Using a Project Approach to Enhance Learning in Depth

Clayton Stephens

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SFU – Michael Derby

Abstract

The central idea behind Egan's program: Learning in Depth, is that students learn for the sake of learning, without assignments or grades. (Egan K. , 2015) Despite the pure intentions, students still find ways to make the learning all about extrinsic motivation rather than about the learning itself. The action research focuses on the barriers that students face when trying to understand Learning in Depth, and its purposes: their misunderstanding of what it is for, how to search, how to question, how to think about what they are learning, etc. The teacher introduces a presentation / project that the students must complete, with steps to take to mediate learning, not only about their topics, but also around how to make students independent and thoughtful about their learning tasks.

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SECTION 1 PURPOSE OF THE RESEARCH PROJECT

Snapshot of Using LiD so far

LiD has been exciting to implement in my classroom over course of this year. The students love taking time each week to work on their projects, and many of them work on them at home. Students will come up to me often in the morning proud of their poster or writing that they did on their topic the night or weekend before.

> Caves: "Here Mr.Stephens. I made this yesterday."
>
> Me: "Wow! It's beautifully drawn. So is this all about the biggest cave in the world?"
>
> Caves: "Ummm, ya."
>
> Me: "You wrote a lot all about it. Let's see. It's called the Goliath Cave. That sounds quite large. What else can you tell me about it?"

Other students would come in with books that they took out from the library on their topic. Others would come in with artifacts. Fossils boy started off strong, filling his book box with fossil books from our local library and showing off a fossil that was in his family to our class.

Aircraft and airports, despite his lower reading level, worked tirelessly on finding out more and more about his topic. He has filled his LiD folder with lots and lots of facts and records all about aircraft. He has diagrams of airplanes, lists of facts, and pictures of how they work.

Buildings comes to me almost every other day with another picture of another tall building somewhere around the world. He prints them out, and then copies some information about them to share with the class. He is ESL, but you would never know it as he works so tirelessly on his LiD. He even created a 3D building of a castle out of toilet paper rolls to share with the class. He clearly spent a lot of time.

"Congratulations", you must be saying, "LiD is clearly working and they are engaged!" But hold on for a second. I've only given you the first part of the interactions with these students. Despite the students collecting lots of facts and writing them down, and drawing lots of pictures and gathering lots of books, I was finding, to my disappointment and shock, that they weren't actually able to tell me anything they learned about their topics.

Caves girl from before, when prodding her further about the Goliath Cave, could tell me nothing about it:

> Me: "Where is the cave found?"
>
> Caves: "Umm, I dunno."
>
> Me: "Okay, well, how big is it?"
>
> Caves: "Uhhh, I forget."
>
> Me: "is there anything that stuck out to you when you wrote and drew this that you could tell me?"

Caves: “Uhh, no. Can I put it up in the hall?”

Hmmm. Seems that caves girl, despite all that efforts, wasn’t able to tell me anything about her topic. Let’s try another. Aircrafts and Airports boy copied down so many facts so vigorously:

Me: “Wow! You worked hard on this. Did you do this all by yourself?”

Airplanes: “Well, my mom and dad helped me.”

Me: “Okay, that’s great. Tell me something that you learned.”

Airplanes: “Ummm…It’s here on the page.”

Me: “Yes, you wrote them down, but tell me something interesting.”

Airplanes: “You have to read it; I dunno.”

Third time’s the charm. Let’s see the last student example. He worked hard all night drawing a picture of the Burj Khalifa and copying down some facts about it:

Me: “Can you tell me something you learned about the Burj Khalifa. Tell me a fact.”

Buildings: Silence

Me: “Come on, just one thing you learned. You copied down so much!”

Buildings: “…Can I put it up in the hall?”

Me: “No….come on. Just tell me…You copied all this information down. How did you find it?”

Buildings: “My older cousin finds facts and prints pictures and then tells me what to copy it and I copy it.”

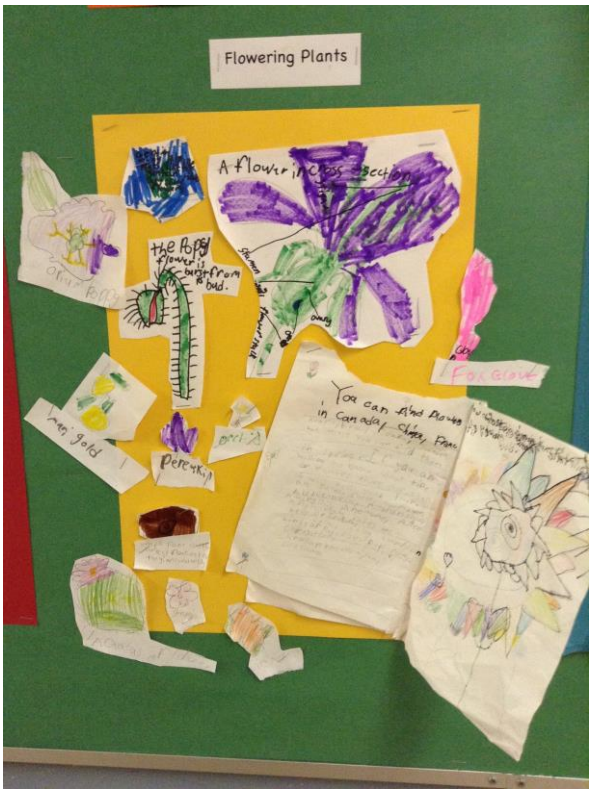
1 - Buildings student showing off all the pictures he printed and information he copied from websites.

I know I should be overjoyed at all of the research and effort that the students were doing, but something was not sitting right. As shown in the examples above, the students were producing a lot, but the actual information that they were retaining about their topics was non-existent. This worried me as an educator. Was this because they simply couldn’t remember what they read? In my experience, students at my grade level do struggle with they read. It’s possible that the information is hidden under some layers in their mind and we should all consider it a happy success that they had

some exposure at all. However, according to Vygotskian theory, thought is language, and to truly know something means that you should be able to repeat it back and say what it is that you have learned. (Vygotsky, 1978) If students cannot tell me anything interesting about their topic after just creating a top-10 list of interesting things about their topic the night before, then what they have written is not going into their minds at all. Upon seeing this, I came to assess the pros and cons of using LiD in my classroom and what it is that is not working.

The Pros

The good things first. The motivation was there; they wanted to do all this work. Ever since receiving their topics at the beginning of the year, the students have been excited to learn all about their topics. Every week during LiD time, I see the students engaged with their topics and finding interesting things about them. I see them sharing videos and pictures about their topics with their classmates. I see all the students engaged, and no one off course. I have seen students struggle, but they struggle with thinking what they want to learn about their topic; they are still engaged, just working through what they need to do. The parents were excited about doing work with them, as well, and I get questions from parents at times of what they can do more at home. Students are always excited to post up outside the classroom things about what they are learning about their topics to share with the school. All in all, it's a great time.



2- Flowering Plants Girl's section on our bulletin board for sharing information with the school.

The Cons

The concerning things. As stated above, they may be really engaged, but I was worried that their engagement was misplaced. Somehow their engagement with their topic had not been about what are the amazing things that they can learn, but instead how can they impress people with what they can share. I had a bulletin board outside the classroom where the students may post some amazing facts and work to show others. Often students would post things up there just for the sake of putting it in the hallway. Flowers girl, for example, just made lists of lots of flowers on pieces of paper that she cut out.

> Flowers: "Can I post these outside, Mr.Stephens?" she would ask happily. She shows me a bunch of strips of paper with different flower names scribbled on each one.
>
> Me: "This is a lot of different flowers. What do they look like?"
>
> Flowers: "Ummm, I dunno. Can you go post them now?"

The scariest part was that there was no desire from the students to move past posting it up to impress other people. Caves girl, who I've mentioned already, works tremendously hard on her topic, but seemingly only to make others impressed.

> Me: "Wow, this is a beautiful poem that you have on stalactites. Did you write it?"
>
> Caves: "I found it."
>
> Me: "Ahh, well, I like the rhyme. What's a stalactite?"
>
> Caves: "I dunno."
>
> Me: "Well…are you curious about what it is? What do you think it is?"
>
> Caves: "Not really."

Interactions like these affirmed my fears: that the students were only interested in impressing others, maybe even only me, by doing the minimum of the assignment. Each week, to encourage motivation, I assigned them projects to do with their topic, just so they had an idea of what to do if they had none. One week we found diagrams of our topic. One week we created top ten lists. One week we found Guinness World records. One week we found our topic in every language. One week we found poems on our topic. These assignments were created around the **cognitive tools**, which I figured would help them to retain and understand what they were learning. But as seen in the interactions with the students, there was no retention or understanding visible.

