive flexibility is especially prominent in relation to the use of theories (Given, 2008, pp. 869-871). Creators of seminal works and originators of theories, models, and frameworks, may also develop conceptualisations on the basis of their continued commitment to particular philosophical or methodological traditions. Such commitments may be reflected in the terminology used in their works, and in the emphasis on either qualitative or quantitative data offering valid representations of the phenomena under investigation.

Despite differences in the ideation and interpretation of theories, models, and frameworks, several of the claims within them may overlap. For instance, reference to tacit knowledge is made both in Bourdieu's work (1984) and in cognitive information processing theories, yet the former is more epistemologically consistent and concerned with tacit knowledge than the latter (Thompson, 2019, p.18). Thus conceptualisations are expressions of scope and perspective, whereby certain elements are brought to the foreground, and others are situated in the background. Two different observations of the same phenomenon may yield different descriptions and explanations due to the accentuation of different elements of natural or social occurrences.

In this research, which is concerned with the identification of boundary objects across common conceptualisations of career information use in everyday life, precedence has been given to mapping thematic commonalities between theories, models, and frameworks, regardless of whether or not these deal with description or explanation. The units of meaning included in the analysis are concepts, relationships between concepts, and background circumstances that create the conditions for observed effects to occur. The differing epistemological, ontological, and methodological claims of reviewed works did not inform the literature search or the subsequent thematic analysis. Such detailed analysis was beyond the scope of the study. Nevertheless, the philosophical and methodological intricacies of interpretation of conceptualisations may be considered in future research, especially that which seeks to present a new theory, model, or framework of career information use in everyday life.

Between January and July 2021, a literature search was conducted for the purpose of gathering material of relevance to the doctoral study, the main theme of which is means by which young people navigate career information environments through the deployment of career information literacy skills. The central themes of this work are career decision-making, information behaviour, and information literacy. Due to the novelty of the term 'career' within the Library and Information Science literature, a literature search strategy was devised to capture all relevant bodies of literature through appropriate keyword searches. The starting point was a group of five keywords, all of which feature in the title of the doctoral study: (1) career; (2) decision-making; (3) information literacy/information behaviour; (4) workplace/everyday life; (5) young people. This led to the development of five synonym lists (one for each keyword):

(1) career, occupation, profession, employment, employability, lifelong;

(2) decision-making, learning, development, exploration, knowledge, skills;

(3) information, information literacy, information behaviour, information practice, information need, information seeking;

(4) work, workplace, health, leisure, hobby, everyday life, community;

(5) young people, students, pupils, children, adolescents, teenagers, youth.

The literature search was performed using Boolean searches and citation pearling using the five synonym lists. In line with the interdisciplinary focus of the work, the goal of the literature search was to identify literature both from Library and Information Science and Career Studies. The databases accessed were Web of Science, Taylor & Francis, ABI/INFORM, Emerald, LISTA, and ProQuest Social Science.

476 papers were shortlisted for analysis as a result of this search, and then used to draft a literature review. Next, an additional search for conceptual works was performed within these 476 papers (to inform the development of a conceptual framework for the research). 16 conceptual papers were identified. Then, inclusion and exclusion criteria were devised for the purpose of mapping conceptual works associated with information literacy practices in everyday life, as opposed to those related to linear information seeking processes. The inclusion and exclusion criteria applied were as follows:

- 1) Conceptual contributions that have an everyday life information seeking component were shortlisted for analysis (e.g. Dervin, 1983; Savolainen, 1995).
- 2) Career models that have been previously argued to be conducive to the study of career information behaviours were included in the analysis (Milosheva et al, 2021b).
- Information literacy models that are most relevant to the completion of distinct tasks within higher education were excluded from analysis (e.g. Eisenberg & Berkowitz, 1990; Herring, 1996).
- 4) Linear information behaviour models and theories that depict information seeking in a prescriptive and sequential manner, and that are most applicable to the completion of assignments in higher education, were excluded from analysis (e.g. Kulthau, 1990; Ellis, 1989).

