

Journal of Information Literacy

ISSN 1750-5968

Volume 16 Issue 1

June 2022

Article

Phillips, J., & Whitworth, A. (2022). Integrating information practices into everyday teaching: The roles played by the practice architecture and learning activities in South Korean elementary schools. *Journal of Information Literacy*, 16(1), pp. 30–49.

<http://dx.doi.org/10.11645/16.1.2923>



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

Copyright for the article content resides with the authors, and copyright for the publication layout resides with the Chartered Institute of Library and Information Professionals, Information Literacy Group. These Copyright holders have agreed that this article should be available on Open Access and licensed under a Creative Commons Attribution ShareAlike licence.

“By ‘open access’ to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.”

Chan, L. et al. 2002. Budapest Open Access Initiative. New York: Open Society Institute. Available at: <http://www.soros.org/openaccess/read.shtml> [Accessed: 18 November 2015].

Integrating information practices into everyday teaching: The roles played by the practice architecture and learning activities in South Korean elementary schools

Jonathan Phillips, English Teacher, English Department, Geochang International School. Email: jonathan@greyj5.com

Andrew Whitworth, Director of Teaching and Learning Strategy, Manchester Institute of Education, University of Manchester. Email: Drew.Whitworth@manchester.ac.uk Twitter: [@DrewWhitworth1](https://twitter.com/DrewWhitworth1) ORCID: [0000-0002-9971-4665](https://orcid.org/0000-0002-9971-4665)

Abstract

This paper reports on the information practices and information literacy (IL) skills of South Korean elementary school students from the perspectives of working teachers. Key to this investigation was the notion of information practice, and how this is shaped by the practice architecture found in an educational setting. A sequential mixed design was undertaken to investigate these ideas which consisted of exploratory interviews with 4 elementary school teachers and was followed by a questionnaire which analysed the responses of 314 elementary school teachers. Findings indicate that in this setting, teachers, students and pre-set curricular content serve as the most frequently used information sources for students during their everyday classes. We pay specific attention to the ongoing centrality of the *textbook*, in its traditional paper format, to the ways in which teachers design learning activities, and suggest that this limits the diversity of informational approaches to which young South Korean learners are exposed. While these learners are engaged, they are limited in terms of informational genre since teachers and textbooks were found to be dominant information proxies. Activities in which students engage in active seeking or scanning are rarer. Contexts with such a configuration may be hindering the development of critical information literacy skills that are vital in dealing with the abundance of information faced by individuals today.

Keywords

information behaviour; information literacy; information sources; instructional design; South Korea

1. Introduction

Conducted in 2017 as part of a Master's dissertation during which time the author was an English teacher at a public elementary school in South Korea, this paper reports on research into how elementary schools in South Korea, shape and enable the information literacy (IL) practices of their students in particular ways (Lloyd, 2017). Attention was paid to how information practices are developed and sustained with a particular focus on factors such as local culture, policies & procedures, provided media, technologies, and teacher perspectives. These context specific factors collectively form part of the practice architecture (Kemmis et al., 2014) which influence how students learn to navigate through their 'information landscapes' (Lloyd, 2010a, 2017).

While there is some prior research in the Korean language (Chung et al., 2007; Song, 2015; Park & Lee, 2011), and some studies of South Korean high schools and universities (Kim & Yang, 2016; Shin, 2015), this is the first English publication detailing a study of information literacy in the South Korean public elementary school system. Through the analysis of qualitative research interviews with teachers and a questionnaire distributed across the Gyeongsangnam province of South Korea, we explore certain elements of the practice architecture and suggest how these influence the development of IL in this setting.

2. Literature review

2.1 Information literacy as a learning activity

Learning activities help students learn not only the content of a particular subject, but also IL skills and practices. For instance, in an activity where students read a book about the theory underpinning a scientific experiment, the students not only learn something about the theory and conduct of scientific experiments, but also something about the act of reading. Another example comes from presenting an assignment using, for example, a blogging platform. Through writing the assignment in this form, students not only deepen their knowledge about the subject matter, but also about how to use a blogging platform to communicate (cf. Sundin & Francke, 2009, discussed further below). These examples suggest that IL skills develop, not only through work that seeks to develop them directly, but also incidentally, as a by-product of other learning activities (Badke, 2012; Marsick & Watkins, 2001). In general, it may therefore be said that learning activities set the stage for the information practices that are to follow, where learning activities *prefigure* (enable or constrain) the information practices that are possible in a given context (Kemmis et al., 2014; Lloyd, 2010b).

Examples of information practices that may be prefigured include those identified by McKenzie (2003), which cover a range of everyday information practices, with 'active seeking' being the most autonomous, followed by 'active scanning', 'non-directed monitoring' and lastly and least autonomous, 'by proxy'. For instance, reading a book about a scientific experiment is an example of connecting with information 'by proxy' because it is the teacher who refers the learning material to the students. However, if the teacher wants the students to make a poster which compares different types of related experiments, and then tasks them with finding information on the internet about this, then the students would be engaged in 'active seeking', since they would be actively planning how to obtain the specific information they need (McKenzie, 2003). Hence, the idea that learning activities prefigure certain information practices may be broadened to the idea of how certain pedagogical styles, such as a student-centred learning pedagogy, will prefigure certain information practices. Indeed, other information practices, such as critiquing, collating and presenting information in ways that others may understand (Smith Macklin, 2001), reminiscent of the 'informed learning' approach of Bruce (2008) may also come into play depending on the pedagogical approach taken by the teacher.

The factors that guide the choice of whether to use certain learning activities or information sources over others are not always solely based on pedagogical goals. Other contextual factors are at play which could influence these decisions. These factors can be explained by the theory of practice architectures (Kemmis et al., 2014) - a theoretical lens which sheds light on how the 'bundles' of practices and arrangements (Schatzki, 2010) within an educational setting might prefigure the learning activities and information practices that students perform.

2.2 Practice and practice architecture

A short description of the nature of practice will be helpful in clarifying the meaning of a practice architecture. Schatzki (2005, p. 11) conceives of a practice as consisting of 'arrays of human activity...[which] interweave with ordered constellations of nonhuman entities ... [and are] centrally organized around shared practical understandings.'

Activities are 'temporal-spatial' events (Schatzki, 2010, p. 171), meaning that they occur at some location at a particular time, yet are also 'oriented towards the future and in response to the past.' (Schatzki, 2010, p. 171). Practices are in constant interaction with certain material arrangements in that time and place, such as 'people, artefacts, organisms and things' which interact to create 'practice-arrangement bundles': '[a] practice-arrangement bundle is linked sets of organized doings and sayings that are performed amid...material arrangements.' (Schatzki, 2010, p. 77).