The Main Problem

I thought all these prods to continue learning about their topic would be helpful, and they have been motivating. But the whole point of Learning in Depth is to learn *deeply* about their topics. (Egan K. , 2015) And all of these projects, and the evidence of their learning, only showed me that their learning has been nothing but surface level, if even at all. The learning had been mostly just *exposure* rather than going in depth, even halfway into the school year many students seemed to still know absolutely nothing except obvious characteristics about their topics.

> Bats: "Bats sleep upside down."
>
> Me: "Okay….but you told me that two months ago. What else have you learned?"

My deepest worry was that the students really, truly believe they have learned something or are doing great work, when in fact they know absolutely nothing about their topics. I let the students know at the beginning of the year that they are going to be masters of their topics. They knew that we were going to call on them to tell us interesting things about their topic. They were going to be responsible for

knowing lots about their topic. But still, even halfway through the year, they weren't learning very much about them.

The whole point of LiD, from my lens, is that students take ownership of learning about their topic themselves. They intrinsically find the interesting things about their topic and come to share the things they learned with the class. I often find my grade level marked by the students starting each sentence they tell me with, "Mr. Stephens did you know that….(insert fact about dinosaurs/space/volcanoes/etc.)" With Lid this year, I am not getting that at all. Despite it being called learning in depth, I am finding no students are actually learning deeply.

SECTION II RESEARCH QUESTION

The assignments that the students had been doing around their topic clearly weren't working, as stated above. Allowing them to freely learn resulted in nothing really happening as well. What I was realizing was that, despite the program being called Learning in Depth, they were never really asked to learn deeply about their topics yet. All of the assignments were quick little approaches to learning. I had given them the inquiry they would do as well. They weren't required to think deeply, just find the answer online and then regurgitate it. Why was I surprised that they just copied it down but never really understood it?

It became clear that in order to learn deeply about their topic, they were going to need a project that required them to do just that. For two weeks, I would run a project-based approach to their topics, where they were required to produce something around a central question they want to answer about their topics. I wanted them to take the time and actually learn in-depth about their topics. Which lead to my central question:

Will using a project-based approach aid students in learning more in-depth about their Learning in Depth topics?

Beyond that central question, there were a lot of others that needed answering so that I could structure a project that would encourage the students to do just that.

- What are the best steps/approaches to take to run a project based around LiD?
- Will using the cognitive tools aid them in their approaches?
- Will using a project-based approach help students to feel more empowered around their topic and feel good about their learning? Will it help them to become more independent and self-motivated in their learning about their topics?
- Will the learning from the project carry into other subject areas for the students?

SECTION III CONCEPTUAL FRAMEWORK

I am doing LiD in my classroom mainly because I am also, at the time of writing this, working on my Masters in Imaginative Education at Simon Fraser University. The cohort I am in focuses on the theories of Vygotsky and Egan, and this is my trial year in testing out Learning in Depth in my own classroom based around their theories. This is also my first year testing out using inquiry and self-directed learning for students of my grade level. Our BC curriculum has recently changed, and this is also my attempt to encourage students to follow the inquiry process.

I take quite a Vygotskian stance with my approaches to education, including this project. In no way do I assume that students will learn naturally on their own passing through stages based on age according to Piagetian approaches to education. I also reject the Rousseauian assumption that students should learn by themselves without interference from others. I come from the stance that students learn from the outside-in, that the example that I set as an educator is what they learn from best. They do not learn by simply doing the task, they learn by seeing someone do the task, and then replicating it or trying it out for themselves. They will only come to understand something if they can internalize it. I also take the philosophy of Vygotsky's that thought is language, meaning that the students, if they truly understand something, should be able to tell you about it. This applies to all my subject areas, math, language arts, etc. I also hold the Durkemian view, slightly, that we are preparing students to be a part of society at large.

This project is filtered through these philosophic lenses, mainly that everything comes from outside-in (must see examples), must be mediated by a learned adult (one-on-one help), and is for preparing them for the future (what they learn must be relevant).

SECTION IV RESEARCH SITE

Class Composition

I have been a grade 3 / 4 teacher since starting my career as an elementary teacher five years ago. Currently I am teaching in an inner-city school with a high ESL population. The school itself is located in an area that has received a lot of refugees from war torn nations due to low-income housing within our catchment. I have a class of 23 students of varying backgrounds: Iranian, Syrian, Caucasian, Pilipino, and Vietnamese.

Many of the students come from low-income households where both parents tend to work and have overnight hours. As well, many of the parents do not speak English or have very little. Both of these factors make it difficult to have parents come in to discuss their child's education. Because of this, it becomes difficult to continue education from school at home, especially with a project like LiD where parents' involvement and mediation is a must. Other schools in wealthier areas might have a lot more parent involvement because of the absence of the above two barriers. I will get the odd question from parents about what is happening in the classroom or how their child is doing, but for the most part there is very little communication, making it the sole responsibility of the student to ensure their work is done.

School Staff

Most of the teachers transferred to the school after a mass retirement of the previous teaching staff. Those teachers were at the school for 20-30 years, and were known within the community as some of the parents who also attended the school in their youth were taught by the same teachers. When they left, the one remaining staff member who had worked at our school for a long time remarked that it was like a hole was left in the community. It was a difficult year for all of us that were new to the school. Most likely the parents and students were hesitant to trust this new batch of teachers when they were expecting the stability of the ones before. Now that we have all continued into a second year, the mood from the students seems to be more relaxed, as they realize that we are not going anywhere to be replaced again. This gives us who plan to stay at the school for a long time a chance to really build with the students a connection for learning.

Everyone at the school has been open to new ideas, and excited to try them. The teachers at the school are, for the most part, a younger staff, with most teachers being in their 20's or 30's, meaning no one is directly set in their ways. The principal takes action research to heart, and encourages teachers to utilize it. Currently, we have 3-4 action research groups happening within the school. One on literacy, one on reporting, and one on inquiry and Learning in Depth. With this it is very easy to get others on board to try new things, such as Learning in Depth. Teachers are comfortable talking candidly about what works, what doesn't work, and are genuinely interested in the betterment of education within the school for the students. Within the Learning in Depth action research group we have 4 members, all of which are trying out action research at their own pace.

SECTION V LITERATURE REVIEW

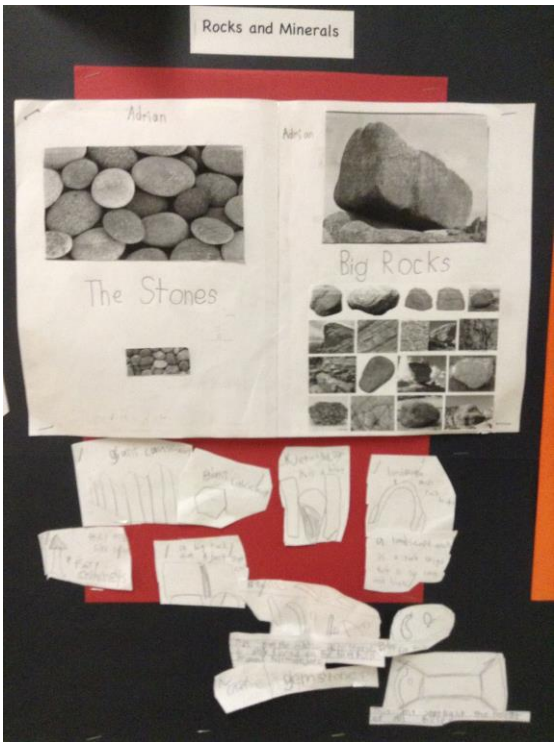
On Learning in Depth

> *Students are randomly assigned topics that have been vetted for appropriate richness to warrant years of study. They receive individual topics during their primary years and keep them through high school graduation. There are no assignments, no deadlines, and no pressure to produce. This is learning for the sake of learning.* (Egan K. , "Learning in Depth" in teaching education, 2015)

The above is a definition of Learning in Depth that Egan himself quoted from a school website on the outline of his program. It neatly summarizes the gist of LiD: that the students learn about one topic on their own and that it is learning for the sake of learning with no assessment attached. I must admit for myself that the program sounded appealing initially, and my students and I took to it right away. The students were free during LiD time to search on their topics however they choose. However, as stated in my interactions with students in earlier sections, I found myself dissatisfied with the learning that was happening during this unstructured time. The learning they were doing seemed inefficient or non-existent in many students.

The ongoing research into LiD shows two sides of a coin that I see mirrored in my own classroom. There is a positive side, where interviews with teachers implementing the program show that student

engagement is high within class and outside of school in their work on their LiD portfolios. (Egan K. , 2012, p. 19) But there is another side, where students' portfolios are filled almost completely with text-based sources from the internet, and where, as stated by researchers, "there was some creative work, but usually finished work was an elaboration of text sources." (Egan K. , 2012, p. 19) This means other classes are seeing the same things. Students have high motivation, but in the end they are just copying down things from the internet into their portfolios.



