'It Trains Your Brain': Student Reflections on Using the Guided Inquiry Design Process

By Kasey Garrison and Lee FitzGerald

The purpose of the research described in this article was to observe students in their first and second use of the Guided Inquiry Design process as they explored curriculum topics in Year 7 History and Geography. Guided Inquiry (GI) may be defined as 'a way of teaching and learning that changes the culture of the school into that of a collaborative inquiry community' (Kuhlthau, Maniotes & Caspari, 2015, p. 3). It originates from Carol Kuhlthau's research model the Information Search Process (ISP), on which she and collaborators have published extensively (Kuhlthau, 1985; 1987; 1988a; 1988b; 1989a; 1989b; 1991; 1993; 1994; Kuhlthau, Heinstrom & Todd, 2008; Kuhlthau, Turrock, George, & Belvin, 1990). Publications from Kuhlthau (2004) and Kuhlthau, Maniotes and Caspari (2007) saw the beginnings of an emerging pedagogy, with further publications (Kuhlthau, Maniotes & Caspari, 2012; 2015) making explicit a practical model of the ISP: the Guided Inquiry Design process (GID).

The GID mirrors the steps of the ISP providing student friendly terms on which teachers and teacher librarians can scaffold GI units. Interest in GI is developing in Australian schools because of the inquiry-based curriculum initiatives in the Australian Curriculum lacking a process approach on which to scaffold inquiry learning (Lupton, 2014). Essential characteristics of the emerging GI approach for teachers and teacher-librarians include its focus on:

- the length of time it takes to develop a personal interest in and questions about aspects of the curriculum topic,
- understanding and allowing for emotional changes that happen as students experience the research process, and
- metacognitive awareness.

There are many practical articles supporting the use of GI and GID in teaching including FitzGerald (2007; 2011; 2012; 2015a; 2015b, 2016), McLean (2011), Mitchell and Spence (2009), Scheffers (2008), Scheffers and Bryant (2013), Sheerman (2011a; 2011b) and Torrington (2013). However, there is little empirical research on the GID, studying the experiences of users.

Purpose of the Research

The purpose of this research was to explore students' use and interpretations of the GID process over time and across subjects. This paper builds on previous research with a group of Year 7 students attending an all girls' Catholic, independent school, regarding their perceptions and use of the GID process (FitzGerald & Garrison, 2016; Garrison & FitzGerald, 2016). In that research, we found that the participants were able to transfer their skills and practice of using the GID process from History at the beginning of the school year to Geography later in the school year. The participants also offered rich and diverse perspectives on the valuable and not so valuable aspects of the process through their own experiences. In this paper, we engage some of the same participants, now in Year 8, in a discussion about their overall perceptions of the GID process over time and across subjects and projects. Our specific research question asked:

- How do students use and interpret the GID process over time and across subjects and projects?

At the time of the discussion, students had completed three projects in their History and Geography subjects using the GID process. Two of those projects were the subjects of our investigations in 2015 while the students were in Year 7; the third project was undertaken in 2016 while the students were in Year 8. The 2015 GI projects focused on gaining a broad overview of the topic, then moving to a narrower, self-chosen focus, as GI theory and practice suggests (Kuhlthau, Maniotes & Caspari, 2012; 2015). Students worked in research process booklets with special attention given to each of the stages of GID and asking prompt questions to get the students thinking and reflecting on the process.

In both 2015 projects, significant scaffolding was provided by the teachers and teacher-librarian during the students' research process. In the first two phases of our research, there were two groups of students completing projects simultaneously in History and Geography. In the second phase at the end of the first school year, the students

switched subjects and did another research project using GID. However, this time, the research process booklet did not name the GID stages. The teachers and teacher librarians still aided in the research, but were more 'hands-off' to allow the students to learn more independently. The third project, the focus of this paper, was at the beginning of the next school year in 2016 when the students were in Year 8. This unit – in History, focusing on Medieval Europe - was much less structured and, due to time constraints, much shorter at around two weeks. Students participated in the focus groups at the completion of the three units.