The theory of practice architectures suggests that these arrangements enable or constrain how information practices are conducted. Kemmis et al. (2014, p. 32) distinguish three types of arrangements that comprise a given practice architecture:

1. **Material-economic:** the arrangements concerned with the physical objects related to a practice and which enable or constrain what can be *done*. An example may be the presence of internet connected tablets in a classroom.
2. **Cultural-discursive:** the arrangements that make possible the language and discourse of a practice and enable or constrain what can be *said*. For example, some information sources might contain sensitive content which cannot be used in certain cultural contexts.
3. **Social-political:** the arrangements that lead to the people and objects of a practice being in relationships with one another in certain ways. These arrangements enable or constrain the way people or things *relate* to each other. For example, teacher-centred teaching approaches will foster a certain kind of relationship between teachers and students. One where the teacher may be required to act as a disciplinarian, and the student as an attentive listener.

These three sets of arrangements represent the blueprints which structure the kinds of information practices that occur in a given setting; they define the spaces within which different information modalities (epistemic, social and corporeal: Lloyd, 2010a) are experienced and, thus, IL develops in a rounded manner: 'When we enact IL, we are referencing the realities of a social site, such as the knowledges and ways of knowing (activities and skills) that are valued and legitimised' in that setting (Lloyd, 2017, p. 96).

For example, teachers may be restricted to a lecture style teaching method because of a school policy, such as one that restricts a certain level of noise from being breached. This might oblige students to stay quiet and focus on their teachers to gain information instead of learning from peers, as activities requiring group work would be constrained because of the noise that this would create, which in turn impacts the IL benefits that these group activities might generate. This aspect of the practice architecture, i.e. the noise policy, constrains what learning activities teachers could adopt, and in turn, impacts upon what information activities students could perform.

2.3 Prior studies of IL in schools

While our interest lies specifically with the practices evident in the setting of South Korean elementary schools, there are useful insights to be drawn from some prior studies of other levels of schooling. Sundin and Francke (2009) researched pupils in upper secondary schools using a practice-based approach. They state that:

By practice, we mean various manifestations of repeated activities... For example, the activities of cutting and pasting text segments and rearranging texts can manifest themselves as different information practices: as either plagiarism or artistic practice, depending on the

social meaning of the activities. The relation between tools and practices is not one-directional; just as tools influence practices...tools are also created and attributed meaning as part of people's practices in different communities. (p. 3)

Sundin and Francke (2009) see this 'attribution of meaning' as evident in how their studied learners have reacted to the rise of user-generated online content, particularly Wikipedia. The meaning assigned, by learners, to this (at the time) new informational resource has meant that 'pupils are no longer dependent on carefully selected textbooks or the authoritative collections in the school library' (Sundin & Francke, 2009, p. 2). Yet learners remain aware of the potential deficiencies in Wikipedia, or in other user-generated resources, such as blogs. Sundin and Francke (2009), in this paper and also in Francke and Sundin (2009), describe how teaching and learning practices that expose these pupils to these new and varied sources of information, and require them to work in these different *genres* (see also Whitworth, 2014, p. 9), instead develop a critical understanding of their potential. They adopt these new media within their information practice, and as a result develop critical perspectives on the credibility of other blogs, even those that manifest as 'serious' (Sundin & Francke, 2009, p. 13).

Our study was of the elementary rather than high school setting, but the work of authors such as Scardamalia and Bereiter (2006), using their 'Knowledge Forum' online platform, shows that even children of this young age can engage in knowledge-building dialogue in the classroom, including assessments of where they have gaps in information and knowledge and of whether they are working well as a team to solve a problem. As an example of this, when Lundh and Limberg (2008) observed classes in a Swedish village, they noted that the children were engaged in problem-centred learning. In turn, '...the information seeking process is shaped by the discursive practice[s] of school' (Lundh and Limberg, 2008, p. 92), yet these practices, and the architecture within which they reside, are not necessarily supportive of the information practices – particularly active seeking and scanning (McKenzie, 2003) – that contribute most readily to problem-solving. As Lundh and Limberg (2008) note, the departure point for their study was an earlier work by Davidsson et al. (2007), who showed that the use of ICT tools in Swedish elementary schools was 'surrounded by restrictions for the pupils' as the tools 'seemed to threaten the teachers' and librarians' occupational identities, their authority and control' (p. 92).

These studies are now several years old, and in South Korea, ICTs are used relatively frequently by teachers (Pang et al., 2015), but it remains a pertinent question as to whether the integration of these tools into the Korean elementary classroom has taken place in ways that help develop the necessary broad repertoire of information practices described, and called for, by authors such as McKenzie (2003), Bruce (2008), Whitworth (2020) and others. Resilient aspects of the practice architecture may influence practice in ways similar to those noted by Lundh and Limberg (2008).

For instance, Pang et al. (2015) note the existence of considerable pressure on South Korean teachers, both directly and indirectly, to teach in ways that help direct students to the passing of the college entrance exam: hence, using didactic methods oriented towards rote learning and recall. Studies such as those (in Korean) of Chung et al. (2007) and Song (2015) suggest that the textbook remains a very significant medium of learning in South Korea, albeit aimed at meeting different learning outcomes. Chung et al (2007) note that where United States textbooks are concerned with assisting learners to analyse and interpret information, the emphasis in the Korean textbooks was more on promoting engagement and curiosity. Song (2015) suggests that textbooks help South Korean students with identifying information needs and learning about how to present information, but less so with activities involving active seeking out of information.

2.4 Research aims and questions

Given the lack of research into the information practices of South Korean elementary school students, and elementary schools in general, especially in light of, in recent years, the proliferation of digital media and the changing landscapes of educational settings, our interest in this research was, therefore, to ascertain the kinds of information practices that are currently being taught in elementary schools and whether they are of benefit to students given the fast-changing information context in which they live. In light of the theory of practice architectures, it would be prudent, furthermore, to ascertain how these practices are maintained. An analysis of this, or any other, practice architecture could lead to a better understanding of which of its elements hamper the integration of information practices into everyday lessons, and how currently used pedagogies and information sources could be modified to expose learners to a diverse array of information practices.