The use of inclusion and exclusion criteria resulted in a shortlist of theories, models, and frameworks of most relevance to the doctoral study, and 10 conceptual papers were selected for thematic analysis. An overview of the filtering process is provided in Table 1. All the work completed for this exercise, and the analysis that followed, was discussed regularly and monitored by the supervisory team.

Next, a search for boundary objects was performed within the shortlisted papers. Thematic coding was conducted in NVivo by pasting the content of articles into the software, extracting and labelling the tenets of conceptual contributions, and employing an open coding strategy. In line with Huvila (2016, p.19), the extent to which a given concept was deemed to be a boundary object was dependent on its etymology and its observed uses and interpretations in practice. In addition, scale and scope were considered to identify boundary objects (Star, 2010).

List of conceptual papers	Theory,	Discipline of	Shortlisted
	model, or	origin	for
	framework		analysis
	(T/M/F)		(Y/N)
Big 6 Skills (Eisenberg & Berkowitz, 1990)	М	Library and	Ν
Purpose, Location, Use, Self-evaluation (PLUS) model	Μ	Information	Ν
(Herring, 1996)		Science	
7 Faces of Information Literacy (Bruce, 1997a)	М	(Information	Y
Society of College, National and University Libraries	Μ	literacy)	Y
(SCONUL) 7 Pillars (2011)			
Dervin's (1983) Sense-making theory	Т	Library and	Y
Kuhlthau (1988) information search process	М	Information	Ν
Ellis (1989) Information Seeking Behaviour model	Μ	Science	Ν
Chatman (1991) Small Worlds theory	Т	(Information	Y
Savolainen (1995) Everyday Life Information Seeking	F	behaviour)	Y
(ELIS) framework			
Wilson (1999) model of information behaviour	М		Ν
Foster (2004) non-linear model of Information Seeking	М		Ν
Behaviour			
Theory of information literacy landscapes (Lloyd, 2021)	Т	Library and	Y
		Information	
		Science	
		(Information	
		practice)	
Law's New Decision-learning, Opportunity Awareness,	Μ	Career	Y
Transition learning, and Self-awareness (DOTS) model		Studies	
(2000)		(Career	
Hodkinson's (2009) Careership theory	Т	development)	Y
Systems Theory Framework (Patton & McMahon, 2015)	F		Y
Sampson and colleagues' Career Information Processing	Μ		Y
(CIP) model (2020)			

Table 1: Conceptual papers identified through the literature search

Findings

The analysis results in five codes and two thematic clusters to generate a conceptual framework of career information use in everyday life (CIEL) as shown in Figure 1. The 'topography' cluster refers to the environment in which career information use and career development processes occur with two sub-concepts: 'wider information environment' and 'personal information environment'. The 'way of life' cluster, relates to three sub-concepts: 'skills', 'subjective experiences', and 'outputs', all of which pertain to the meanings ascribed to, or derived from, experiences in everyday life, and the activities performed within personal career information environments.

'Topography' and 'way of life' are linked because subjective awareness of the career information environment guides action within it. Taken together, these two thematic clusters function as boundary objects between Library and Information Science and Career Studies, and contribute to the development of a multifaceted, layered understanding of the principles that underpin career information use in everyday life.



Figure 1: Career information use in everyday life (CIEL) conceptual framework

Discussion

In general, interdisciplinary linkages between conceptualisations of everyday career information use in Career Studies and Library and Information Science are made apparent in this analysis. For instance, Careership theory (Hodkinson, 2009) and Savolainen's Everyday Life Information Seeking (ELIS) framework (Savolainen, 1995) are both informed by Bourdieu's habitus theory (Bourdieu, 1984). These researchers also conceptualise information seeking and career development processes as everyday practices. A further example links the work of Sampson (2020) and Dervin (1983). In the Cognitive Information Processing (CIP) model (Sampson, 2020), a career problem is defined as a gap between an existing state of indecision and a more desired state (of career decidedness), and creates a cognitive dissonance which drives problem-solving processes. Similar conceptualisations of gaps and problem-solving are present in Dervin's (1983) sense-making theory. Thus, in both Career Studies and Library and Information Science, there is an emphasis on problem-solving within one's immediate surroundings. The tenets of extant theories, models, and frameworks depict how such problem-solving manifests itself in everyday life.