3 - Rocks and Minerals' early attempts at using LiD this year.

Egan claims that in interviews with teachers who found engagement high in their classrooms, as time went on the students were also connecting their LiD work with the work they were doing in other subjects. As well, he also claims that the work they did in their portfolios gave evidence of greater imaginativeness over time. (Egan K. , 2012) This supports his claim of the mind not as a zero-sum container which we must avoid being too full, but instead the opposite, "The more you learn, the more you *can* learn." (Egan K. , 2002, p. 138) As the students learn more, they are able to do more with what they have learned. They can play with the knowledge in their imaginations only once they have started to internalize and amass what they have written down into their memory.

But despite it seeming to be just time that will grow students' understandings and imaginations with their topics, there "may be all kinds of other considerations that need to bear on the question of implementing any innovative program." (Egan K. , 2015, p. 292) As great as it is that students are engaged and copying down information, if that information is not being retained by them, then what good is it? If that information does not go to their memory, then how will their imaginations grow?

The Self-Education Crisis

The research into LiD has had its own limitations. Success in programs such as Literacy or Math can be measured as there have been many programs created to address these subject areas. The success of one program may be compared with another through scoring on standardized tests. LiD, however, is program unlike any other, with no program or possible test to measure its success against. It is a new addition to the curriculum and, "Does not replace something; it does not aim to achieve something better than other programs, because it aims to do something no other program has achieved." (Egan K. , 2015, p. 292)

Not only do teachers and researchers not know how to assess a program like this, but the students seem to struggle as well. Students are not used to the idea of being entirely free to research of their own accord. What once was organized learning within the safety of teacher lessons and guidance is now a

free for all without limitations or direction. This new burden of responsibility for their own learning is a shift for students, and can be difficult for them to deal with.

Much like how there are stages of grief, Gibbons and Phillips (1978) outline that there are different stages that students go through as they move from traditional learning to learning which is self-directed. Those stages are outlined below:

1) Initial Ecstasy – As students enter into self-directed learning, they anticipate their future in the program with high optimism. Elated with their release from the constraints of a teacher-directed program, they begin to plan their first activities with great expectations and enthusiasm, but little experience or skill. Lacking in personal decision making and goal setting, students tend to choose activities that are either too easy and familiar or too grandiose and beyond reach. (Gibbons & Phillips, 1978)

2) Shock of Recognition – Students gradually recognize the huge size of the task they face. They begin to comprehend the extent of their ignorance. They see the difficulties in arrangements to be made. They realize that there is hard work to be done under their own motivation, and that their failures as well as accomplishments will be very visible. Overwhelmed, they experience the trauma of freedom and recognize with a shock the responsibility that goes with it. Many turn to the teacher for assistance. Others want to be told what to do. (Gibbons & Phillips, 1978)

3) Crisis – Shock turns to lethargy and procrastination. Immobilized by the complexity of their self-directed tasks, students fail to meet deadlines, or they perform at a level much below the one they had anticipated.

4) Realism - Students accept the reality of their failure. Recognizing the futility of condemning themselves and blaming others, they begin to examine the demands of self-directed learning more realistically. Gradually, students convert the acuities they experienced into valuable lessons. They clarify their role and the role of others; they develop a clearer picture of what they can accomplish; they accept the need for organizing their time and effort. This state of readiness for further development is the turning point in the transition. (Gibbons & Phillips, 1978)

5) Commitment – Attitudes necessary for successful self-directed learning begin to emerge. Work is conducted in a more orderly and sustained fashion. As they exert self-discipline and see their progress, students begin to report a new sense of power. Students recognize and describe changes in themselves and others. (Gibbons & Phillips, 1978)

6) Achievement – Problems arise but are not as devastating as in earlier stages. Students solve them, increasing their sense of accomplishment. They also complete projects, share them with peers, and generally begin to enjoy their ability to shape events. They begin to

> evaluate their own work and to report achievements with pride. As students take ownership of their success, grades and teacher/parent approval become less important rewards than the personal feelings of worth. (Gibbons & Phillips, 1978)

I can attest to these stages occurring within my own students as they experience the self-directedness of Learning in Depth. The class started out initially elated with their new found freedom to learn about their topics. Then they quickly become shocked at the vastness of the internet and overwhelmed with what to even begin to learn. I saw and still see students stuck in the crisis stage, unsure of what to do and procrastinating during LiD time or just looking at the same site again and again.

The goal as a teacher, then, is to help students through the stages of Shock of Recognition, Crisis, and Realism, with the ultimate goal of students working on their topics in Commitment and Achievement. It is not mentioned whether these stages *must* be experienced in order to move on to the next. As a teacher, though, the question becomes what are the tools I can employ to best encourage students onward from one step to the next; how can I prevent my students from becoming stuck?

Using Scaffolding

Helping students through the crisis of independently using LiD may rely on recognizing, from the standpoint of a teacher, that the students are not just learning about their topics. They are learning to do work independently, which is a point of maturation in their young lives. Using LiD challenges them not just to learn, but to develop thought processes and skills that lead them into their next stage in maturity.

Vygotsky defines the Zone of Proximal Development as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development and determined through problem solving under adult guidance or in collaboration with more capable peers. (Vygotsky, 1978, p. 86) Learning to be self-directed in research during LiD is really problem solving for the students. They must problem solve how to find information. They must problem solve to figure out what information is worth reading and what is not. They must problem solve to synthesize information into readable chunks.

All of the skills listed above fall into the functions that lie in the students' ZPD. The zone of proximal development "defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state." (Vygotsky, 1978, p. 86). These skills, currently in crisis mode for the students, must be nurtured to grow and develop with the help of outside mediation. This is mainly the role of the teacher, who guides the student by leading just ahead of development, encouraging the student forward to their next point in development.

The process of nurturing a child in their zone of proximal development is scaffolding the task into more manageable chunks for the student to digest. Scaffolding is not about just completing an assignment, for when adults "provide a scaffold they often accomplish more than just completing a task. The child may internalize the essence of the thinking." (Beed, Hawkins, & Roller, 1991, p. 649) The adult leads by example with clues and hints that demonstrate examples of thinking for the student to follow. Those thinking cues become internalized by the child, then making the thinking their own.

It is key to note that this internalization of thinking is not passive. The student does not absorb what the teacher learns like some sponge, sitting silently. Instead "The hallmark of scaffolded instruction is its interactive nature. There is ongoing interplay between teacher and learner in the joint completion of a task." (Palinscar, 1986)

> *"When children engage in problem solving, they display the kind of behaviors that are characteristic of dialogue, posing and responding to their own questions, essentially internalizing the dialogue they have experienced in the initial stages of problem solving when they were collaborating with a more expert individual. It is this dialogue, occurring with initial instruction regarding the strategy that enables learners to participate in strategic activity even though they may not fully understand the activity and would most certainly not be able to exercise the strategy independently. The relationship between the learner and the teacher in this supportive dialogue is to be contrasted with that observed when students are left to discover or invent strategies independently or when students are passive observers who receive demonstration and are "talked at" regarding strategy."* (Wertsch, 1980)

This dialogue does not exist just between teacher and student. Human learning "presupposes a specific social nature and a process by which children grow into the intellectual life of those around them." (Vygotsky, 1978, p. 87) Creating a classroom environment of encouragement, learning and mentorship from students operating within a higher ZPD, can set a bar for development for the entire class to follow.

Lastly, it should be noted that although we are slicking the slide with scaffolding in order to make learning easier, it does not mean that it should be easy. Providing reading instruction in a child's ZPD means finding the range of book readability levels that will challenge a student without causing frustration or loss of motivation. (Chaiklin, 2003) The same for other problems: they must be actual problems for students to solve. It is not necessary that the problems be fun either, as "Vygotsky never assumed that learning related to the zone of proximal development is always enjoyable: a child running a race may not be having pleasure, especially after losing, yet still this action can still be part of the zone of proximal development." (Chaiklin, 2003, p. 4)

Although the process of scaffolding in a student's ZPD is a natural process of questioning and leading, Larkin (2001) offers an outline of steps that outline best practices for teachers to follow when creating lessons or interacting with students. The goal overarching all is "to support students until they can apply the new skills and strategies independently. This means a gradual decrease in supports and a gradual increase in student responsibility with the responsibility for learning shifting from the teacher to the student." (Rosenshine & Meister, 1992) The steps are listed below.

