"It's like stickers in your brain":
Using the Guided Inquiry Process to Support Lifelong Learning Skills in an Australian School Library

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Abstract

The Guided Inquiry Design process (GID) is a model of information seeking behaviour emphasising elements of autonomy and reflection throughout students' research process and based on Kuhlthau's (1989a; 2004) Information Search Process (ISP). GID is timely in the Australian context as a way to support the new Australian curriculum emphasising inquiry learning but omitting a practical framework for implementing it. This study sought to investigate the experience of students engaged in two GI research projects in Year 7 History and Geography at an independent girls' school in an Australian urban area. Analysis of the data indicates rich and diverse interpretations of the GID process across participants. Freddo's comment "It's like stickers in your brain," the title of this paper, highlights the memorability of the stages of the GI process. The girls also noted rewarding responses through their learning of the content and skills and "had fun" in this project.

Keywords: Guided Inquiry; Information Search Process; Guided Inquiry Design Process; focus groups; inquiry learning; metacognition

Guided Inquiry (GI) is a pedagogy grounded in a constructivist approach to learning based on the Information Search Process (ISP) developed by Kuhlthau (1989a; 2004) and further enriched with the framework of the Guided Inquiry Design process (GID) (Kuhlthau, Maniotes & Caspari, 2012; 2015). GI holds the potential to produce deep learning with its focus on student autonomy in pursuing their own interests, reflection in developing self-regulating learning skills, and continuous support for students from teachers and teacher librarians throughout the research process. The GI process is supported by various scholars in the field (Gordon & Todd, 2009; Kuhlthau, Maniotes, & Caspari, 2012; Todd, 2012; Todd, Gordon, & Lu, 2010). This model of information seeking and using behaviour is unique in that it describes the experience of researchers as they engage with information.

GI tasks and scaffolding are emerging in the Australia context, which is particularly timely given recent curriculum changes emphasising inquiry learning but omitting a process to support it (Lupton, 2012). GI presents Australian educators with an opportunity to enhance student learning by providing supports in the form of ISP and GID (Kuhlthau, Maniotes, & Caspari, 20Ah12; 2015).

The Development of Guided Inquiry

GI developed over years of research and study by Carol Kuhlthau (1985; 1987; 1989a; 1989b; 1991; 1993; 2004; 2005) and collaborators (Kuhlthau, Heinstrom, & Todd 2008; Kuhlthau, Maniotes, & Caspari, 2012; 2015). The second edition of Kuhlthau, Maniotes and Caspari 's *Guided Inquiry: Learning in the 21st Century* (2015) includes a comprehensive annotated bibliography of the works studying ISP and developing GI and GID in the Appendices.

Kuhlthau, Maniotes and Caspari (2015) describe GI as "tak[ing] students beyond the pre-digested format of the text book into learning from a variety of sources to construct their own understandings" (p. 61). Its intent is to create a deeper learning environment where students are granted autonomy to explore their own questions and interests related to a topic. GID offers students a guide for working through their research and progressing through stages, defined by the actions in their titles. These verbs are shown and described in Table 1 (Kuhlthau, Maniotes, & Caspari, 2012, p. 29).

Table 1. Stages of the Guided Inquiry Design Process

Stage	Definition
Open	• Introduction to the project • Building curiosity and interest in topics • Maintaining an open mind
Immerse	• Developing and identifying background knowledge • Connecting to content
Explore	• Discovering interesting ideas • Pursuing what becomes personally interesting
Identify	• Taking time to ponder on what was discovered in the first three stages • Identifying an inquiry question and topic
Gather	• Collecting information on the topic and question • Researching broadly and deeply
Create & Share	• Answering the inquiry question through the synthesis of research • Creating a final product to communicate these ideas • Sharing with fellow classmates and researchers • Learning from each other
Evaluate	• Assess the achievement of learning goals • Reflect on the content and creation • Reflection on the process

GID gives young researchers a user-friendly guide to engaging with information during a research project. While there is research examining students' experiences in varying levels of school (Kim & Todd, 2008), the workplace context (Kuhlthau & Tama, 2001), and higher education (Hyldegard, 2006; Swain, 1996), more research specifically applying the framework from the GID process in schools and supporting GI is needed to promote the pedagogy.

The purpose of this research was to investigate the use of GID with Year 7 students studying History and Geography in an Australian Catholic Independent girl's school. This study sought to answer the research question: How do students use and interpret the GID process whilst engaged in research?