Further links are evident within sub-concepts of each thematic cluster. In respect of 'the wider information environment' (a sub-cluster of Topology), Patton and McMahon's Systems Theory Framework (2015) postulates that career decisions occur within specific social, structural, and temporal contexts (Patton & McMahon, 2015, p.142). Individuals are positioned in spatiotemporal contexts, complete with social and environmental strata, which represent the wider environment in which they 'come to know' about careers. Similarily, the role of time, place, and context are considered important in information literacy scholarship, and feature in common discourse in one form or another (Gibson & Kaplan, 2017). Examples of concepts that incorporate notions of time and place include information grounds and information horizons (Savolainen, 2009; Sonnenwald et al; 2001). More recently, Lloyd (2021) has developed a theory of information literacy landscapes that takes into account the information environment as the space in which sayings, doings, and relationships are shaped (Lloyd, 2021, p.4). Thus, there is a *wider environment* in which career influences and career information reside.

Equally there are evident links related to the sub-concept of 'personal information environment' within Topology. The 'horizon of action' in Hodkinson's (2009) Careership theory, comprises biased, contextualised, and partial information. Career decision-making is pragmatically rational and situated

within the horizon of action, i.e. subjectively rational in light of the given circumstances, rather than objectively rational. This reflects Chatman's earlier work (1991) when she argues that the perception of individuals is bounded by their limited time-horizon as part of their life in a 'small world'. They are only aware of a limited portion of the wider environment, and their beliefs and expectations are shaped by the social understandings and customs of their immediate social network. The notion of 'horizon of action' is also thematically similar to the notion of 'information landscapes' found in Lloyd's (2021) theory: both refer to the resources of which individuals are aware, and which shape action affordances. The horizon of action is the space in which career decision-making occurs, and the information landscape is the space which affords the accomplishment of information practices (Hodkinson, 2009; Whitworth, 2020).

For everyday information seeking, individuals do not cross the boundaries of their 'small world' to look for information (Chatman, 1991). They make career decisions based on incomplete information, serendipity, and what they perceive to be desirable or possible within their horizon of action (Hodkinson, 2009). The horizon of action is not static over time; it may expand or shrink depending on exposure to career influences or career information. Individuals may seek to expand the boundaries of their immediate horizon, either as a function of a perceived inadequacy of the information provided through their 'small world', or through serendipitous or self-directed career development learning (Chatman, 1991; McIlveen et al, 2011). Career aspirations are raised once knowledge of previously unknown possibilities is developed (e.g. Ryan & Hopkins, 2013). It can thus be concluded that personal information environments are bounded by individuals' perceptions and awareness of information affordances at given points in time and space. Whether this is referred to as a horizon of action, a small world, or an information landscape, a similar principle applies: career decision-makers act on the basis of what they believe to be true, relevant, or available. The potential for any given individual to act is increased whenever a personal information environment is expanded.

A common thread unites all three of the sub-concepts of Way of life. Here information use tends to be implicit in everyday life experiences (across various tasks and settings), rather than explicit in linear information tasks. Commonalities in the analysed work are discussed further below in respect of skills, subject experiences, and outputs.

From an interdisciplinary perspective, three types of skills are needed to navigate the personal career information environment: career learning competencies – sensing, sifting, focusing, and understanding (Law, 2000); career decision-making skills – communication, analysis, synthesis, valuing, and execution; (Sampson et al, 2020), and information literacy skills – identify, scope, plan, gather, evaluate, manage, present (e.g. SCONUL, 2011). There is some conceptual overlap between these skills. For instance, each of the skill matrices follow a logical sequence in which information is gathered, evaluated, and applied towards the development of increased awareness (of the self or the career environment). However, further research is needed to ascertain the skills most applicable to career information use in everyday life, and other types of competencies exhibited by decision-makers.