1) **Pre-engagement with the Learner and Curriculum** – Teacher selects an appropriate task after considering student needs and curriculum goals. (Hogan & Pressley, 1997)
2) **Establishing a Shared Goal** – Together with the learner decide what needs to be done

3) **Actively Diagnosing the Understandings and Needs of the Learners** – The teacher must be sensitive to the learner and be knowledgeable of content matter to compare student performance to external standards for growth. (Hogan & Pressley, 1997)
4) **Providing Tailored Assistance** – Work together, leading just ahead of learning.
5) **Maintaining Pursuit of the Goal** – Keep the student focused on the goal to avoid frustration or failure.
6) **Giving Feedback** – The teacher who uses scaffolding summarizes student progress and highlights behaviors that lead to success in anticipation that students eventually will self-monitor their own learning. (Hogan & Pressley, 1997)
7) **Controlling for Frustration and Risk** – The teacher must create environment where students are free to try alternatives without being penalized and in which mistakes are considered part of learning. (Hogan & Pressley, 1997)
8) **Assisting Internalization, Independence, and Generalization to Other Contexts** – Means helping students to become less dependent on teacher's extrinsic signals for what to do next and providing students with the opportunity to practice the skills in different contexts. (Hogan & Pressley, 1997)

An essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these processes are internalized, they become part of the child's independent developmental achievement.

The Project Method

As seen in the steps for scaffolded instruction, goal setting is revisited again and again as a motivator for students. In Vygotsky's theory of ZPD, students can only problem solve when they have a goal for solving the problem. In Gibbons and Phillips' steps for solving the self-education crisis, revisiting goals is the turning point for those who ascend. Across the board, goal setting becomes an important part of leading students through self-directed learning.

If you think about it, life is only really worth living if you are living with goals. It's not necessarily that every goal is good, but that a worthy life is marked by purposeful activity and not just coasting. "We scorn the man who passively accepts what 'fate' or mere chance brings to him. We admire the man who is master of his fate, who with deliberate regard for a total situation forms clear and far-reaching purposes, who plans and executes with once care the purposes so formed." (Kilpatrick, 1926)

The hope of school, then, is to encourage students to devote their life to setting and reaching goals. Left to their own devices (literally), the students in my class seem to rely on filling their time with time wasting activities rather than meaningful ones. This is a broad generalization on my part, but when I ask my students what they do for fun, most of the answers are related to a phone or video games. No one has a goal of building a fort or building rockets. No one wants to be a fireman or a policeman. My point is that many of the students have no goals, even with their leisure time, and my hope is that in school they can learn the joys and fruit of having a goal to live by. The best example would be to organize LiD in a way that exemplifies the fruits of goal setting. Learning in Depth time should focus not on finding

random things about your topic, but instead have a clear goal, so that the enjoyable process of working towards it can be demonstrated, since "education based on the purposeful act prepares best for life while at the same time it constitutes the present worthy life itself." (Kilpatrick, 1926)

While working on a project with a clear goal, may not exactly be what was intended by Egan for LiD, I base my need for a goal on the context of the direction of LiD so far in my classroom. The students do not know what to do or where to go. Despite writing so negatively about Piaget for much of his career, ironically his Learning in Depth seems to demand students to do exactly what he told us not to encourage: students figure things out by themselves, creating sporadic, episodic learning on their topic based on what they can discover for themselves. I can tell you right now that letting them try to find things out by themselves is not working. Seven months in and Animal Habitations can't tell me what a habitation is, Bats can only tell me that they sleep upside down, and Apples just looks at pictures of purple apples every LiD time; something had to be done to intervene.

Of course, it comes down to intervention and mediation from the teacher. The responsibility of the educator is "to prepare students to competently assume their roles as self-directing and self-responsible lifelong learners. The need is to effectively combine teacher-directed and self-directed approaches." (Ashworth, 1963) As a teacher, the job is to scaffold and model setting goals and self-directed learning. This is done not only by creating scaffolded steps, but also in being vulnerable to do a self-directed project *alongside* the students, becoming "a co learner instead of an expert." (Knowles, 1975)

Key points from the literature:

- Students go through stages of frustration when learning to do self-directed learning
- This does not mean they are unable, it means they are working within their ZPD, and successful mediation from the teacher can help them develop
- Scaffolding steps are great tools for mediating a new thinking/process
- Goals are important for life and learning to push forward
- Modelling self-directed learning helps students to see examples of what to do

SECTION VI RESEARCH METHOD

As measuring students' individual learning on the depth they are taking with their projects can look different for each child, a majority of the data is based within the qualitative paradigm. Interviews, focus groups, visual data and ongoing observations were used to gather anecdotal individualized responses from the students. The surveys administered before and after the project are the quantifiable data in this research, although the questions in the data themselves are qualitative in nature.

Data Collection and Analysis

Interviews:

I conducted interviews with 5-7 students of varying engagement levels in their topics. One session was conducted before the project started, and one session when the project ended. The interviews were conducted during class time, but during times when the other students were talking and engaged with separate work to ensure that the other students don't hear the answers the students give, keeping their responses genuine. Mini-interviews will also occurred during project time, just to give snippets of data about the progression of the students through their projects. It should be noted that while I only used the data from a handful of students, all students will underwent a conference about their topics before and after the project to ensure all students felt treated equally as important about their topics.

After the interviews, I listed responses from the students underneath each question. I used the common themes in responses from different students to gauge if responses at the beginning of the project were different to those in the end. My assumption was that students at the beginning of the project would have little to say about their topic and at the end would be able to tell me more. I also assumed their motivation towards the beginning of the project would be lower than at the end of the project.

Surveys:

Written surveys (same for pre and post) were administered to all students participating in the research. The survey consisted of general questions about their feelings / knowledge about their topic and how much time they had spent on it, etc. The post survey included questions about the project and if it helped their understanding and learning of the depth of their topic. Survey answers were graphed to show differences between student feelings about their self-directed learning before and after the project. The resulting numbers were then interpreted by myself, along with any other data students had written in the comment section of the surveys.

Observations:

Daily I observed and made general notes in an ongoing research journal. These observations recorded conversations with students, or general trends or findings I was noticing in the classroom. I also took photos/short videos of students' involvement and progress with their projects. These observations were used to guide any readjusting of the project, as well as to guide me in creating a whole picture of the class when writing this action research report.

Focus Groups:

At the end of the project, I held two focus group sessions with four students in each. I asked the students a variety of questions similar to the survey questions, and asked that they freely talk about LiD

and their experience with the project. The student responses were recorded by myself and written under each question. I looked at the resulting data for themes, and made my own interpretations based on the student responses.

Visual Data:

Since it is a project, photos were taken of their progress and final projects/presentations. Visual data includes their LiD portfolios, student note taking and organizing, and final projects.

Visual data offers a snapshot of progress through the projects that words cannot encompass. The details of the students' hard work are made clear through simply a picture of their final projects. Evidence of planning along the way in terms of the planning pages was compared with final results to see if there is correlation between planning and final stages of projects.

Research Steps

Based on research into best practices in organizing students for self-directed learning, I created steps for the students to follow in creating their own projects. The steps for the project are listed below, but are discussed in more depth later. Within the project timeline I have inserted the points for data collection marked in capital letters.

INITIAL INTERVIEWS
PRE SURVEY

1) Find out something you want to learn more about your topic
   - Think of something you really want to learn deeply about your topic. What do you have the most questions about? What is the most wondrous about your topic?
   - Gather questions from other students/teachers about my topic.

2) Make a goal of what you want to achieve in learning about your topic
   - First, think of the WHO WHAT WHERE WHEN WHYs that you have related to your question
   - Create a goal - Examples: "I want to make a list of all the different kinds of _____" " I want to all about how ____ are made." "I want to learn about someone famous related to my topic."

3) Think of the materials you need
   - How will you find your information? What sites on the internet can help you? What books in the library might be useful to you? Who can help you find more information? (mom, dad, teacher, librarian, brother/sister)

4) How will you share your project?
   - What will you say to us during your presentation? What will be interesting for people to hear "Did you know that….?"
   - What visuals will you have to make your project interesting for us to see? (Diorama/poster/pictures/diagrams/artefacts)?

5) Set a timeline
   - When will you do your research? Set a specific goal
   - "I will learn _____ about my topic on Saturday and come to school with information on Monday."
   - How long will it take you to do your project?
   - How will you plan to use each school day? What will you plan to get done each day?

   PHOTOS AND OBSERVATIONS OF ONGOING WORK

6) Evaluate your work – How will you know if it's good?
   - Are you excited about sharing the information you have learned? Is the information something that people wouldn't already know?
   - Does your information answer all the WHO WHAT WHERE WHEN WHY about your question?
   - Do you have fascinating details for all your main points?
   - Do you understand and know a lot about your presentation? Can you talk easily about it?
   - Are your visuals well-organized, labeled and neat? Are they easy to understand?