Methods
Using a mixed methods design (Patton, 2002), the study followed participants through two research projects in History and Geography. There were three sources of data collected: 1) the students' research booklets guiding them through the GID process and marked by the researchers and Teacher Librarians; 2) the students' final essays products assessed by their teachers; and 3) focus group interviews conducted, transcribed, and analysed by the researchers. The results presented here focus on the themes arising from the focus group interviews which addressed the

ways the participants used and interpreted the GID process whilst engaged in their research.

Eight classes (four Geography and four History) of Year 7 students were invited to participate in this study. For their History and Geography subjects, the students research a particular topic and complete a final product to showcase their learning. For Geography, the girls chose a World Heritage site and conducted research about the site. The students were also expected to consider the broad value of recognising World Heritage listed sites to a global audience as the overarching inquiry question for the unit. For History, the girls chose a specific topic relating to Ancient Egypt and conducted research about that topic. The students were also expected to consider what contributions the Ancient Egyptians made to the modern world in regards to their topic (e.g., architecture, politics) as the inquiry question in History. In each subject, the girls completed a final essay product to answer the overarching inquiry question which was marked by their teachers. They also completed a research booklet guiding them during the GID process, which was designed by one of the teachers and one of the resaerchers and marked by the researchers and teacher librarian. The girls completed the projects in the library with the collborative aid of their teachers and teacher librarians. Complete data across both phases was collected from 16 girls.

Approximately five to ten girls participated in each 20-30 minute focus group after the research projects in the first and second semesters of the 2015 school year. As the first research project was the first time the girls had used GID, the first focus group interview guide asked them to consider the different activities within each of the stages and how they felt these activities contributed to their overall learning in addressing their individual inquiry questions. The second interview guide was less structured as the girls now had had two experiences using GID and were likely to have more defined attitudes about the process and its effects on their learning. (See Appendix A and B for the interview guides.)

In order to analyse the focus group transcripts, we used a deductive approach where themes emerge from the data instead of using prescribed themes prior to coding (Patton, 2002). This was the most appropriate method for our research question as we wanted to explore the girls' interpretations and perspectives surrounding the GID process holistically. Further, a big focus of GI is the element of choice and giving students room to explore what they personally find interesting about a topic. Thus, it

was not suitable to limit the analysis to predetermined themes but to let them develop naturally from the discussions with participants in the focus groups.

Each of the two researchers read through the transcripts and noted potential themes. Then we got together to compare and discuss the patterns we both noted in the transcripts to come to consensus. As a result of this process, the following codes were developed as shown and defined in Table 2.

Table 2. Codes from the Data

Code	Definition & Sub Codes
Stages	• Referring to the use of stages as a whole part of the overall process o Noting positive and negative aspects to specific stages
Choice	• Being able to choose their own research topics and design their own inquiry questions so they were exploring things they were personally interested in studying

Rewards	• Indicating rewards from gaining experience in GI to take away including:
	    o Learning for learning's sake
	    o Elements of fun in learning
	    o Using skills for future learning

Reflection	• Commenting on the use of reflections throughout the GI process

Findings

Analysis of the data indicates rich and diverse interpretations of the GID process across participants. In examining the focus group interviews, codes emerged in relation to the stages of the GID process, the element of choice which is an important characteristic of the GI, rewards resulting from engagement with the GID process, and the use of reflections, another key piece of GI. The following discussion about the findings is broken down into these codes and relevant sub codes noted within each of them.

Stages of the GID Process

During the focus group interviews, the girls noted the usefulness of the stages of the GID process and having it broken down into steps. Freddo's comment which gives the title of this paper, notes that "It's like stickers in your brain." Her description of the stages adds a visual layer to her interpretation. Icons of the stages described in Table 1 are featured as posters throughout the library of this school, a reminder to the girls whilst engaged in research. Madalyn explained that the division of the stages "help[ed her] to organise and set out each section" of the project. She said, "I am splitting it up so I can get each little part done as efficiently as possible." Holly Bell reiterated that point:

> …they don't just push you in with all of the information, what you have to find, what you have to do. They really take you through it with the different stages, so ok, I've finished this stage, then the next stage. It's not just one, Whoa!

Holly Bell's comment conveys anxiety of the magnitude in beginning a research task. Breaking large tasks into smaller tasks is an important part of building metacognitive and self-regulating skills for learners (Spruce & Garrison, 2016).

The participants also discussed specific stages they found helpful and specifically enjoyed whilst engaged in the GID process. The first stage, Open, was popular in that it gave the girls a chance to get interested in the broader area in both subjects berfore narrowing down their topics. Sleeping Beauty noted that the Immerse stage "helped me reflect on what I already knew. So that really helped me because I knew what to go for." Having that extra time to get more familiar with a topic and immersing oneself in the resources and information is an important piece of GI and making the choice on what to study. The latter stages Create and Share were also identified as important "because you could get to find out about more, not just your area of focus…I found that really fun" as explained by Eternity. This supports the collaborative nature of GI in learning together.