To achieve these aims, knowledge of the kinds of learning activities and information practices that currently take place in schools is required. Furthermore, data relating to the nature of the practice architecture would assist in clarifying the relationship between these two points of departure. Hence the following research questions guided this research:

1. What learning activities are common in South Korean elementary schools?
2. How do learning activities, and their corresponding practice architectures, shape the information practices of students in South Korean elementary schools?

3. Methodology

This study followed an *exploratory sequential mixed design* (Creswell, 2009; Teddlie & Tashakkori, 2006). Sequential mixed designs can be used to explore an unknown context through an initial qualitative data collection phase, followed by a quantitative data collection phase 'to assist in the interpretation of the qualitative findings' (Creswell, 2009, p. 211) and to generalise qualitative findings (Morgan, 1998, as cited in Creswell, 2009, p. 211). The first stage aimed to collect qualitative data about learning activities, practice architectures and information practices through interviews of South Korean elementary school teachers. This data was used to:

- (a) generate explanatory findings and
- (b) to inform the design of the second stage of the research, an online quantitative questionnaire.

This was used to generalise the initial findings from the qualitative phase and to determine the distribution (Morse, 1986, as cited in Creswell, 2009) of different kinds of learning activities that are used by South Korean elementary school teachers as well as to ascertain to what extent elements of the practice architecture influence the practices of teachers and students. Each stage will be discussed in detail below.

3.1 Data collection and analysis

3.1.1 Interviews

The interviews served two main aims: (1) to obtain data to generate explanatory findings, and (2) to inform the design of the questionnaire. A semi-structured interview schedule which took on a conversational form was utilised. Initially, 'Grand tour' (Spradley, 1979 as cited in McCracken, 1988) question types were planned for to give interviewees conversational freedom, but during the interviews a more structured approach, where the researcher guided the interviewee along certain conversational pathways began to take form due to there being a language barrier between the researcher and interviewees.

Participants.

A total of 7 individuals were interviewed. The initial interviews were conducted with a native English elementary school teacher and an after school Korean English elementary teacher. Later interviews were conducted with four teachers from the same Korean elementary school over a period of 2 weeks. Then finally, a final interview was conducted with a Korean English elementary school teacher. Three interviews were excluded from the data set, the initial two interviews were excluded because those interviewees did not work under the same conditions as a typical elementary school teacher and because this research attempted to describe a typical Korean class, including these interviewees may have added atypical variables into the data. The final interview was excluded because this teacher worked in a private school, and so it was felt that he worked under different conditions to a typical Korean teacher. The findings should therefore be considered applicable to the South Korean public elementary schools only.

3.1.2 Analysis of the interview data for constructing the questionnaire

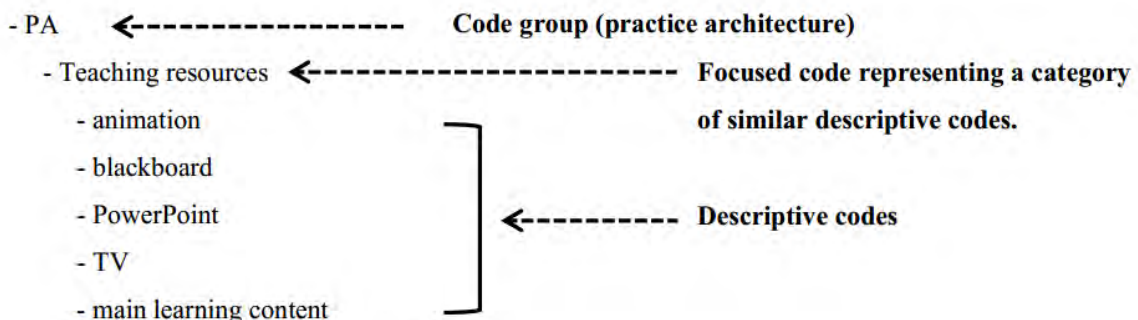
Primary and secondary coding cycles were performed to analyse the data and were largely based on the theory and terminology found in Saldana (2009) and Tracy (2013). For the primary coding cycle, a two-pronged coding approach was undertaken where descriptive codes were used to represent elements of the practice architecture, while process codes were used to represent learning activities. Descriptive codes, in the case of this research, help to index what elements of the practice architecture are present in the data (Saldana, 2009, p. 70). Process codes, on the other hand, are often signified by their ending with 'ing' to indicate that they represent an ongoing activity such as a learning activity (p. 77). Data for this code must be deemed to be a learning activity, which may or may not have been a consequence of a teacher's instructions. An example of how the data was coded is found in table 3.1 below.

Table 3.1: Example of process and descriptive codes from an interview transcript.

Data	Code
<p>Kyle: Sometimes I teach them how to make PPT, and find the information from the internet¹ because they don't know how to find information from the Internet².</p>	<p>¹LA – searching for information ²PA – student knowledge</p>
<p><u>Note.</u> 'LA' represents the 'learning activity' group. 'Searching for information,' is a process code that represents the kind of activity taking place. 'PA' signifies the 'practice architecture' group and 'student knowledge' is a descriptive code that represents the element of the practice architecture represented in the data.</p>	

After this, the second coding cycle adhered to a *focussed* coding approach which involves grouping, firstly, the descriptive 'practice architecture' codes based on a common theme, and then grouping the process 'learning activity' codes based on a common theme as well (Saldana, 2009, p. 155). An example relating to the practice architecture group is shown in figure 3.1.

Figure 3.1: Example of coding scheme.



Grouping descriptive and process codes by a common theme resulted in the list of categories found in table 3.2, each of which formed the basis of Likert type items for the questionnaire. For example, the ‘content’ category, representing a practice architecture, formed the basis of a Likert questionnaire item which asked respondents to indicate how strongly they agree or disagree with the following statement: ‘this year, textbook content has limited me in preparing useful learning activities.’ Similarly, the ‘student centred’ category, representing a student-centred learning activity, formed the basis of a Likert item which asked respondents to indicate how often their students have performed a student-centred activity like pair/group work over the last year.

The interview data was analysed and coded further to generate findings that examined how learning activities and practice architectures shape the information practices of students. Throughout the analysis, theoretical notes, hunches and reflections were made to trigger and retain ideas as per Strauss’s and Tracy’s recommendations (1987 as cited in Lune & Berg, 2017; Tracy, 2013). This part of the analysis was iterative in nature, and, in a similar fashion to the initial coding cycles, was partly grounded in pertinent literature such as the theory of practice architectures and the relation it has to learning activities and information practices (Tracy, 2013).

Table 3.2: Categories signifying elements of the practice architecture and learning activities identified in the interview transcripts.