Skills may be associated with specific subjective experiences and behavioural patterns. These experiences contextualise the formulation of the problem, the solution of the problem, and the deployment of skills to address it. Extant conceptual notions of subjective experiences are: interacting with others in the field, turning points and routines (Hodkinson, 2009); mastery of life - optimistic-cognitive, pessimistic-cognitive, defensive-affective, pessimistic-affective (Savolainen, 1995); information technology; information sources; information process; information control; knowledge construction; knowledge extension; wisdom (Bruce, 1997a). According to Bruce (1997b), information literacy is a sum of experiences, and the goal of information literacy education is to help learners broaden their repertoire of experiences.

Further associations across the work analysed are evident in respect of the sub-concept outputs. After an instance of problem-solving in the personal information environment, an information gap is addressed, and self-knowledge and occupational knowledge is developed (Dervin, 1983; Sampson et al, 2020). The ability to present learning is an important indicator that it has taken place (Bruce, 1997a), hence a tangible output (e.g. a computer file) or an observable outcome (e.g. communication with others) through which information and knowledge is externalised results. From this it can be concluded that individuals who possess a high degree of career information literacy competence should be able to articulate the self-knowledge and occupational knowledge developed through self-directed career learning (presented in subjective terms, and in narrative form).

Conclusion

Following Smyth (2004), the conceptual framework presented in this paper fulfils two important functions: to unite ideas and principles taken from relevant fields of enquiry and to inform the research design of subsequent research.

It has been demonstrated that while multiple theories, models, and frameworks of information behaviour, information literacy, information practice, and career development exist, to date, no general theory, model, or framework of everyday career information use has been developed. In addition, career information behaviour and career information literacy are under-researched. Therefore, there is little primary evidence to guide conceptualisation, and the explanatory utility of extant conceptualisations as applied to *career* may be limited.

The proposed conceptual framework of career information use in everyday life (CIEL) presented above has been developed to remedy this. The boundary object approach adopted entailed consideration of the thematic commonalities of extant conceptual tools from Career Studies and Library and Information Science. Two boundary objects – topography and way of life – provide a better understanding of the means by which individuals may come to know about careers within their contextual environments and the types of skills that they may apply when doing so.

The findings indicate multiple commonalities across extant conceptualisations of career information use. Multiple tenets converge to suggest a wider career information environment (i.e., a specific spatio-temporal context and socio-cultural space) and a personal information environment which is bounded by one's awareness, and which sets the parameters for action. Action, in turn, is represented as a way of life: an amalgamation of skills, subjective experiences, and outputs that are construed in subjective terms.

The CIEL conceptual framework thus represents a useful analytical toolkit with which to design future research. It establishes interdisciplinary and conceptual linkages between extant conceptualisations and makes an original contribution to understandings of everyday career information use. At the time of writing, this conceptual framework is being used to develop questionnaire items, an interview script, and digital diary prompts for a doctoral study of everyday career information use (inclusive of career information behaviour and career information literacy). Once findings from this doctoral work emerge, the conceptual framework will be revisited and revised. In its final form it will be presented to Skills Development Scotland (Scotland's national careers agency) so that its value to practitioner audiences and young people can be further evaluated, and means of enhancing young people's career information literacy agency further explored.

It is hoped that the findings reported in this paper will inspire future research into everyday career information use, and be of value in efforts to generate a general theory, model, or framework of career information use in everyday life.

About the authors

Marina Milosheva is a PhD student at Edinburgh Napier University's School of Computing. Her primary research interests are in the areas of information literacy and information behaviour with an emphasis on information use in community and organisational contexts. She can be contacted at m.milosheva@napier.ac.uk

Hazel Hall is Professor of Social Informatics within the School of Computing at Edinburgh Napier University. Her main research expertise and interests lie in information sharing in online environments, social computing and media, online communities and collaboration, and research impact. She can be contacted at h.hall@napier.ac.uk

Peter Robertson is Professor of Career Development within the School of Applied Sciences at Edinburgh Napier University. His research interests focus on career development, health and wellbeing, career services, public policy for career development, and the effective use of career information. He can be contacted at p.robertson@napier.ac.uk

Dr Peter Cruickshank is Associate Professor of Social Informatics within the School of Computing at Edinburgh Napier University. His main research areas are in information practices associated with engagement with digital systems, trust and identity in online systems, information security and governance, and privacy and data protection. He can be contacted at p.cruickshank@napier.ac.uk

Acknowledgements

The authors thank Professor Brian Detlor, Dr Bruce Ryan, Dr Ella Taylor-Smith, and John Marshall for their helpful comments on an earlier draft of this paper.