   LATE INTERVIEWS

   POST SURVEY

   FOCUS GROUP

SECTION VII INITIAL DATA

Surveys

Students were asked to circle or colour in the face that best represents their feelings about the posted questions. The Pre-survey was done before the project began. The post survey was done just before they had presented their presentations to the class. The pre-survey results are as follows.

Pre-Project

Question				
I enjoy doing Learning in Depth		7	4	9
I am excited to share what I learn about my topic with others	7	5	3	5
I know a lot of things about my topic	3	8	5	4
I have lots of questions I want to know about my topic	2	4	10	3
I can work by myself to learn more about my topic		6	6	8
I know how to find out more about my topic	1	6	5	8

Student Sample: 20

Student Quotes:
"I love LiD and I love learning about my topic, ships."
"I don't like my topic ☹" (generally sad face circles)
"I am going to be shy when I have to do presentation."
"How can birds make nests?"
"LiD is fun!"
"I like my topic teeth so much! Thanks for choosing me the best topic!"

Around a third of the participants do not really seem to enjoy doing Learning in Depth. This was alarming, as from my perspective, most of the class seemed to really enjoy our 1 hour a week to look into their topics. I can only assume this is due to not understanding what to do or how to look up on their topic during LiD time.

Not many students were very excited to share about their topics. It was also alarming, as many students have enjoyed sharing the work they do out in the hall for the rest of the students to see. It did make some sense, as during LiD times, students are often focused on their own work and sharing with others. Also, at this point they had been made aware that a project was coming where they would need to present, and the nervousness around that may have affected their feelings.

Another third also didn't have great feelings about the questions they had around their topic. And another third didn't have great feelings about working independently on their topic. And another third didn't really know how to find out more about their topics. Overall, over a third of the class is feeling uneasy about LiD in general.

Initial Interviews

Interviews were conducted with students around the beginning of the project, and as well near the end. A list of interview questions with their responses is listed below.

What have you liked about LiD so far this year?	Roads: "Dunno" Buildings: "I like doing great stuff, like the stuff outside." Caves: "I like learning how it's formed and used to be, like, caves and stuff? Im learning a lot." Birds: "I want to know all the different kinds of birds. I liked when we searched for world records."
Can you tell me something interesting that you've learned about your topic?	Roads: "No, but some roads are different." Buildings: "I don't know. Buildings are good cause you can live in it." Caves: "I learned there's a cave in Japan, ya, it used to be formed 100 years ago. Lot's of people lived in them and made shelter. Ya. Caves are hollow places. Mines are where they get coal." Birds: "I don't remember."
Out of 10, how much do you think you've learned about your topic? Why?	Roads: "5. I don't know too much." Buildings: "5 or 7. I'm not that much good." Caves: "8. I'm not that good but I'm learning more." Birds: 5 cause I don't know everything yet.
Is there anything you would like to be able to do with your topic?	Roads: I don't know. It's hard Buildings: I'll find out tomorrow when we do it. Caves: How do the caves get formed? How many caves are in the world? Is a cave always a rock or is it something else? Birds: how do they build their nest perfectly as a circle?
What do you need to help you? What have been the best activities that have helped you learn about your topic?	Roads: Dunno. It's too long to write about stuff. I get tired and my hands hurt cause I write too much. Buildings: My cousin he opens the computer and the pages and he tells me, "just copy everything" so that's what I do. Caves: I do it by myself. I'm okay. Birds: My mom takes me to the library to get info already.

Some students clearly haven't thought much about LiD and it shows. Others have worked really hard and are excited to tell about what they are learning. Those that have spent the time on LiD can tell me interesting things about their topics. My natural response to them is to guide them with more questions that I have about what they just told me about their topics. "What kind of birds do you know so far? What kind of birds are in different areas? How can you group the birds you know?" My questions, I hope, are guiding them into the next ZPD in terms of independent thinking.

Those that really haven't learned anything seem to be motivated by the shame of not being able to tell me anything. When I ask roads about his topic, he seems almost embarrassed that after 6 months he still knows so little. This recognition is almost a fuel for him to be inspired to do well on his project and to learn more about his topic.

Some of the students who are getting help from home and increasing their knowledge base on their topic. Birds clearly has a lot to say about what kind of birds there are, and has been able to verbalize her understanding. According to her, her mom takes the time to take her to the library, and also I'm sure takes the time to listen to what she learns about birds. On the opposite, another student who is learning about buildings has produced a lot, but is unable to verbalize almost anything that he's learned about buildings. Despite creating a lot, just a little digging and I find out that "My cousin he opens the computer and the pages and he tells me, "just copy everything" so that's what I do." By doing this, it reaffirms my fears that they blindly copy down without knowing anything about their topics.

SECTION VII RESEARCH STEPS / PROGRESSION

Outline of Project

Based on the research into effective methods to encourage self-directed studying, I created a project for the students to complete over the following weeks. The main premise was quite open-ended: that they would be expected to give a 5-minute presentation on something specific they had learned about their topic. Knowing that this may be the first attempt many of the students may have had with creating a project such as this, I made sure to scaffold the steps and skills needed to ensure as much success as possible. Below are the steps as they were introduced to my class, and their general reactions.

Introduction of project to the students – Creating a Question

Upon telling the students that they would be doing an open-ended project on their topic, most students met the news with excitement. Chatty and bubbly, it became hard to explain further about the project as they bounced in their desks discussing what they might do with each other. However excited they were, I predicted that it wouldn't last if they were given free-reign over the next few weeks to come up with something. Their initial phase of elation would diffuse to shock-of-recognition at the dauntingness off the task, and possibly failure at point of crisis. (Gibbons ,Phillips, 1978) That failure and frustration would have been okay with them if it was just to be shown to me, but now that the expectation was that they share with their peers, the need for scaffolded strategy to ensure their success was imminent.

Forecasting their future frustration, I captured them in that excitement with an activity to help them develop an idea. Their experience with LiD so far had been randomly looking up different things about their topics, and the fear was that would end up being what they present about as well: a jumbled mess of facts. To narrow their focus and give them a goal, I had them think carefully about what exactly they would want to learn and present about their topics.

I modelled on the board how I would choose my own question I had with my topic: dogs. I let the students know that I would be working on a project to present as well, and that I would need to think about what exactly I would like to learn and present on. I looked off to the sky and touched my chin. I modelled for them thinking about a few things that I already know about my topic, and then thinking something specific that I really want to know about.

"Dogs…hmmm... Well, most of the stuff I've looked into about dogs is about the relationships people have with dogs. So, perhaps a question like, 'how do dogs help people?' might work."

I wrote down that very question on the board: "how do dogs help people?" With that up, I worked through creating a list of sub-questions that I could follow up on underneath the main one with the students. I wrote down a few myself, following the 5 W's: Who are the people that get to work with dogs? Where are some places where dogs help people? Why do people use dogs to help them? What are the most interesting dog jobs?

After creating a list myself, students started to chime in with their own ideas. Some had very thoughtful things to add; "I know that some dogs lead blind people," said one. I responded with adding a question on the board: How do seeing-eye dogs help people? Another mentioned that she heard about sheepdogs. I added: How do sheepdogs help people? One student said, "why are some dogs black?" but I made sure to cull any examples that didn't follow, leading the student back to the main question I made: How do dogs help people? If it didn't fit, we weren't going to write it down.

With a full list of sub questions under my main question, I now turned to the students and asked them to think about a main question that they would have about their topics. Before loosing them, I gave them examples of question-starters to aid them in coming up with a main question. These sentence starters follow the Romantic cognitive tools (Egan K. , 1997) assuming that following their toolset as early Romantic learners would aid them in imagining questions to learn about their topics, and to make them the most engaging. Example question starters followed the tools as seen below:

Collections and Sets – "What different kinds of _____ are there?"

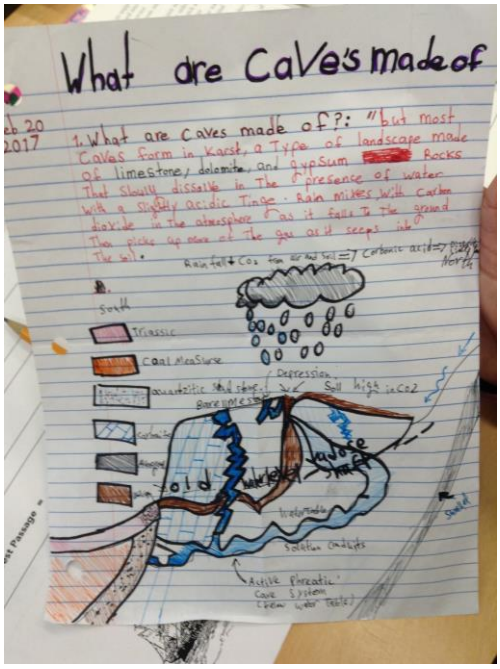
Extremes and Limits – "What's the _____est _____?