	Focussed code	Descriptive Code example	Interview extract
Practice architecture	Teaching community	Colleagues’ classes	‘Korean teachers have to do open class two times in one year. So, at that time I can observe their class, other teachers' class. And I can get a good source.’ (Kevin)
	Content	Lesson consistency	Researcher: So, one chapter, how do you teach one chapter? Lesson plan. Is it the same every chapter? Barry: Not especially different.
	Parents	Textbook obligation	Researcher: Must you teach with the textbook? Kyle: Not must, but teachers and many parents think textbook is a must.
	Pedagogy	Learning goal	Researcher: So, what is the science goal and what is the math goal? Kyle: Maths goal is learning what the signs of maths are. But science is thinking, I teach thinking power.
	Scheduling and sequencing	Time to teach	Researcher: So, must you teach the entire textbook in one year? Kyle: It's a lot of work to do. If we run out of time we just teach it really fast.
	Student characteristics	Student knowledge	There is acting, they know, do experiment, they know, but concept and knowledge, they don't know. (Richard)
	School	School meetings	Especially this school. The school has many meetings. Monday, Thursday, Friday and Wednesday is physical exercise day. (Kevin)
	Superior to school	Government stipulation	Governments [say to] all schools ‘...you must not reduce PE or art [and] music.’ (Barry)

	Teacher characteristics	Teacher goals	So, I want [the students] to make a very very good relationship with me so that we can communicate better, it has many benefits. (Kevin)
	Teaching resources	Online resources	If I need more, extra information I search online and show to the students. (Kevin)
	Textbook	Textbook content	Researcher: When they do experiment they write? Richard: Yes, in the extra student workbook. There are 2 books, one is main book, the other is students book.
	Time	Lack of time	Well, I think the biggest problem is that Korean teachers are very busy, we don't have much time to think about what I want to teach tomorrow. (Kevin)
Learning activities	Accessing information	Finding information within sources	Sometimes I teach them how to make PPT, and find the information from the Internet... (Kyle)
	Complex activities	Doing a quiz	Richard: Question or quiz. Researcher: How do you make quiz? Richard: PPT, PowerPoint, or ah, one person, write on the white board, those small ones.
	Information seeking	Students using the internet	Kevin: I give a chance to, limited use of their smartphone. Researcher: Ah, so what can they do, on the Internet? Kevin: yes. Only search, search for information.
	Information scanning	Students listening to teacher	Researcher: Ah so they listen to you and do worksheet and then next question they listen. Kyle: and listen and sometimes find in the textbook and sometimes listen sometimes show on the PPT. They like the PPT.
	Information by proxy	Going through the textbook	Researcher: I wonder when you, you said they look at the picture in the book, so I wonder how do you make them look in the book. Do you say just say 'open the book page 90' or do you say 'open the book to the next chapter.' Kyle: no page and 'what you see?' 'Why do they look happy?'... Interaction. This is first time first chapter.
	Specific activities	Showing online content to students	...if I need more, extra information I search online and show to the students. (Kevin)
	Student centred	Students doing group work	Researcher: And students are sitting together in group. Richard: Always in group.
	Teacher centred	Teacher presentation	Researcher: I wonder how you, how do you teach the Internet how to search, what do you do. Kyle: [as if explaining to students] if you find the information you first turn on the Internet, find Internet Explorer icon and double-click. And then you can see searching engine for example Google
	Textbook centred	Going through the textbook	...so when I teach math to all students I just follow the textbook (Kevin)

3.1.3 Questionnaire

The aim for the questionnaire was to obtain data that would, through descriptive statistical analysis, ascertain:

1. The extent to which the practice architectures identified in the interviews were felt to limit teachers in the population.
2. The frequency by which certain information sources are used by students.
3. The frequency by which certain learning activities were performed by students.

The questionnaire was piloted and revised to avoid dissemination problems and to ensure that it did not capture inappropriate data (Bell, 2005; Floyd, 1995). An outline of the question types may be found in table 3.3.

Sections 3 and 4 of the questionnaire were based on data derived from the interviews (see table 3.2). Section 5 was based on typical information sources found in classrooms such as textbooks, other students, teacher presentations, the internet, etc., and was partly informed by the interview data, partly by the research literature, and partly by the researcher's knowledge of the setting.

Table 3.3: Overall structure of the online questionnaire.

	Section	Question types
1.	Participant information page	N/A
2.	Personal Information	5 category items; 2 list items
3.	Practice architectures	15 Likert items
4.	Learning activities	19 Likert items; 1 open qualitative question
5.	Information sources	16 Likert items; 1 open qualitative question
6.	Final remarks	1 open qualitative question

Participants. Non-probability convenience sampling was used to obtain a sample of grade 3, 4, 5, and 6 homeroom teachers. An online questionnaire was distributed through the online National Education Information System (NEIS) of the Korean government. An online message with a link to the questionnaire was sent to all teachers in 486 of the 502 schools in the Gyeongsangnam province of South Korea. The questionnaire received responses for 2 weeks, after which it was closed. In this time 627 (403 female, 224 male) out of a potential of between 8816 to 13423 questionnaires were returned, generating a response rate of between 4.7% and 7.1%.

Data from all teachers who responded, except homeroom teachers of grades 3, 4, 5, and 6, were excluded, leaving a total of 314 respondents. Homeroom teachers were selected because they spend most of the time with the students in any given school day. Teachers from grades 1 and 2 were excluded because they work under a different curriculum to Grade 3, 4, 5, and 6 teachers.

3.2 Limitations

Some limitations of this methodology should be borne in mind. Firstly, the interviews being conducted in English with second language speakers of English limited in some way the detail that the interviewees were able to respond with. This language barrier issue could also have influenced the questionnaire, which was translated from English to Korean. Questions that include more nuanced meanings may not have been captured completely through the translation process. Secondly, the interviewees were all known to the researcher, which may have had an influence over how they responded to interview questions. Thirdly, no direct observations of actual classes or students took place. Therefore, all the data is based on the recollection of teachers. This also implies that no direct observations of actual information practices took place, these had to be inferred from the learning activities that the teacher recollected.

The implications of these limitations are that the learning activities, elements of the architecture, and the information practices of the students as they occur in the setting cannot be assumed to be entirely contained within the dataset that was collected through the interviews and questionnaire. Questions of internal, external and ecological validity (Bryman, 2012) may be asked. However, the mixed methods approach taken in this research does mitigate these limitations since data from each approach appear to confirm the findings/results of the other to a certain degree. Further research would nonetheless help to clarify and confirm some of the findings/results contained herein.