Funding information

This research is funded by the Economic and Social Research Council (ESRC) through Grant ES/P000681/1, Project reference 2277127

References

- Agarwal, N.K. (2015). Towards a definition of serendipity in information behaviour. *Information Research*, 20(3), paper 675. Available at: http://InformationR.net/ir/20-3/paper675.html
- Arur, A. & Sharma, M. (2022). Career life skills for 10th Grade Boys in Delhi, India: Mapping information literacies for sustainable development. In J. De Jaeghere and E. Murphy-Graham (Eds.) *Life Skills Education for Youth: Critical Perspectives* (pp.169-191). Cham: Springer International Publishing.
- Baggio, J. A., Brown, K., & Hellebrandt, D. (2015). Boundary object or bridging concept? A citation network analysis of resilience. *Ecology and Society*, 20(2), 1-11. https://www.jstor.org/stable/26270178
- Bawden, D., Bates, J., Steinerova, J., Vakkari, P., & Vilar, P. (2007). Information retrieval curricula; contexts and perspectives. In *First International Workshop on Teaching and Learning of Information Retrieval* (*TLIR 2007*) 1 (pp. 1-6).
- Borgen, S. O. (2021). Standard quality as a boundary object: A conceptual study. *Sociologia Ruralis*, 61(4), 704–722. https://doi.org/10.1111/soru.12345
- Bourdieu, P. (1984). Distinction: A social critique of the judgement of taste. London: Routledge and Kegan Paul.
- Bruce, C. (1997a). The relational approach: A new model for information literacy. *The New Review of Information and Library Research*, 3(1), 1-22.
- Bruce, C. (1997b). The seven faces of information literacy. Adelaide: Auslib Press.
- Caidi, N., & MacDonald, S. (2008). Information practices of Canadian Muslims post 9/11. *Government Information Quarterly*, 25(3), 348-378. https://doi.org/10.1016/j.giq.2007.10.007
- Carpentier, N. (2020). Communicating academic knowledge beyond the written academic text: An autoethnographic analysis of the Mirror Palace of Democracy installation experiment. *International Journal of Communication*, *14*(1), 2120-2143. https://ijoc.org/index.php/ijoc/article/view/13438
- Case, D. O., & Given, L. M. (2016). Looking for information: A survey of research on information seeking, needs, and behavior. San Diego, CA: Academic Press.
- Chatman, E. A. (1991). Life in a small world: Applicability of gratification theory to information-seeking behavior. *Journal of the American Society for Information Science* (1986-1998), 42(6), 438-449. https://doi.org/10.1002/(SICI)1097-4571(199107)42:6<438::AID-ASI6>3.0.CO;2-B
- Collins, C. S., & Stockton, C. M. (2018). The Central Role of Theory in Qualitative Research. *International Journal of Qualitative Methods*, 17(1), 1609406918797475. https://doi.org/10.1177/1609406918797475
- Dar, S. (2018). De-colonizing the boundary-object. Organization Studies, 39(4), 565–584. https://doi.org /10.1111/gwao.12673
- Dervin, B. (1983). An overview of sense-making: concepts, methods, and results to date. *Paper presented at the annual meeting of the International Communications Association, Dallas, TX, May 1983*. Available at: http://communication.sbs.ohio-state.edu/sense-making/art/artdervin83.html
- Eisenberg, M.B, & Berkowitz, R.E. (1990). Information problem solving: The Big Six approach to library and information skills instruction. Norwood, NJ: Ablex.
- Ellis, D. (1989). Behavioural approach to information retrieval system design. *Journal of Documentation*, 46(1), 191–213. https://doi.org/10.1108/EB026843
- Enqvist, J. P., West, S., Masterson, V. A., Haider, L. J., Svedin, U., & Tengö, M. (2018). Stewardship as a boundary object for sustainability research: Linking care, knowledge and agency. *Landscape and Urban Planning*, *179*(1), 17–37. https://doi.org/10.1016/j.landurbplan.2018.07.005

Ford, N. (2015). Introduction to information behaviour. London: Facet Publishing.