Choice
An integral element of GI is giving students the choice in researching their own personal interests around a topic to promote intrinsic motiation to learn. Choice was identified by the students as a motivating factor of the research process. Sleeping Beauty noted that "creating your own question meant we could kind of explore our interests and decide what we wanted to find out about those places." Going along that idea, Cinderella also thought that "it was good that we were able to make our own [question] because sometimes that can make more sense than what you are given because it is what you think rather than what you are told to." Both of these comments show the value of choice in GI as motivating researchers to be more engaged in the process overall. That being said, Eternity would have preferred more choice with regards to the stages of the process as she "like[s] to do things in a different order to how they suggested." While there is a huge level of autonomy involved in the very foundations of GI, it is interesting that this learner wanted more within the structural aspects of the process.

Rewards

The rewards associated with engaging in the GI process focused on the different purposes of learning including learning for learning's sake, learning as a fun activity, and learning new skills to use in future endeavours. Poseidon thought that the Gathering stage of the GI process was quite rewarding in order to gain a "deeper understanding of…what…we were researching" and to learn "more about World Heritage Sites as a whole as well as the individual one" they each chose. Ariel had a similar reaction as she explains:

> …I really liked the GI actually, I found it was really refined…using it
> to create questions and stuff that I feel as if, it's more the way to
> kind of be a part of it, more than just writing a speech or something
> like that, whereas answering questions and stuff makes you feel
> more connected to the project.

Both girls' comments describe using GI holistically as being a way to make a deeper connection to their learning experiences. In addition to this aspect, several times the girls described their experiences researching with the GID process as fun. Holly Bell said, "I loved this project! It was so fun!"

Rewards also included developing skills from this learning experience to use in future learning experiences. Specifically the girls noted searching skills and resources that they would use for future projects. Ariel and Hawaii 101 both remarked that using primary sources in their research is something they would like to do again. Ariel thought that primary sources were "interesting" and "not something you would usually think about putting in your essay" while Hawaii 101 noted that "[primary sources] actually have a whole lot of different information." Royal has similar feelings about searching and resources explored in this research project:

> I found many more websites and things I could look at in other
> subjects as well so not just history and this area, but I've learnt to
> do it in English and other subjects, and learning about more
> reliable sources.

Building lifelong learning skills is the ultimate goal of GI. The discussions with these participants note a reward of their learning experience with GI is developing knowledge and understandings of how to search for and evaluate sources more effectively for the future.

Reflection

Another theme from the focus group discussions was the use of reflection within the GID process. Reflection is used throughout the stages as a way for students to think back upon their experiences within each of the stages. It is also an important culminating activity at the very end where students consider their research process and activities as a whole over the course of the entire research project.

Throughout the discussion groups, the girls noted the placement of reflection in the stages with mixed feelings. Some participants preferred the reflection during the process. As Sleeping Beauty notes "I find that reflecting during the process is easier than reflecting at the end, because when you reflect at the end, you can't really remember what you did at the start." Dudley echoed that: "I find it quite tricky to do the reflection at the end, and I find it may be a bit easier to do it as we go through the process, because at the end I was finding it hard to look back." Conversely, other students showed a preference for reflection at the end of the project as a way to wrap it all up. As Anastasia says, "I liked reflecting at the end, because...really Guided Inquiry, you can't do one step without doing the rest of them so the reflecting on the whole process kind of brought the whole thing together." Madalyn felt the same way and her comment particularly singles out the GID process as empowering her to become a reflective learner:

> Well, before I did the GI, I didn't really do reflections but now I think,
> I like doing them at the end because it's thinking back to what
> you've done and at the end of an assignment, it's kind of just ok I
> finished now just what did I do? What worked, what didn't for next
> time? So it's kind of reflection for me.

Despite the timing of reflection in GI, these participants mentioned its significance in helping them to consider their learning process whilst researching. At the same time, there were some girls who had negative reactions to reflection. Holly Bell felt reflection was "annoying" and did not understand the value of looking back and ruminating over the process. Eternity also felt strong dislike for the reflection process comparing it to something like therapy:

> I also really, really dislike reflecting mainly because I think it's
> totally therapeutic and I don't like those sort of things that you get

> in a therapy session… oh, now reflect on how you are feeling…
> No! No, that was one of the things I didn't like...