Humanizing – "How do people use _____?

Matters of Detail – "How do _____ work? / How is _____ made?"

Associating with the Heroic – "Who is a famous person associated with _____?

Once the students were going with creating a question, I made sure to go around and conference with each student, helping to guide them to create a valuable question to work from. Many of them were off to good starts, asking thoughtful questions, but they definitely needed steering in the right direction to make the main question complete. Many of them, I knew, still were in the dark on basic knowledge about their topics, so I guided many students to ask questions that got to the core of their topic. For example, upon asking Volcanoes what his question was, he said that he wanted to know why the rocks are red. I nodded, but prodded him with questions on basic knowledge. "Well, for me, I'm just really impressed that lava shoots out of the earth. Why does that happen anyways? How do volcanoes work?" He looked at me, and with enthusiasm said, "Well, you take some baking soda and some vinegar…" I cut him off, and let him know that I wanted to know about *real* volcanoes. "I'm pretty sure lava isn't baking soda and vinegar," I said. Coming back to him a little later, I found that he had made a main question of, "How do volcanoes work?" Clearly he didn't really know either, and wanted to know why now.



4 - Caves is on track.

After conferencing with all the students and making sure they were on track with their main question, they continued with creating their own list of sub questions. I encouraged them to get up and ask other students what they would ask you /make connections about related to their main question. As the students wandered, I continued to prod and ask my own sub questions as examples along the way.

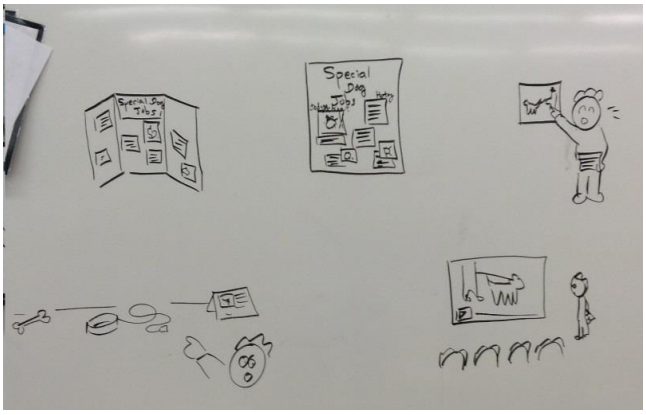
At the end of the day, the students kept their list of questions in their LiD folders. They were encouraged to add to it anytime something came to them. I gave them a written message in the planners to look into the main question of their topic over the weekend.

After the weekend, I was ambushed by students in the morning who had looked into their main questions on their topics. Caves usually just blindly copied down information, adding pictures of Pikachu on the side. This time she had a detailed diagram of a cave, with a title "how are caves formed" at the top. I asked her that very question, to which she replied, "ummm, limestone." Despite it being a mere one word answer, it was a huge jump from "umm, I don't remember," which was her track record. Airplanes showed me a bunch of bullet points he copied down about airplanes and how they are made. "I read that when they make jet engines, they throw a dead bird into the engine to make sure that it won't stop," he said. He pulled up a video on an iPad to show me in more detail. Both of these students showed great enthusiasm for learning which they were happy to share with me. This wasn't them wanting to pin something up on the board for people to see, instead they were showing me because they wanted to share what they had *learned* with me. It seemed that LiD was finally moving in its intended direction.

Project Presentation Format

Now that the students were collecting information on their main question, I decided to answer the other main question that they had burning: how are we going to present this? I outlined a variety of options that the students could use to aid them as they gave presentations, and outlined each one in detail. Each of the options made use of, again, the cognitive tools best associated for early Romantic learners. Each made use of a change of context, or the literate eye as a media of conveying their information.

A) Sandwich Board – Create a standing poster filled with information about your topic under sub question sections, with a main title that relates to the main question



5 - Examples of presentation formats.

B) Poster – Similar to the sandwich board, but can be held up during your presentation by another

C) Pictures and Diagrams – Clearly show what you are talking about with a picture.

D) Artifacts – Bring in things for us to touch related to your main question.

E) Technology – You could show us a short video about your main question

With the options in mind, the students now had two goals working in favor of their success. First, they had a clear question and sub questions to look up and research on, ensuring they don't fall off track. Secondly, they had a vision of how they would organize all their information into a presentation.

Creating a Plan

Now that the beginning was clear and the end goal was clear, it was time to hammer out the steps to get there. The students were asked to complete a "project plan" that asked them to think very carefully about what they would do, how they would find out what they need to know, what materials they would need, how they would share, and how they would know if they did a good job. I asked them to think very carefully about this part, so they could show me that they had clear goals and were aware of how to complete it. A few students were unclear of the direction of their projects, and by sitting down together with them and conferencing about what exactly they would be sharing, the students had more of an idea of how to organize their presentations. Some thought they were finished quickly, but again, a little prodding from me revealed the cracks in their plans. "I'm just going to talk," said Roads. I asked him if he would be interested in just listening to someone talk. "No, but I don't know what to do." I responded by merely asking him some questions. "What are some pictures you found interesting that you would like to share? Do you have any diagrams that you could talk about? You talked about asphalt, do you think people will be able to know what that is only by hearing you talk about it, or would a picture be better?" This spurred him to think more about how to organize for others, and soon he was asking me to print a diagram of modern road parts.

Learning in Depth Presentation

Over the next two weeks, you will be creating a presentation about your LiD topic. In the presentation, you will share about some amazing things that you've learned about your topic. You will need to decide what you will present about, research it to understand it, and share it in a 5 minute presentation.

MY PROJECT PLAN

Name: _____

Date: _____

Topic: _____

What will I do?

What do I need to learn / find out?

What materials do I need?

How will I share my project?

_____

How will I know if I did a good job?

_____

Keeping a Timeline

As we worked on the plans, it became clear to many of the students the amount of work they were going to need to do. Therefore I gave the students a timeline to work on to complete their project, and what would be the steps that they would need to do to complete it. This was an easy step for me to model, as I had just finished creating a timeline of my own action research at the time, following steps that I would need to follow. I in fact shared some of these steps with the students, modelling for them the thought process of breaking down a daunting task into easier chunks. I modelled again with dogs how I would break down my task into chunks on the board.

"So I have my main question and I know some things now. I have my end goal of creating a poster. What do I need to do to complete my task? How can I break it up?"

I went through, listing the things I would need to do to complete my task, such as:

- Research and find information on seeing-eye dogs
- Research and find information on sheepdogs
- Research and find information on police task dogs
- Print out pictures of dogs with jobs
- Find a good story about a dog job
- Write out good copies of my work onto papers to be glued to poster board (title too)
- Double check spelling and organization of work
- Organize and glue all information to poster
- Create cue-cards of what I want to say during my presentation
- Practice saying presentation
-

I then went through and organized what I needed to do, and asked the students for input on what a realistic timeline would be for each task. It was clear by their faces that many of the students didn't think about the details such as creating cue-cards for their presentations, or practicing their presentations. The students were then able to create their own timelines using the templates. Again, I circulated and helped students with guiding questions as to what they needed to do and helped chime in with things they may be forgetting.

My Project Timeline

Now that you have something you want to learn about your topic, set up goals of when you will complete what you need to do. Fill in the timeline with what you need to work on, and write in details of when you will complete it.

What Will You Do?	When Will You Complete it?	Is it completed?

With their, and my own, timelines out of the way, it was much easier to have a conversation with students about the progress of their presentations; the timeline they made acted as a map for exactly where they were on their projects. Without such a timeline, students may get lost or unclear of how far along they are. Now when I approached them in the morning I was able to ask "did you meet your goal for your project last night?" During LiD time, the students were able to focus much clearer on what their task was for the day.

Leading by Example

As this was their first attempt at a presentation, I remained wary about what the final results would be like. They still had had no exposure to what exactly a presentation is or watched a successful one. My fears were confirmed when, in talking to the 6/7 teacher, she mentioned how her students made really sub-par science projects for the science fair so far. She found herself disappointed in their work, mainly because they had no idea what even a science fair project was. She took the initiative and spent an entire weekend creating her very own finished science fair project to show the class, and the results were, according to her, much better.

I knew that for myself I was going to need to lead the way with examples from my own topic and own presentation. Beyond the examples listed above on how to organize for a project, I started to search for dogs information to report back to the students as I created my own presentation. I reported in the mornings early in the project with interesting things I learned. "Did you know that seeing-eye dogs date back to murals in as early as Rome 79AD? It depicts a blind man being led by a dog!" The students seemed to have mediocre responses to my own project. Either it really wasn't very interesting to them that early in the morning, or the shock of seeing how much I was finding out on dogs illuminated the vastness of the project looming before them still.