- Foster, A. (2004). A Non-Linear Model of Information Seeking Behaviour of Graduate Students of the University of Botswana. *Library Review*, 47(7), 329-340. https://doi.org/10.1002/asi.10359
- Gibson, A. N., & Kaplan, S. (2017). Place, community and information behavior: Spatially oriented information seeking zones and information source preferences. *Library & Information Science Research*, 39(2), 131-139. https://doi.org/10.1016/j.lisr.2017.03.001
- Given, L. M. (2008). *The SAGE encyclopaedia of qualitative research methods*. Thousand Oaks, CA: SAGE Publications. https://doi.org/10.4135/9781412963909
- Goldstein (2015). A graduate employability lens for the SCONUL Seven Pillars of Information Literacy; Incorporating a review of sources on how graduate employability relates to information know-how. Available at: https://www.sconul.ac.uk/sites/default/files/documents/Employability%20lens%20and%20report.pdf
- González-Teruel, A. & Pérez-Pulido, M. (in press). The diffusion and influence of theoretical models of information behaviour. The case of Savolainen's ELIS model. *Journal of Documentation*, 76(5), 1069-1089. https://doi.org/10.1108/JD-10-2019-0197
- Herring, J. E. (1996). Teaching information skills in schools. London, UK: Library Association.
- Hodkinson, P. (2009). Understanding career decision-making and progression: Careership revisited. *Career Research & Development*, 21(1), 4-17. https://doi.org/10.1080/0142569970180102
- Hollister, C. (2005). Bringing information literacy to career services. *Reference Services Review*, 33(1), 104–111. https://doi.org/10.1108/00907320510581414
- Hooley, T. (2012). How the internet changed career: Framing the relationship between career development and online technologies. *Journal of the National Institute for Career Education and Counselling*, 29(1), 3– 12. http://hdl.handle.net/10545/246992
- Hooley, T. (2017). Developing your career: Harnessing the power of the internet for "digital career management". *Development and Learning in Organizations: An International Journal*, 31(1), 9–11. https://doi.org/10.1108/DLO-07-2016-0066
- Hultgren, F. (2009). Approaching the future: a study of Swedish school leavers' information related activities. Department of Library and Information Science/Swedish School of Library and Information Science University College of Borås/Göteborg University: Doctoral dissertation. Available at: http://www.divaportal.org/smash/get/diva2:876905/FULLTEXT01.pdf
- Huvila, I., Anderson, T. D., Jansen, E. H., McKenzie, P., & Worrall, A. (2017). Boundary objects in information science. *Journal of the Association for Information Science and Technology*, 68(8), 1807–1822. https://doi.org/10.1002/asi.23817
- Jenkins, L., & Jeske, D. (2017). Interactive Support Effects on Career Agency and Occupational Engagement Among Young Adults. *Journal of Career Assessment*, 25(4), 616–631. https://doi.org/10.1177/1069072716652891
- Julien, H. E. (1999). Barriers to adolescents' information seeking for career decision making. Journal of the American Society for Information Science, 50(1), 38-48. https://doi.org/10.1002/(SICI)1097-4571(1999)50:1<38::AID-ASI6>3.0.CO;2-G
- Kuhlthau, C. C. (1988). Longitudinal case studies of the information search process of users in libraries. *Library* and Information Science Research, 10(3), 257-304.
- Law, B. (1999). Career learning space: New DOTS thinking for careers education. *British Journal of Guidance* and Counselling, 27 (1), 35-54. https://doi.org/10.1080/03069889908259714