4 Findings/Results and Discussion

Findings from the qualitative data were categorised into the three overarching themes as stipulated by the theoretical approach utilised in this research. They are learning activities, the practice architecture and fostered information practices. The findings presented here serve to indicate the relationship between the learning activities and the practice architecture in this setting. Due to the complex nature of their interaction, learning activities and the practice architecture will be discussed in conjunction and will lead to a specific discussion of an element of the architecture that was identified to be highly influential in prefiguring the information practices of students in this setting, i.e. the textbook.

4.1 Common learning activities from interview data

Uncovering elements of the practice architecture that underpin the learning activities was firstly a matter of identifying the learning activities in the interview transcripts, and secondly, inferring what the necessary requirements were for these activities to take place. By focussing on the learning activities, avenues were opened where the conditions for their possibility (Kemmis et al., 2014, p. 34) could be further explored. One such interaction between researcher and an interviewee, Kevin, reveals the nature of this approach and shows a typical teacher-centred approach:

Researcher: *What is your normal teaching plan every chapter?*

Kevin: *...I usually follow the textbook.*

Researcher: *So, the textbook guides, teacher's book, do you use those?*

Kevin: *Sometimes.*

Researcher: *So, do you follow the student's book?*

Kevin: *Yes, and also, CD, and online stuff.*

Researcher: *[Looking in a student's textbook] So...you start here, so the first page there is a picture, and what do you do?*

Kevin: *I explain the lesson, what will we learn from this chapter and then, there is the sub-aim, I talk about that. Because the textbook, I think it's very good.*

Researcher: So, you use that, and you just go through and you follow and use the online materials and CD?

Kevin: If I need extra information, I search online and show to the students.

Researcher: The interaction between you and the students, you are in the front talking and so for example 'go to page 10.'

Kevin: Basically.

Researcher: So, do you ask the students questions? And things like that?

Kevin: Yes, but, sometimes I make small groups and they talk to each other about the subject and then I check the result. That's up to the subject...

Researcher: So, this kind of style is for every subject?

Kevin: Basically yes.

Kevin explaining the aims and going through some of the learning content of his lesson to his students is one form of a 'teacher presentation' learning activity. According to Kevin, their purpose may be (1) to motivate student interest in the topic, or (2) to introduce the topic of the lesson. This activity may also provide learners with instructional information or information directly related to curricular content. A further example of this activity is described by Kyle, highlighting the motivational and introductory functions of this activity:

Researcher: What will you do first?

Kyle: First is motivation.

Researcher: Motivation how?

Kyle: Motivation sometimes, movie, sometimes show the picture. And then, I make PPT every time.

Researcher: You talk and show PPT, and you talk and show next slide. Like that.

Kyle: Yes. First motivation to give big picture and then smaller and smaller and smaller [meaning going from a broad outline of a topic toward more detail.]

For this activity, the presentation of information is important. Material-economic architectural elements are therefore required to ensure that such a presentation can occur. Such elements may include a blackboard, a classroom TV, an internet connection, a textbook, or any other information presentation artefact, with the key information source for this lesson being the textbook. Furthermore, students must be seated in desks arranged so that they are able to clearly view any presented information. Hence, the students, teacher, and information presentation artefacts are spatially related in such a way that the students' attention is guided toward the front of the class where the teacher is, as is typical in many classrooms around the world.

It may be assumed that on some occasions pair/group activities follow on from some form of a teacher presentation activity. The seating arrangement described above can be modified slightly by re-arranging the classroom desks into groups. Barry, whose classroom is arranged this way, describes a lesson of his that transitions from a teacher presentation to a group discussion activity:

Researcher: Can you tell me what you do first? Every chapter?

Barry: For example. I say to the students see the movie, video, or look at this picture and guess what our goal in this chapter is...So then quickly see these pages and mark what you don't know.

Researcher: Can students talk to each other or...

Barry: [Only] [a]fter the reading...Step one guess and step two, read...Then share their feeling [i.e. discuss the reading]...in groups of three...I think it's very important to guess what they will read.

Barry's lesson illustrates how information sources and a variety of learning activities operate in combination. Having students seated in groups gives everyone simultaneous access to any presented information while also making pair/group activities possible. Group activities were found to be a relatively frequent set of activities which students perform during lessons. However, qualitative data seemed to indicate that these activities were mainly centred on the textbook and did not appear to encourage students to create their own knowledge in the form of any tangible artefacts; an important information practice (Warmkessel & McCade, 1997).

A final individual learning activity of a typical lesson that appears to be fairly common is described by Barry:

Barry: ...I think its very important to guess what they will read.

Researcher: They talk together about the reading. Ah that's interesting. And then what happens?

Barry: Then answer the question. In the book - individual. Then check together as a class

This individual work that, in this case, comes near the end of the lesson also involves use of the textbook, adding additional evidence that the textbook has a central role as an information resource in this setting.

4.2 Questionnaire Results

Results of (1) how limiting elements of the architecture were for teachers, and which (2) learning activities and (3) information sources were most used by teachers in elementary schools are presented below. These were used to generalise findings from the interviews and, to identify any discontinuities, the results were also compared with the interview findings.

4.2.1 Practice architecture

Teachers' responses to how limiting, or constraining, each architectural element is in preparing lessons is summarised in table 4.1. Each item in the table represents an element of the architecture that was identified through coding of the qualitative data. The questionnaire allowed for 5 responses to each element, but for analysis these were collapsed into 3 – low, neutral and high. For instance, 51% of the sampled teachers agreed that 'time constraints' limited them in their lesson preparation activities. 'Time constraints' would therefore be regarded as something that shapes the lessons that they prepare, or in the case of this research, as an element of the practice architecture. This question is significant as it suggests one reason why the textbook remains central to information practice in the South Korean setting, as noted in the discussion to follow.