In GI, reflection is a higher order thinking activity, enlisting the reflector to consider their emotions and processes. It requires a high level of self-awareness and deliberation in the steps taken whilst engaged in research. It is interesting that Eternity would describe it as "therapeutic" which holds healing and restorative connotations, but it was a negative feeling for her. Her comment emphasises how different learners and their learning preferences can be. This aspect of difference is something that the GI process is meant to address as well with the elements of choice and autonomy in research. Participant Cinderella, recognised that value and focus in saying, "I think that what's good about the inquiry process is that it's got different types of stages so it's good for different people that learn in different ways."

Limitations & Future Directions

As with any study, there are limitations to analysing the data within the context of the school, sample, and research design. One of these limitations was the teachers' knowledge and understanding of GI or the GID process. Not all of the teachers have had experience using GI in their teaching, so in some ways their implementation of it was similar to that of their students as it was their first time. It was clear in the focus groups that not all of the elements of GI were properly implemented, including some classes being given their topic instead of being allowed to choose it themselves. The discrepancies in the way the teachers managed their classes is definitely a limitation in how the girls interpreted the GID process as a whole. That being said, the researchers have another year of research planned at this school working with the same teachers and students. Since last year, the teachers have engaged in professional development sessions targeting GI so they will have a broader knowledge and understanding of the process. Also, this year the teachers, not the researchers, are designing all aspects of the unit including the research booklets guiding the students through the process. The teachers, teacher librarians, and researchers discussed this after the first year of research and it was decided that doing the booklets in this way would give the teachers more ownership over the unit and implementing the GID process than they had had in the first year.

There are also limitations in generalising the data from this study to other populations of students. This school is a small independent Catholic secondary school located just outside of the central business district in a large urban area in Australia. Many of the families attending this school are affluent, have a history at the school, and hold

academics and learning as an important priority for their children. The results from a similar study in a school with dissimilar demographics and history could derive much different data than what is presented here.

Significance and Conclusions

The big ideas coming out of these findings involve the development of metacognitive skills and strategies, the benefits of collaboration between teachers and teacher librarians, and the importance of growing a wider base of research on the GID process. The students participating in this study had not previously engaged in research using an active process like GID. Its careful use forced them to consider their own learning processes in a calculated and deliberate manner which some of them not as being the first time they have engaged in such a way. Staying organised through a task by using strategies like breaking tasks down into steps with smaller tasks is a valuable metacognitive strategy (Spruce & Garrison, 2016). Holly Bell's "Whoa!" comment about being "push[ed] into [a research project]" highlights the anxiety she has felt about past projects without such a breakdown of steps or stages. The GID Process was found to be a useful guide for the girls in tackling this big project.

At the same time, it was challenging for them as noted in some of the comments about disliking reflection. Eternity's negative attitude towards reflection as being "therapeutic" was an interesting comment as such a descriptor is meant to be positive. In her study of upper students, Harada (2002) found reflection and journal writing activities as positive in building students' metacognition and deeper engagement with learning. Reflecting is a high level learning activitiy so it is possible that giving the deeper thought and attention to what actually occurred during the projects was difficult for these students. It was their first experience with such a process so that should be noted. Further research should investigate this aspect of the girls' learning, especially in light of Harada's (2002) finding that students became more adept and engaged with their reflections with increased opportunities.

Another strong conclusion from the present study is the need for stronger collaboration between the teachers and teacher librarians engaged with this research. As some aspects of the design were completed separate from each other (e.g., creation of the research booklets), it was clear that teachers found it difficult to hold ownership of the research and tasks. Further, many of the teachers had not had proper training in GI so they did not hold the same beliefs in its value as the teacher

librarians or those teachers who had had training. This emphasises the need for collaboration, specifically between the teacher librarians and teachers.

While there are studies on ISP and GI in general, a thorough review of the professional research revealed no similar studies looking specifically at students using the GID process as presented here. It is particularly relevant to the Australian context given the focus and emphasis of inquiry learning the new curriculum changes. The analysis of the curriculum presented by Lupton (2014) concluded that certain areas of the Australian Curriculum are lacking an across-the-curriculum approach to inquiry learning. The GID process offers Australian teacher librarians the perfect opportunity to give their students and teachers a framework for inquiry-based learning to actively engage in research in meaningful ways (FitzGerald, 2015).

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Appendix A.

First Focus Group Interview Guide

How would you describe the Guided Inquiry process to someone who has not used it before?

Stage 1 Open

In Open, the first stage of your GI process, your teacher introduced you to the big topic (New Kingdom Ancient Egypt, or World Heritage sites) and you jotted down a couple of thoughts about what was interesting, to you and what questions you had about this topic. You did a glossary.