Description of GID

The GID consists of these steps: Open, Immerse, Explore, Identify, Gather, Create and Share, and Assess (Kuhlthau, Maniotes & Caspari, 2012, pp. 1-6). These stages align to the stages of the ISP: Initiation, Selection, Exploration Formulation, Collection, Presentation and Assessment (Kuhlthau, Maniotes, & Caspari, 2012, pp. 17-31). The GID verbs are easy for students to understand, and provide a framework for teachers and teacher-librarians to create, schedule, implement and assess GI units. Kuhlthau, Maniotes and Caspari (2015) have provided clear and detailed information on what the GID stages mean and what scaffolding can be used at each stage. GID is intended to be used by teaching teams to create, schedule, implement, and assess the inquiry unit. It also describes what the inquiry community (the class) is doing at any given point, while giving students simple verbs to describe their process.

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Participants and Setting

The participants in the first phase of this study (FitzGerald & Garrison, 2016) volunteered to share their class projects, process, and perspectives with the researchers via focus group interviews, research process booklets, and final assessment products. At the beginning of this research, they were Year 7 students at the school. In the third phase of our research, the subject of this paper, the students were in the middle of Year 8. This independent Catholic school is situated in an affluent metropolitan suburb. The school has a history of high achievement, though it is not academically selective. The students chose their own pseudonyms so their participation in this study could be anonymous.

Methods

Focus groups were an appropriate method for what we wanted to study for a number of reasons. First, they evoke the collaborative nature of the GID process as students did their research in small groups called inquiry circles. As Patton (2002) notes about focus groups, "interactions among participants enhance data quality" (p. 386). Smith, Newman-Thomas, and Stormont (2015) used focus groups to study long term mentors' perspectives on mentoring. They mention a "snowball effect" on responses where one participant's thoughts spark another's, "creat(ing) excitement about the shared topic and experiences" (p. 253). This was the type of setting we wanted to create so focus groups were an obvious choice for data collection.

The data presented here are from the last focus groups with the participants, after they finished their third unit using GID. The interview guide provided a semi-structure, which allows the participants to drive the conversation while answering a few focused questions (Patton, 2002). This open structure saw the discussion evolve into culminating conversations which is ironically a task often used in the final stage of the GID process, Evaluate. By this time, our study had experienced substantial attrition so these last two focus groups were quite small with just five participants. We discuss the limitations of these numbers on our analysis after presenting the findings in the next section.

Data Analysis

After transcribing the focus group interviews, we used a deductive approach to analyse the findings. We read through the transcripts, noting possible themes and patterns and then came together to discuss them. After rereading the transcripts and discussing further, we confirmed the following codes related to the students' interpretations of GI in terms of time and subjects they were studying. These main codes addressed: 1) changes and understanding of the students' research skills including breaking down a topic and their research process; 2) development of specific tasks like creating bibliographies and evaluating sources; and 3) using the stages of the GID process, specifically reflection. These codes and subcodes are shown in Table 1.

Table 1. Codes from the Data Analysis

Interpretation of GID	Codes	Definitions & Sub Codes
A. Over time	Research skills	o Breaking down a topic o Breaking research into stages
	Specific tasks	o Bibliographies o Evaluating sources
B. Across subjects	Using the stages	o The stages o Reflection

Findings

The findings are discussed using the codes and relevant sub codes from Table 1, addressing our research question: How do students use and interpret the GID process over time and across subjects and projects?

Research Skills

Students noted some important research skills developed over their experiences using GID in different subjects on different projects. They talked about an ability to break down a topic into smaller subtopics while searching for information. Tinkerbell commented that she learnt to "make it broad and then specify as you go along", taking a search in History from the broad term 'medieval' to the more narrowed term 'peasants.' Sleeping Beauty supported Tinkerbell in saying that "I find that I can now, like break down a question and know how to sort of research it". Iggy noted the value of this skill in that "it kind of trains your brain to do research properly . . . and to . . . analyse the question before you start looking into it".