True inspiration came from witnessing the science fair, which was happening at the same time as we worked on our projects. Our class was able to file into the gym and go around and listen to the grade 6/7s talk about their science fair investigations. More than usual, the students were listening carefully to the older peers, mainly because I believe they were garnering exactly what a presentation looks like: how to introduce it, how to talk about the small points, etc.

Making Worktime Available

Despite a timetable to follow and motivation of a looming deadline, I found many students still unable to complete a lot of their research. It could have been a myriad of reasons for when they were at home: no motivation since school is over for the day, no resources or someone to help, too many responsibilities, etc. When they were at school, though, I found they were still somewhat unfocused on their projects. Many were distracted by non-helpful sites, or by their peers who, despite their good intentions of wanting to share, only kept their friends from completing their own work. I made some changes to our LiD time to maximize their output into their research in response to this:

1) Made them work in an independent space

Before, I was happy to see other students share what they were learning with others on the iPad. However, for the sake of doing this project, I found that it was ultimately distracting students from completing their own scheduled tasks, or finding their own information out about their own topics. As well, even if they argued earnestly about how they would work better together, ultimately they would end up only focusing on one students' work while the other student would get nothing done. That work they would do together was also a ticking time bomb. Give two grade three students an extended period to work in the vicinity of each other, and you've got about 5 minutes before they start getting each other off task.

In response to this, and to help them focus on their work, I separated each student from each other by up to two meters. This helped to focus the students on the timeline and tasks of their own project and to help them not be distracted by others. The classroom was not silent by any means; I was walking around conferencing with students about their progress. Some students were watching loud videos on their topics and dictating. Others were practicing presentations of their work. I have found a few students in my class who, self-diagnosed, require less distractions in order to focus. Luckily I have an empty classroom across the hall which I was able to deem as a 'silent work space' for just those students. The rule became that if you went across the hall to work, you were not to make any noise or you would be asked to return. The benefit of the split of the class was that those that wanted silent independence had it, while those that needed extra help were with me.

2) Have a clear goal for the day

Every day that we worked on our projects in class, I was able to go around and ask every student, "What is it you want to accomplish with your project today?" Many students were able to stick to their timeline and tell me exactly what they needed to do. If they couldn't answer, or if the answer didn't make sense, then I was able to identify that they had lost track of their goal, or weren't even sure what their goal should be. With those student, I was able to steer them back towards their project timeline and discuss what they could work towards next.

Codes and Sign Systems was into his third day of just copying down and drawing barcodes. I asked him what his goal was for today, and he said to show more bar codes. I could tell that he was stuck in a loop. I redirected him to his title (main question, which was "how do barcodes work?" and asked him if he could answer it yet. He knew that the bars represented numbers and letters, but didn't know much else. I asked him about how the laser reads it? What kind of a machine do they need and how does it work? After that, he found a video explaining barcodes and started copying information from it. Despite having a timeline, some students such as Codes needed check-ins such as the one above when they were stuck repeating the same process without understanding why. Why make a whole bunch of bar codes?

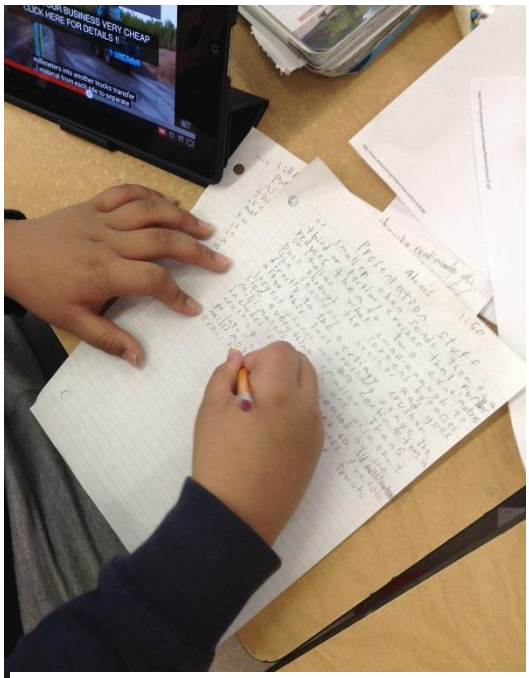
3) Make excuses to conference

As the above example showed, I found the teachable part of LiD is really when you are able to sit down with each student and discuss their own personal learning and thought processes they are having in relation to their topic. During the course of the project, I sought out times where I could get that one-on-one time to ask them those questions. One example was printing. The iPads are unable to print, and some of the pictures they want to do for their topics are just too intricate to draw, so I told them they could sign up and come and ask me to print something for them on the desktop. The conferencing part came when, after they told me what they wanted to print, I would ask them to show me why it is important to their project. Some could clearly say what they needed, such as Animal Habitations, who wanted a Lynx printed because it is endangered and that's part of his top ten list. Roads wanted a diagram of a road. Some students were totally off course, and when they asked to print, it was a good time to catch it. Flowering plants wanted me to print off a life cycle of a flower. Just the day before, she told me she was studying how to make artificial flowers. I asked her then, "why do you want me to print this off? What does it have to do with your presentation?" She told me how she was going to present on the life cycle of a plant. This being the third time she changed what she was going to do, I used the time to focus her goal more carefully. "I'll print off this life cycle, but your job is going to be to find out what each part of it is. Like, what's an ovum?" She pointed to some circles getting bigger on the diagram, saying, "well, it's this thing that gets bigger and bigger and then…" "No, you're just pointing to the picture and saying what is happening in the picture. Your goal is going to be finding out what each part of this picture is in writing." I printed it off for her, and she ended up telling me by the end of the day that the ovum is where the baby plants are made: the eggs. Had there not been an impromptu conference like that, she may have still been off track on her topic.

Continuing to work – Finishing up Projects and Preparing for Presentations

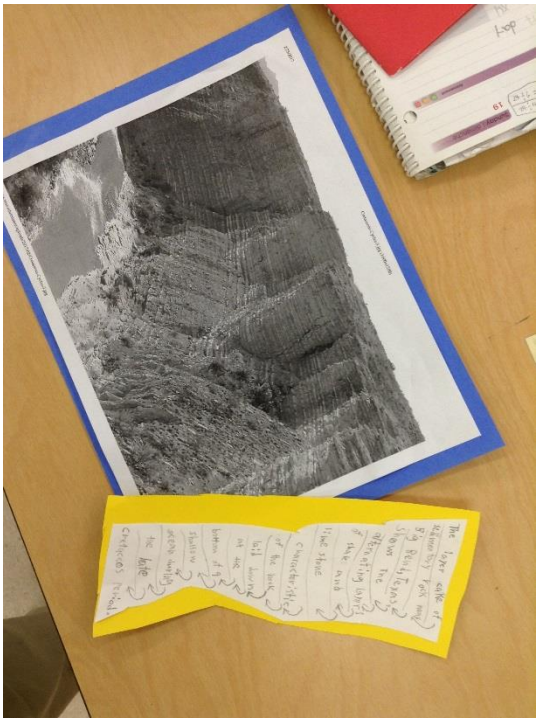
Within the last half of working on their projects, students started to enter a point of finishing up and preparing for their presentations. By this point most students had spent lots of class time learning and copying down information about their main question on their topics, and some had moved to a point of organizing their final presentations. However, many students were still at different phases as outlined below.

Roads was under the assumption that he was finished. He had copied down massive amounts of information from the internet on asphalt and how roads are made. His choice for a presentation was to just read out what he had scribed down to



6 Roads transcribing information he is learning from a video.

the class. What he had scribed was good, interesting information, but upon querying him he couldn't answer many questions about it, leading me to suspect he was another casualty of blindly copying down information.



7 Rocks and Minerals trying to claim he is finished his presentation. Nice try.

Rocks and Minerals also was convinced that he was finished. He had completed a few panels for his poster and claimed that he couldn't find any more, so he was done. He, as well, had copied down some information, but couldn't say much about what he had copied down. Upon asking him to show me his presentation, he began to slowly sound out words from his completed panels.

Bats, who is one of my early language learners, really ended up putting his full effort into his presentation. He had limited information on bats, but stuck to his timeline and tirelessly practiced saying out what he would say again and again in the hallway.

Ships was completely finished her poster, and was summarizing what she was going to say onto cue-cards. She and a partner who was also near completion would practice their presentations with each other. They also had insightful comments for each other on how to improve their presentations.

So the students were mainly broken into groups of either a) being nearly finished and ready to present, such as ships or bats or b) assuming they are ready to present but have no way of proving that, even to themselves, such as roads or rocks and minerals. The division seemed to fall between students who actually knew what they wrote down, as opposed to those who did not. Ships could talk about her project merely by pointing to pictures; it was all in her mind. Roads, however, could not tell me anything without just blindly reading off from what he had written.