- Did the Open stage get you interested in your topic? If so, why? If not, why not?

Stage 2 Immerse

In Immerse, the second stage of your GI process, you developed some background knowledge using overview sources like encyclopedias, Clickview, and YouTube. You noted what you already knew about this topic and began to plan your search for information, including search terms.

- Did you find the activities in this stage helped you to get a big picture of World heritage sites or Ancient Egypt? If so, why? If not, why not?

Stage 3 Explore

In Explore, the third stage of your GI process, you chose your inquiry circles based on your interest in a particular part of the topic and began some independent research (stop and jot) about that.

- Did you find it easy/hard to choose an inquiry circle (and therefore to concentrate on only one aspect of the broad topic – either Ancient Egypt or World Heritage sites)?

Stage 4 Identify

In Identify, the fourth stage of your GI process, you shared what you found in the Explore stage with your inquiry circle and you worked together to create an inquiry question using the question formulation activity.

- Did you find it difficult to create your inquiry question? If so, how? If not, why not?

Stage 5 Gather

In Gather, the fifth stage of your GI process, you worked with your inquiry circle to find the answer to your inquiry question, sharing the work of researching and notetaking, and gathering pictures or primary resources for your project.

- How did you find the notetaking? Easy/difficult? Why/why not?
- Did you find it difficult to share the researching of your inquiry question?

Stage 6 Create & Share

In Create & Share, the sixth stage of the GI process, you created a mind map to draft an answer to your inquiry question and then completed a jigsaw activity sharing your knowledge with other inquiry circles.

- Did the mind map help you to organise your ideas about your inquiry circle's question? If so, how? If not, why not?
- Did the sharing in the jigsaw activity help you to have enough knowledge about the whole topic to answer the big question for the unit? Why/Why not?
    - Reminder: History- Why was New Kingdom Egypt a golden period in Ancient History?, Geography- Why is it important to know about, and cherish World Heritage sites?

Stage 7 Evaluate

In Evaluate, the seventh stage of your GI process, you reflected on the entire GI process and how you felt throughout each stage.

- What was the most challenging stage? Why?
- What was the most rewarding/interesting stage? Why?
- How did you find the inquiry circles? Would you rather work on projects like these independently or with a group or partner? If so, how? If not, why not?

Appendix B.

Second Focus Group Interview Guide

1. You've now done two Guided Inquiries, one in History, one in Geography. If you were asked to describe the steps in a Guided Inquiry (it doesn't matter if you can't remember the names of the stages), what would you say?

2. Did your understanding and use of the GI process change from the first project to this project? for example: Did you find it easier to use the GI process in this project than the first? Or did you find it more challenging?

3. In your opinion, does the GI process work better in one subject than the other? Why/Why not?

4. Working in inquiry circles is a big part of Guided Inquiry. Your first focus groups identified some issues with working in groups, e.g. not being allowed to choose them, people not contributing equally, different abilities in the circles. What do you have to say about inquiry circles in the second GI?

5. Your first focus groups discussed some attitudes to reflection, e.g. some people only like reflecting during an assignment, rather than at the end, some people don't like it at all. How did the reflecting go this time?

6. Your first focus groups discussed some attitudes to creating and answering a question, e.g. just using the model questions, not creating your own, changing the question to suit the information found. How did the question making process go this time?

7. In the first focus groups, some of you found mind maps, Jigsaw and PEEL had some issues, especially lack of time to complete, lack of understanding of the purpose of the mind map, and not understanding the point of PEEL. What are your thoughts this time?

8. An interesting thing that came out of the first focus groups and from the process booklets was the attitudes you have to taking notes. Some people don't think they're necessary, others do, but prefer to hand write them, others like to type them. What would you say about note taking after the second project?

9. Did the Guided Inquiry process work for you as a learner?

Biographies

Kasey Garrison is a lecturer with the Teacher Librarianship Team in the School of Information Studies at Charles Sturt University's Wagga Wagga campus in New South Wales, Australia. Prior to that, Kasey worked in primary school libraries and also teaching Spanish and students with special needs in the United States. Kasey's research interests focus on the issues surrounding culturally diverse children's and young adult literature as well as the use of guided inquiry in school libraries.

Lee FitzGerald joined Charles Sturt University School of Information Studies in January 2014, following a long career as a teacher librarian in school libraries. She has a passion for teacher librarianship and the burgeoning theory and practice of Guided inquiry. Her research interest is to confirm the growth of deep learning through inquiry, as well as the transferability of the process from one subject area to another. She is currently writing a book for ABC Clio in the Guided Inquiry series due for publication in 2016.