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Students also discussed the utility of breaking the research process down into stages like those in GID. Tinkerbell commented that the GID stages, as a whole "keep you on track, keep you going to the end, and once you get to the end, you finish your project and that helps". Iggy noted how that process helped her become accustomed "to research things more thoroughly" than in junior school. She said it "teaches or taught me to research I guess better and more thoroughly and more extensively before I came to my final product or my presentation or whatever I was doing".

Some of the other students reflected on changes in their research practice coming up from primary school. Dudley reflected back on changes in her research process from having the GID stages:

> *I remember in primary school or before we did the GI process, when we did research tasks, I didn't really have like a formula that I used to find my information and I think that using these stages is something that I have like taken away, and . . . like with any research task, I try to like kind of like reflect at the end and like give myself a general understanding of where I am at before I like jump into it.*

Sleeping Beauty supports that idea in considering her progress in high school noting that "I wasn't that great at researching, but by like using those skills that I've taken away from this, like I am now sort of like developing my research skills". Sleeping Beauty is unconsciously voicing one of the main benefits of awareness and practice of GID. As Kuhlthau, Maniotes and Caspari (2015) note, "This way of learning prepares students to think for themselves, make thoughtful decisions, develop areas of expertise, and learn throughout their lives" (p. 4). The effects of internalising an engaged way of doing research has benefits throughout life as a tried and true metacognitive support.

> **"This way of learning prepares students to think for themselves, make thoughtful decisions . . ."**

Specific Research Tasks

In addition to research skills in general like searching, some students referred to some particular tasks and strategies they learnt whilst using the GID process which have helped them develop their research skills further. Creating bibliographies and referencing is often hard for researchers, but was identified by Dudley as something useful she learned during this process: "Another thing that I found useful was like through the GI process, we were kind of introduced to a more detailed bibliography . . . and where to see who has like written the article and that sort of thing".

An important part of creating bibliographies is evaluating sources. This was particularly noted by the students as an area they improved during their GI projects. Cinderella feels that she's better at "making sure that the websites you use are . . . like ok and you're not just really rushing into it, researching like a really broad area and then picking the first site there". Evaluating the quality of information and authority of sources is an important skill to master in becoming information literate.

Using the Stages Across Subjects

During the focus groups, students considered what they have taken from GID to other subjects and beyond. Some focused on the whole process while others mentioned the specific stages. Cinderella notes that the Open phase "gives me a chance to really like find out what I want to research, like what are the main areas that I have to focus on and like little bits of information instead of just rushing into the presentation". Tinkerbell also found useful takeaways from the stages, noting "the beginning part, the exploring, that is kind of what I take to other subjects". She included an example:

> For like religion or whatever, we were doing human suffering as a whole so I was looking at different human sufferings all over the world and then having to like shorten it into the Pacific Evil one or whichever society it goes into.

Dudley commented that it's helped her to be more organised in her learning, and has affected that way she writes in exams and taking study notes, and Sleeping Beauty remarked that she used writing skills from the GI units in debating class. Tinkerbell also noted value in using the research process in "outside life . . . maybe like if you want a job or whatever".

"the beginning part, the exploring, that is kind of what I take to other subjects".

Reflection

Student comments on reflection, which is a continuous part of GI, are a mixture of positive and negative. The researchers found in the Phase 1 of this study that many students had left their reflecting till the end of the GI, which was not what was intended, and would indeed have appeared "totally unnecessary", as Cinderella reported, and as Tinkerbell asserts, "It's kind of in the past . . . and, I want to move on to other stuff". However, other more positive comments on reflection included Dudley's view that she likes . . . "taking the time to really just like stop and reflecting". Iggy supports this, saying she likes . . . "reflecting like on what I could have done better, what could have made this situation better or like what was a positive, what came out of that, what do I need to improve on, things like that".