- Lin-Stephens, S., Kubicki, J. M., Jones, F., Whiting, M. J., Uesi, J., & Bulbert, M. W. (2019). Building student employability through interdisciplinary collaboration: An Australian Case Study. *College & Undergraduate Libraries*, 26(3), 234–251. https://doi.org/10.1080/10691316.2019.1674027
- Lloyd, A. (2021). *The qualitative landscape of information literacy research: Perspectives, methods, and techniques.* London: Facet.
- Marheineke, M., Habicht, H., & Möslein, K. M. (2016). Bridging knowledge boundaries: The use of boundary objects in virtual innovation communities. *R&D Management*, 46(S3), 1084–1094. https://doi.org/10.1111/radm.12216
- Martzoukou, K., & Sayyad Abdi, E. (2017). Towards an everyday life information literacy mind-set: A review of literature. *Journal of Documentation*, 73(4), 634–665. https://doi.org/10.1108/JD-07-2016-0094
- Mawson, M., & Haworth, A. C. (2018). Supporting the employability agenda in university libraries: A case study from the University of Sheffield. *Information and Learning Science*, 119(1/2), 101–108. https://doi.org/10.1108/ILS-04-2017-0027
- McIlveen, P., Brooks, S., Lichtenberg, A., Smith, M., Torjul, P., & Tyler, J. (2011). Career development learning frameworks for work-integrated learning. In S. Billett & A. Henderson (Eds.), *Developing learning professionals: Integrating experiences in university and practice settings* (pp. 149–165). Dordrecht, The Netherlands: Springer.
- Milosheva, M., Hall, H., Robertson, P., & Cruickshank, P. (2021a). New information literacy horizons: Making the case for career information literacy. In *Information literacy in a post-truth era: 7th European Conference, ECIL 2021* (online), September 20–23, 2021, revised selected papers.
- Milosheva, M., Robertson, P., Cruickshank, P., & Hall, H. (2021b). The role of information in career development. *Journal of the National Institute for Career Education and Counselling*, 47(1), 12-20. https://doi.org/10.20856/jnicec.4703
- Mowbray, J., Raeside, R., Hall, H., & Robertson, P. (2016). Social networking sites and employment status: an investigation based on Understanding Society data. In *Proceedings of the 2nd International Data Information and Information Management Conference (IDIMC)* (pp. 75-85).
- Newell, W. H. (2013). The state of the field: Interdisciplinary theory. *Issues in Interdisciplinary Studies*, 31(1), 22–43. http://hdl.handle.net/10323/4478
- Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science*, *10*(1), 53-66. https://doi.org/10.1186/s13012-015-0242-0
- Nolin, J. (2009). "Relevance" as a boundary concept: Reconsidering early information retrieval. *Journal of Documentation*, 65(5), 745-767. https://doi.org/10.1108/00220410910983092
- Nordsteien, A., & Byström, K. (2018). Transitions in workplace information practices and culture: The influence of newcomers on information use in healthcare. *Journal of Documentation*, 74(4), 827-843. https://doi.org/10.1108/JD-07-2017-0116
- Patton, W., & McMahon, M. (2015). The systems theory framework of career development: 20 years of contribution to theory and practice. *Australian Journal of Career Development*, 24(3), 141-147. https://doi.org/10.1177/1038416215579944
- Ryan, N. J., & Hopkins, S. (2013). Combining social media and career development learning: An intensive tertiary preparation programme for disadvantaged youth. *Australian Journal of Career Development*, 22(3), 107–111. https://doi.org/10.1177/1038416213505274
- Sampson, J. P. Jr., Osborn, D., Bullock-Yowell, E., Lenz, J. G., Peterson, G., Reardon, R. C., & Dozier, V. C. (2020). An introduction to CIP theory, research, and practice. Florida, US: Florida State University, Center for the Study of Technology in Counseling and Career Development. http://purl.flvc.org/fsu/fd/FSU_libsubv1_scholar ship_submission_1593091156_c171f50a