Table 4.1: Frequency of responses grouped by perceived limitation of each element

Element of Architecture	Low limitation		Neutral		High limitation	
	n	%f	n	%f	n	%f
Time constraints	85	(27)	70	(22)	159	(51)
Administration work	118	(38)	59	(19)	137	(44)
Student motivation	163	(52)	55	(18)	96	(31)
School infrastructure	150	(48)	76	(24)	88	(28)
Student learning ability	162	(51)	62	(24)	90	(26)
Textbook learning goals	159	(51)	74	(24)	81	(26)
School resources	157	(50)	79	(25)	78	(25)
Lesson preparation skills	177	(56)	72	(23)	65	(21)
Textbook content	176	(56)	78	(25)	60	(19)
Students' parents	272	(87)	22	(7)	20	(6)
Colleagues	257	(81)	38	(12)	19	(6)

Nine of the eleven architectural elements had 'low limitation' as the most frequent response out of the available 3, with 'colleagues' and 'students' parents' having the highest number of low limitation responses out of all eleven elements. The only two elements out of the eleven which garnered the 'high limitation' option most frequently were 'time constraints' and 'administrative work.' These results are interesting considering that most responses indicated a low limitation, meaning that teachers were largely not feeling limited in their lesson preparation activities by the context in which they work; but lack of time was an identifiable factor when it comes to teachers feeling enabled to prepare lessons that might develop student information practices in ways other than by proxy (that is, through the textbook).

4.2.2 Learning Activities

Results of the frequency by which teachers engage their students in the presented learning activities are summarised in table 4.2. Again, the questionnaire allowed for 5 responses to each learning activity, but for the purposes of analysis these were collapsed into 3 – rarely, sometimes and often.

Table 4.2: Frequency of responses grouped by frequency of engaging in learning activities.

Learning activity	Rarely		Sometimes		Often	
	n	%f	n	%f	n	%f
Teacher shows students where to find information.	10	(3)	44	(14)	260	(83)
Students engage in pair/group work.	7	(2)	49	(16)	258	(82)
Teacher teaching for 20 minutes or more.	21	(7)	70	(22)	223	(71)
Teacher presents online content.	28	(9)	63	(20)	223	(71)
Students make presentations or live performances.	18	(6)	85	(27)	211	(67)
Students find information from textbooks or worksheets.	17	(5)	89	(28)	208	(66)
Students reflect on their work.	33	(11)	78	(25)	203	(65)
Students perform pair/group projects.	30	(10)	89	(28)	195	(62)
Students use electronic devices to access information.	74	(24)	92	(29)	148	(47)
Students find information themselves.	39	(12)	128	(41)	147	(41)
Students evaluate each other's work.	47	(15)	130	(41)	137	(44)
Students perform individual projects.	84	(27)	107	(34)	123	(39)
Students used digital technologies to make presentations.	114	(36)	94	(30)	106	(34)
Teacher teaches with own teaching materials.	57	(18)	156	(50)	101	(32)
Students work individually through textbooks.	116	(37)	101	(32)	97	(31)
Students go to library to find information.	104	(33)	133	(42)	77	(25)
Students used digital technologies to evaluate other students' work.	164	(52)	81	(26)	69	(22)
Students used digital technologies to reflect on learning.	179	(57)	73	(23)	62	(20)
Teacher presents textbook CD material.	168	(54)	90	(29)	56	(18)

Findings suggest that teacher directed as well as pair/group activities are a common occurrence, in line with qualitative data analysis findings. Interestingly, a teacher using their own teaching materials in their lessons, while not exceedingly rare, nonetheless does not occur very often, implying that teachers make use of either curriculum content or other content created by private companies in their lessons. This confirms qualitative data findings as well.

4.2.3 Information Sources

Results of the frequency by which students obtain information from the listed information sources are presented in table 4.3. The questionnaire allowed for 5 responses to each learning activity, but for the purposes of analysis these were collapsed into 3 – rarely, sometimes and often.

Table 4.3: Frequency of responses grouped by frequency by which students obtain information

Information Source	Rarely		Sometimes		Often	
	n	%f	n	%f	n	%f
Teacher presentation	9	(3)	31	(10)	274	(87)
Textbook	6	(2)	36	(12)	272	(87)
Internet	14	(5)	66	(21)	234	(75)
Other students	24	(8)	91	(29)	199	(63)
Online textbook content	71	(23)	63	(20)	180	(57)
Worksheet	42	(13)	108	(34)	164	(52)
Realia	41	(13)	129	(41)	144	(46)
Student notebook	91	(29)	88	(28)	135	(43)
Music	50	(16)	135	(43)	129	(41)
Videos	73	(23)	124	(40)	117	(37)
Library	97	(31)	153	(49)	64	(20)
Textbook CD	179	(57)	79	(25)	56	(18)
Practice book	189	(60)	71	(23)	54	(17)
Extra-curricular materials	149	(48)	112	(36)	53	(17)
Information handout	142	(45)	123	(39)	49	(16)
Textbook present through tablet	266	(85)	36	(12)	12	(4)

Results indicate that students utilise teacher presentations, textbooks and the internet as their primary information sources. The internet as an information source could be teacher or student driven. If teacher driven, then it could be in the form of a teacher presentation. If student driven, then it could be in the form of students utilising tablets or smartphones to complete activities. Other students also appear to be a relatively frequent information source, bolstering the result that pair/group work learning activities are a somewhat frequent occurrence. Each of these results confirm findings from the qualitative data analysis.

An important finding from this research was that the internet was used as an information source by students according to 75% (n =234) of the teachers who participated in the questionnaire. Furthermore, it was found that students ‘often’ use electronic devices to access information according to 47% (n = 148) of teachers surveyed. This is a high number given what has been previously discussed and may indicate that students are indeed being exposed to other information sources found on the internet. However, it is unknown whether it was the teacher displaying this kind of information to students, or whether students were accessing it themselves. Adding more nuance to this situation was the finding that teachers ‘often’ show students where to obtain information 83% (n = 260) suggesting that teachers exert a certain amount of control over the kinds of information sources students are able to use. Further research could attempt to clarify these results as they are counter to the general thrust of this paper.

4.3 The textbook as a foundational element of the practice architecture

The South Korean Ministry of Education and Human Resources (2008, p. iv) mentioned five guidelines related to the implementation of its educational system, two of which are pertinent to this research: (1) it intends to build a ‘curriculum-centred school education system,’ and (2) ‘it is student-centred and aims to facilitate student autonomy and creativity.’ Such objectives form part of the broad practice architecture which sets the stage from which teachers will eventually draw for planning lessons. What the above makes clear is that curricular content is prioritised

and may therefore be regarded as a form of 'sanctioned knowledge' of this educational setting (Lloyd, 2010a).

Data from the questionnaire shows that 51% (n = 159) and 44% (n = 137) of teachers believed that time constraints and administrative work limited them in their preparation of lessons, respectively. This would suggest that lesson preparation time, for some teachers, is somewhat limited, and may foster a preference for them to use premade learning content such as textbooks. This scenario is summed up well by Kevin:

Kevin: I think the biggest problem is that Korean teachers are very busy, we don't have much time to think about what I want to teach tomorrow. Lesson planning, every teacher after school they have to do their... administrative work. That is the most difficult thing, so, at the beginning of this interview I said I followed the textbook, I think that's why I follow the textbook. There's no time to make my own lessons...