If students know why they are reflecting – to allow teachers and teacher-librarian to know of their progress, what they are feeling, what difficulties they are having, as well as becoming more conscious of their own learning, it becomes an integral part of the process. This can be a formal reflection and/or conversation between student and the teaching team, and can be used for feedback and intervention at the zone of proximal development, beyond which students struggle to continue without assistance (Vygotsky, 1978, p. 86). Reflections as well as use of inquiry tools should form the basis of assessment of process in GIs, in which weighting for process should be at least as heavy as content. Reflections based on the SLIM Toolkit from the Centre for International Scholarship in School Libraries (Todd, Kuhlthau, & Heinstrom, 2005) are simple and direct, and also form data for evidence-based practice.

Limitations and Considerations

In interpreting these findings, it is important to note some limitations and considerations of the study. First, our study experienced attrition from the beginning of the first phase in March 2015 (42 participants) to the end of the third phase in August 2016 (five participants). Some students left the school, moved to different classes, or did not show up for the focus group interviews. Having small participant numbers in our final phase was not ideal and does

affect the external validity of these findings and conclusions being generalised to other, larger groups. However, the small numbers also made the groups engage in a richer dialogue surrounding GI and their research. All of the students had an opportunity to speak and very much engaged in that 'snowball effect' of discussing their experiences through the interactions encouraged by this method as described by Smith, Newman-Thomas, and Stormont (2015) and Patton (2002), respectively. For those reasons, we believe it is still worth sharing the students' perspectives and experiences and want to report them to the profession.

The most challenging limitation to GI operating successfully is allowing time for teachers to understand GI, its processes and scaffolding. They need time to read about and apply GI to their own learning, to understand how it might work with students, and to take ownership of it. Time, however, is the missing element in busy schools, with teachers barely keeping afloat in the sea of classes, marking, and accountability confronting them. Collaboration in a teaching team is essential in GI, but is also challenging to achieve. Additionally, it is imperative for teachers to understand and accept the teaching role of the teacher-librarian and to engage in that collaboration together.

> **. . . it is imperative for teachers to understand and accept the teaching role of the teacher-librarian . . .**

It should also be noted that we engaged these students in GI at a timely stage of their learning development, moving from primary to secondary school where the expectations are higher and the work more challenging. It could be that introducing GI at this turning point was the perfect time for the students to take up these new challenges and develop their research skills.

Conclusions

Our findings here show support for using the GID process with secondary students in building research skills. The students' reflections displayed growth and development from how they approached a research topic and sculpted their inquiry questions, to how they evaluated sources and created their final products. Within the three GI units they completed, they progressed and developed a firmer understanding of the research process. Their responses reinforce the importance of consistency and suggest that using a school wide approach to research may be particularly useful in building skills. Kuhlthau, Maniotes, and Caspari (2015) see GI as a school wide, K-12 model, which begins in the earliest years, and is repeated throughout the curriculum and across the years. Students in the digital age 'need to be able to think, learn, and create and be able to search, evaluate, and use information for thinking, learning, and creating. Schools must give them opportunities to practice this daily in every subject of the curriculum' (p. 3).

As well as internalising the ISP/GID process, students need to understand at the outset what the research process is for and why it will provide them with a reliable tool to use every time they have a research need (from cradle to the grave). teacher-librarians are in a strategic position in schools to become adept at introducing and explaining the process both to students and teachers. teacher-librarians might find it useful to introduce the process using analogies, such as The Research River (FitzGerald, 2013), to help students understand the impact that insufficient research and commitment might have on decisions in their real world outside of school.

In conclusion, Dudley's final reflections on her experiences in GI sum up well the idea of repetition as critical to internalising the process:

> *It gets easier throughout the times that we are doing it. Like from the start, we didn't have a clue what to do. Um, the last time we did it, like it sort of, you understand the process more, it's kind of like practice makes perfect, the more you do it, the easier it gets.*

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