- Savolainen, R. (1995). Everyday life information seeking: Approaching information seeking in the context of "way of life". *Library & Information Science Research*, *17*(3), 259-294. https://doi.org/10.1016/0740-8188(95)90048-9
- Savolainen, R. (2007). Information Behavior and Information Practice: Reviewing the "Umbrella Concepts" of Information-Seeking Studies. *The Library Quarterly*, 77(2), 109–132. https://doi.org/10.1086/517840
- Savolainen, R. (2009). Small world and information grounds as contexts of information seeking and sharing. *Library & Information Science Research*, 31(1), 38-45. https://doi.org/10.1016/j.lisr.2008.10.007
- SCONUL (2011). SCONUL 7 Pillars Model [online]. Available at: https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf
- Smyth, R. (2004). Exploring the usefulness of a conceptual framework as a research tool: A researcher's reflections. *Issues in Educational Research*, 14(2), 167–180. https://search.informit.org/doi/10.3316/ielapa.200412121
- Sonnenwald, D., Wildemuth, B., & Harmon, G. (2001). A research method to investigate information seeking using the concept of Information Horizons: An example from a study of lower socio-economic students' information seeking behavior. *The New Review of Information Behavior Research*, 2(1), 65– 86. http://hdl.handle.net/10760/7969
- Star, S. (2010). This is Not a Boundary Object: Reflections on the Origin of a Concept. *Science, Technology, & Human Values, 35*(5), 601–617. https://doi.org/10.1177/0162243910377624
- Star, S. (1989). Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. Social Studies of Science, 19(3), 387-420. https://doi.org/10.1177/030631289019003001
- Stonebraker, I., Maybee, C., & Chapman, J. (2019). Undergraduate students' experiences of using information at the career fair: A phenomenographic study conducted by the libraries and career center. *The Journal of Academic Librarianship*, 45(4), 358-367. https://doi.org/10.1016/j.acalib.2019.05.002
- Thompson, M. (2011). Ontological shift or ontological drift? Reality claims, epistemological frameworks, and theory generation in organization studies. *Academy of Management Review*, *36*(4), 754-773. https://doi.org/10.5465/amr.2010.0070
- Trompette, P., & Vinck, D. (2009). Revisiting the notion of Boundary Object. *Revue d'anthropologie Des Connaissances*, *31*(1), 3–25. https://www.cairn.info/revue-anthropologie-des-connaissances-2009-1-page-3.htm
- Vakkari, P. (2008). Trends and approaches in information behavior research. *Information Research*, *13*(4), Paper 361. http://InformationR.net/ir/13-4/paper361.html
- Valentine, K. S., & Kosloski, M. F. (2021). Developing the key constructs of career literacy: A Delphi study. *Journal of Research in Technical Careers*, **5**, 1. https://doi.org/10.9741/2578-2118.1095
- Webber, S., & Johnston, B. (2017). Information literacy: Conceptions, context and the formation of a discipline. *Journal of Information Literacy*, 11(1), 156. https://doi.org/10.11645/11.1.2205
- Whitworth, A. (2020). *Mapping information landscapes: new methods for exploring the development and teaching of information literacy*. London: Facet.
- Wilson, T. D. (1999). Models in information behaviour research. *Journal of Documentation*, 55(3), 249–270. https://doi.org/10.1108/EUM000000007145
- Willson, R. (2018). "Systemic Managerial Constraints": How universities influence the information behaviour of HSS early career academics. *Journal of Documentation*, 74(4), 862–879. http://doi.org/10.1108/JD-07-2017-0111

- Willson, R. (2019). Transitions theory and liminality in information behaviour research: Applying new theories to examine the transition to early career academic. *Journal of Documentation*, 75(4), 838–856. https://doi.org/10.1108/JD-12-2018-0207
- Yates, J. (2020). Career development theory: An integrated analysis. In P. J. Robertson, T. Hooley, & P. McCash (Eds.), Oxford handbook of career development. Advance online publication, https://doi.org/10.1093/ oxfordhb/9780190069704.013.10
- Zalaquett, C. P., & Osborn, D. S. (2007). Fostering counseling students' career information literacy through a comprehensive career Web site. *Counselor Education and Supervision*, 46(3), 162-171. https://doi.org/10.1002/j.1556-6978.2007.tb00022.x