In addition to this, a low number of teachers (19%, n = 60) said that textbook content limited them when planning lessons, and 32% (n = 101) of teachers said that they often teach with their own teaching materials. These findings indicate that teachers may not have an aversion to using the textbook for lesson preparation and may prefer to use it over making their own learning materials. Periodic assessments, such as examinations, are based on the textbook too, and if one further considers that a low 17% and 20% of teachers said that their students 'often' use (1) extra-curricular content' or (2) the library, respectively; or, again, the result that 87% (n = 272) of the sampled teachers said that students use the textbook as an information source when completing learning activities, one may feel confident in the notion that the textbook, at the very least, must be a central information source for teachers and students in Korean elementary schools. This is in accordance with the educational goals of the South Korean Ministry of education mentioned earlier, and means that the textbook, as an information source for students and teachers, is an integral part of the practice architecture.

4.4 Some effects of the practice architecture on information seeking and scanning practices

Because teachers, students and most prominently textbooks are often-used information sources, they play a larger role in the IL development of students over other information sources. Their use enhances the students' ability to utilise textbooks or witness others using them in efficient ways, but this comes at the cost of developing skills in the use of other information sources, such as the internet or library. What is, therefore, being negated by the overuse of teachers, students and textbooks as primary information sources is the opportunity for students to develop a greater variety of information practices, and more precisely, the information seeking and scanning practices reported by McKenzie (2003). Moreover, teacher presentations and textbook based pair and group activities are not necessarily suited to information seeking and scanning practices since such practices may yield information that lies outside the purview of the designated curriculum.

The typical South Korean classroom practice architecture described in the previous section (including the seating arrangements, blackboard, television, teacher position, etc), is *biased toward the presentation of information*. Much of the information students require to complete their learning activities is directly accessible in their immediate environment and may mean that students do not encounter many obstacles when attempting to obtain information to complete learning activities. Indeed, such an arrangement of having the information necessary for completing learning activities easily available means that there is no need for students to search for and inscribe new information into their learning spaces. Thus, the practice architecture found in these elementary schools is not supportive of information seeking and scanning practices, a similar outcome to that found by Davidsson et al. (2007), although involving a different set of

architectural factors. The practice architecture in this setting therefore prevents students from exploring different informational genres, and, in accordance with the findings of Francke and Sundin (2009), students are therefore not likely to develop a critical understanding of the strengths and weakness that various information sources have to offer.

Without information practices such as the seeking and scanning practices of McKenzie (2003), new information does not enter student learning spaces and it is in this sense that the information sources that surround South Korean students are not guided by the students but have been curated for them, designed by teachers to cater to the informational needs of a given learning activity and curricula content. This may lead students to engage in information practices that are passive in nature, which deal with easily consumable information sources, as opposed to information sources that, without proper IL development, may be difficult for novices to use effectively.

The following aspects of IL development are therefore hampered:

1. Learning to distinguish between information sources that are useful from those that are not.
2. Collating information from different information sources.
3. Learning to access information from various sources.
4. Scrutinising the origins of informational sources.
5. Comparing information from different authors.
6. Gaining sight of a diverse set of views on a particular topic.

4.5 Some effects of the practice architecture on information transformation practices

Information practices that change information into other forms may be considered information *transformation* practices. For instance, a student may use sources such as their textbooks, teacher or other students as a foundation from which to create something new. A representative learning activity of such a practice was identified in one of Richard's classes, where students were required to make presentations or engage in live performances such as plays. Activities of this nature occurred often according to 67% (n = 211) of the sampled teachers. Richard describes how such a group activity might run in the extract below:

Richard: *Then group make group play. Acting about science. That is the day's learning.*

Researcher: *Before the play, what do they do? How many people in one group?*

Richard: *3, 4, or 5. They do discussion and they make script. And another group watches them...they watch each other. Other groups judge, is their idea bad, incorrect? Other students give feedback.*

This sequence of activities includes information practices that lead to the creation of a script and its presentation in the form of a play, and as such, is a more complex activity than the group/pair discussion activities discussed earlier. An important element of this kind of activity is that information has not only been consumed, like in the teacher presentations, but has also been *transformed* in one way or another. Such a transformation, by its nature, requires information practices of some form to take place.

Information transformation practices like these do not have additional architectural requirements, i.e. they may be performed as the architecture currently stands. However, Richard mentions a critical problem associated with creating these kinds of lessons, i.e. students may obtain low scores for tests because by doing these activities, what students learn may not reflect in their test scores. Such activities do not directly cater to the testing environment found in elementary schools. This is explained by Richard below and points to an important element of the architecture in elementary schools that may hinder any attempts by other teachers to develop a wider array of information transformation practices in their students.

Researcher: *Do you have any frustration?*

Richard: *Two reason. First, experiment and play and flipped learning effective but all students don't do.*

Researcher: *How many?*

Richard: *20% don't do. And. ...All students it's difficult to their knowledge, they have learn, knowledge is difficult...if we do test, many students don't know. Just knowledge, they don't learn...There is acting, they know, do experiment, they know, but concept and knowledge, they don't know. Test score are poor.*

Perhaps, at times, not all students will learn the necessary content that the curriculum deems important. This scenario, however, does not apply in the case where lessons are based strictly on the curriculum since such lessons are specifically designed to cover all the necessary content. Thus, a situation arises where pedagogies and curricular content that deliver the goals of the school's assessment and curricular system are sanctioned. Such an outcome suggests that pedagogies which, as mentioned in the previous section, foster (1) information seeking practices (which might introduce unsanctioned information into the learning environment) or (2) information transformation practices (which may not cover all the necessary information), may not appeal to South Korean teachers because they clash with the assessment and curricular aspects of the architecture as it currently stands.

4.6 Summary of findings

A summary of the most salient findings of this research follows. The practice architecture of this setting appears to favour teacher directed and pair/group learning activities that are underpinned by the textbook. The textbook is favoured, thus limiting, to a certain degree, the development of skills in the use of other information sources. Such a configuration fosters a learning environment where the information required to complete learning activities is available by proxy, openly presented and ready to hand, thus rendering information seeking and scanning practices unnecessary. Information transformation practices however, while being highly dependent on the nature of the practice architecture, can nevertheless go on in their various forms.

5. Conclusion

One goal of this research was to identify a way to integrate IL development into the everyday classes of South Korean students. Such an aim might better prepare them for a world with an ever-increasing quantity of new information. Information transformation practices may be an avenue to explore in terms of IL development, since they do not have any new architectural requirements (although, they do depend heavily on the given architecture). However, these are limited to a certain extent in that they may yield lessons which might not cater to the assessment and evaluative needs of the Korean education system. Nevertheless, with modifications they may be able to suit such a system. Information seeking practices, on the other hand, could be argued to hold the key to true IL development since they are the appropriate tool to deal with the abundance of information available in society today. These practices lead to the development of a critical eye which students can use to filter out the

profusion of information they receive. While the information transformation practices develop the ability for students to spread information to their peers, without appropriate information seeking practices, the information that is spread may not be of a high quality and may instead accelerate the creation and propagation of information which has little value.

Our research suggests that South Korean elementary school students are generally exposed to IL practices that are engaging and frequently contain elements of information transformation. However, they are also limited in terms of the sources of information used, with a persistent focus on the textbook, in its traditional paper format, although there is some sign that the internet is being increasingly used. This textbook focus is driven by elements of the practice architecture that include expectations about the assessment regime students will face in future life, and a lack of time for the teachers to develop new approaches. In McKenzie's (2003) terms, connecting with information by proxy thereby remains the dominant mode of information practice in this setting.

Further research could also be directed toward understanding the true nature of the textbooks used in Korean elementary schools and what information practices they foster. For instance, there is data to suggest that textbooks are structured differently from one subject to the next. Each subject may therefore foster a different set of information practices.

References

- Badke, W. B. (2012). *Teaching research processes: The faculty role in the development of skilled student researchers*. Chandos.
- Bell, J. (2005). *Doing your research project* (4th ed.). Open University Press.
- Bruce, C. S. (2008). *Informed learning*. Association of College and Research Libraries/American Library Association.
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford University Press.
- Chung, C. D., Oh, H. S., Choi, J. S., & Kang, K. H. (2007). [A comparative study on illustrations of science textbooks in Korean and American elementary schools-focus on biology section of 3rd-6th grades](#). *Journal of the Korean association for science education*, 27(7), 639–644.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed approaches* (3rd ed.). Sage Publications.
- Davidsson, B., L. Limberg, A. Lundh, and L. Tyrén. 2007. [Informationssökningsomdiskursivoch social praktiki de yngstaskolbarnens rum för lärande](#). [Information seeking as a discursive and social practice in the learning rooms of young school children.] *HumanIT* 9(2): 76–133.
- Francke, H. & Sundin, O. (2009). [Format agnostics or format believers? How students in high school use genre to assess credibility](#). *Proceedings of the ASIS & T Annual Meeting*, 46, (Poster session 2), Poster 13. **Error! Hyperlink reference not valid.**
- Floyd, J. F. (1995). *Improving survey question: Design and evaluation*. Sage Publications.
- Kemmis, S., Wilkinson, J., Edwards-Groves, C., Hardy, I., Grootenboer, P. & Bristol, L. (2014). *Changing practices, Changing education*. Springer.
- Kim, E. M., & Yang, S. (2016). [Internet literacy and digital natives' civic engagement: Internet skill literacy or Internet information literacy?](#) *Journal of Youth Studies*, 19(4), 438–456.

- Lloyd, A. (2010a). *Information literacy landscapes*. Chandos Publishing.
- Lloyd, A. (2010b). [Framing information literacy as information practice: Site ontology and practice theory](#). *Journal of Documentation*, 66(2), 245–258.
- Lloyd, A. (2017). [Information literacy and literacies of information: A mid-range theory and model](#). *Journal of Information Literacy*, 11(1), 91–105.
- Lundh, A. & Limberg, L. (2008). [Information practices in elementary school](#). *Libri* 58, 92–101.
- Lune, H. & Berg, B. L. (2017). *Qualitative research methods for the social sciences* (9th ed.). Pearson Education.
- Marsick, V. J. & Watkins, K. E. (2001). [Informal and incidental learning](#). *New directions for adult and continuing education*, 89, 25–34.
- McCracken, G. (1988). *The long interview: qualitative research methods* (Vol 13). Sage Publications.
- McKenzie, P. (2003). [A model of information practices in accounts of everyday-life information seeking](#). *Journal of Documentation*, 59(1), 19–40.
- Park, M. K., & Lee, J. W. (2011). [Investigation on the status of information literacy instruction in school libraries](#). *Journal of the Korean BIBLIA Society for library and Information Science*, 22(4), 133-144.
- Pang, S., Reinking, D., Hutchison, A., & Ramey, D. (2015). [South Korean teachers' perceptions of integrating information and communication technologies into literacy instruction](#). *Education Research International*, 2015.
- Saldana, J. (2009). *The coding manual for qualitative researchers*. Sage Publications.
- Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 97–115). Cambridge University Press.
- Schatzki, T. (2005). [The practice turn in contemporary theory](#). Taylor & Francis e-library.
- Schatzki, T. (2010). *The timespace of human activity: On performance, society, and history as indeterminate teleological events*. Lexington Books.
- Shin, W. S. (2015). [Teachers' use of technology and its influencing factors in Korean elementary schools](#). *Technology, Pedagogy and Education*, 24(4), 461–476.
- Smith Macklin, A. (2001). [Integrating information literacy using problem-based learning](#). *Reference Services Review*, 29(4), 306–314.
- Song, G. H. (2015). [An analysis of elements of the information literacy process within common inquiry tasks of textbooks in Korean middle schools social studies](#). *Journal of the Korean Society for Library and Information Science*, 49(3), 233–252.
- South Korean Ministry of Education (MOE). (2008). [The school curriculum of the Republic of Korea](#).

Sundin, O., & Francke, H. (2009). [In search of credibility: Pupils' information practices in learning environments](#). *Information Research*, 14(4).

Teddlie, C., & Tashakkore, A. (2006). [A general typology of research designs featuring mixed methods](#). *Research in the Schools*, 13(1), 12–28.

Tracy, S. J. (2013). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.

Warmkessel, M. M. & McCade, J. M. (1997). [Integrating information literacy into the curriculum](#). *Research Strategies*, 15(2), 80–88.

Whitworth, A. (2014). *Radical information literacy: Reclaiming the political heart of the IL movement*. Chandos.

Whitworth, A. (2020). *Mapping information landscapes: New methods for exploring the development and teaching of information literacy*. Facet.