To encourage those who were in the latter group to move forward in their presentations, I found myself asking them questions to help spur them along. They included:

1) How will you present? – just reading out information is going to be boring for other students. What will you do to make it more interesting? What could they look at? Do you have pictures or diagrams or artifacts?
2) Have you practiced yet? – You have to read fast enough that people will stay interested. Do you know all the words, or are you going to get stuck? Do you even know what it is that you're saying?
3) What are the steps to your presentation? – Will you introduce with anything? How will you know what to say? Will you be able to answer questions easily about your topic?

Another thing that really helped encourage those who were disillusioned in completion of their presentations was seeing the progress of successful students around the class. As I said, ships was nearly completed, I started to notice other students measuring their own projects against hers. Her knowledge on her topic was infectious, and it spurred other students to work harder on their own.

A regret on my part is that I did not continue to work on my own project: dogs. Looking back now, if I had a clear example for a presentation done and presented to the class in a thoughtful way, it would have been the best model possible for what their completed projects should look like. Many students, in fact, only seemed to realize they weren't done when Ships had her project completed. Only when they could measure against hers did they realize what a project should look like. At the time, I thought my best use of time was to continue to conference with the students, and I strongly believe it still was. However, for the future I am going to need to create, in my own time, an example presentation on my project to use as an example to ensure students have an end goal to shoot for.

8 Students, no matter where they were on their projects, remained engaged and focused on completing their presentations.

Final Presentations

On the last day before Spring Break fell the time for students to present their practiced presentations to the class. In the morning, many who had waited till the last second showed up at the door with completed posters, ripe with valuable information on their topics. Others, who were completed ahead of time, came in and immediately took out their presentations and started comparing them. Three of them told me that they had invited the principal and that she would be here. The students were clearly anxious, but at the same time excited to show their hard work to their peers, teacher, and principal.

I would not mitigate that excitement, but did consider carefully how to minimize their nervousness in relation to the presentations. In the past, I had students present to the whole class one by one for presentations on book reports, and found that the results were always not very engaging. First off, students are nervous to give reports in front of a silent class. Their voices end up being meek due to that nervousness, and they end up not giving as good a presentation as they practiced due to nerves. Second, in relation to the first point, students in their desks end up not being able to hear, and therefore disengaged with the presentation. Third, having each student present one-by-one is just time consuming. By the end of the fifth presentation, students in the class without fail will end up being antsy in their chairs and start falling off of them one by one.

So, I surprised them with a different format for presentations. For these projects, I placed them into groups of 4 or 5 and told them that they would only present within that small group. This caused disappointment in some students who were expecting a whole-class presentation, but I also saw some smiles, so I assume some relief for others. I decided on the groups, and place them in groups that, for logistics' sake, separated the ones who would distract one another. They were told that within those groups they would have 5 minutes each to present on their topics. If they were finished, they were allowed to ask questions to the presenter.

9 - Teeth giving her presentation to her small group on how teeth grow.

The positive result of this presentation format was that the students were able to make their presentations more informal than they would be had they presented in front of the class. As I circulated, I noticed some students asking questions mid-presentations, or asking for clarification on what they had said earlier. Another positive was that all presentations were done in a quick 25 minutes time, leaving lots of time for congratulations and no exhaustion.

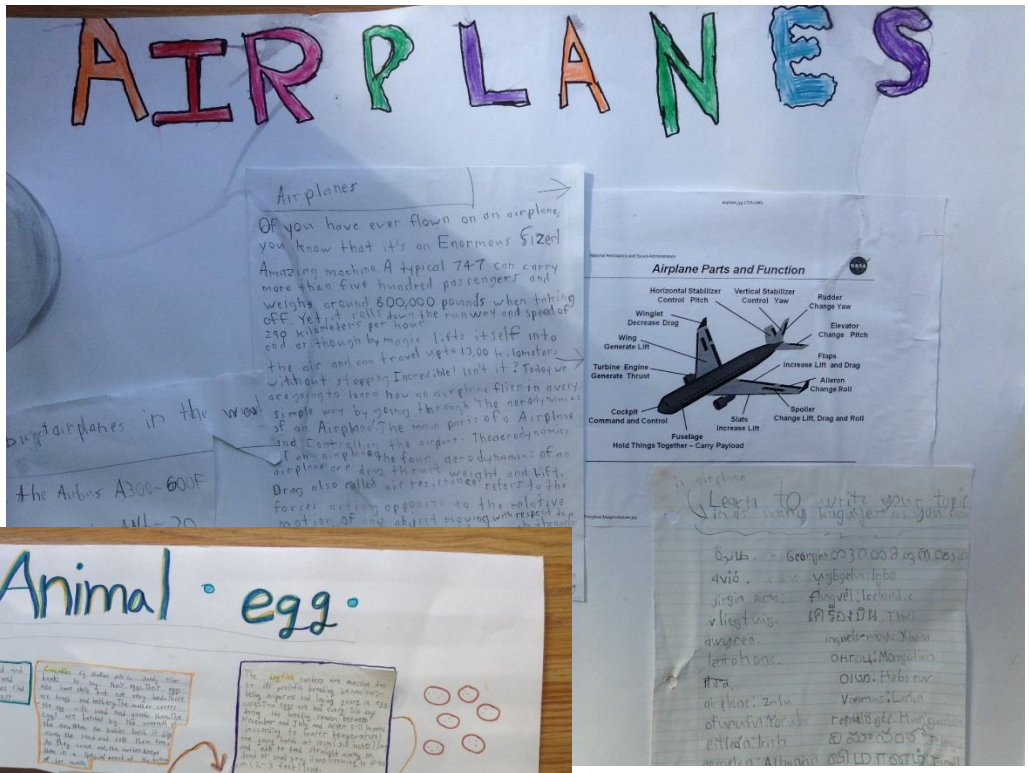
Some aspects of the presentation format could have been improved upon, though. First of all, in future presentations, I would create the small presentation groups based on ability level rather than just behavior management. I found that those students who were of a lower ability had trouble focusing on other presentations by students who were not of a similar ability as them. Likewise, those who were of higher ability had a sense of impatience on their faces when listening to students of lower ability. If I had grouped all the high-achieving students together, they could have learned from each other rather than just tolerated their groupmates, as well as the lower students who are of the same ability could have inspired each other.

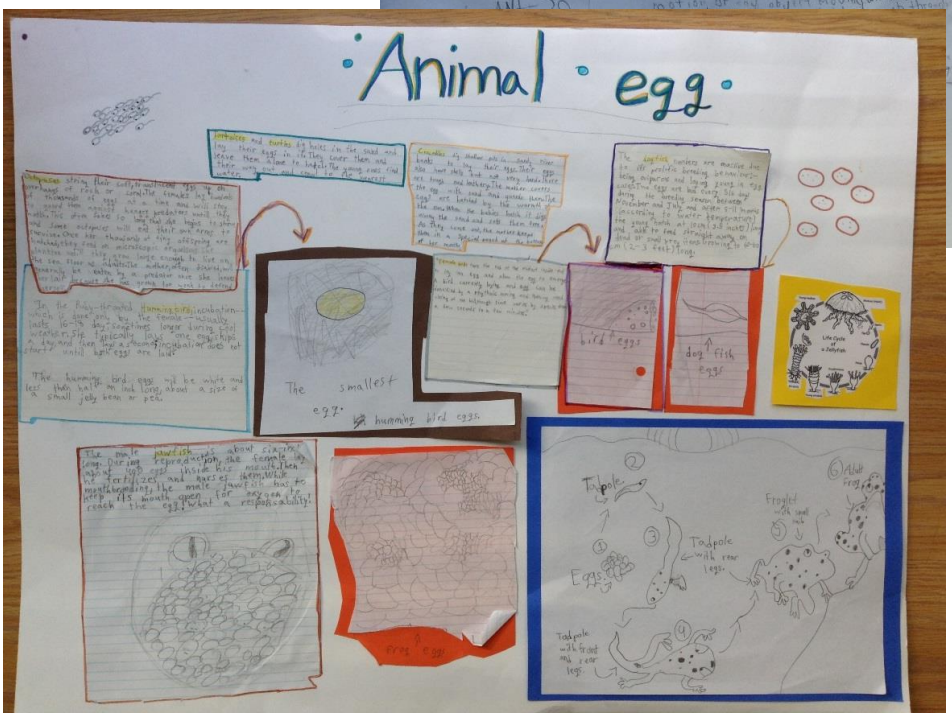
A second regret on my part is not having, again, a completed project of my own. Those students who went first had a difficult time, as they had no example to go from. In the future, I would kick off presentation day with my own presentation on dogs to inspire them before they did their own, with

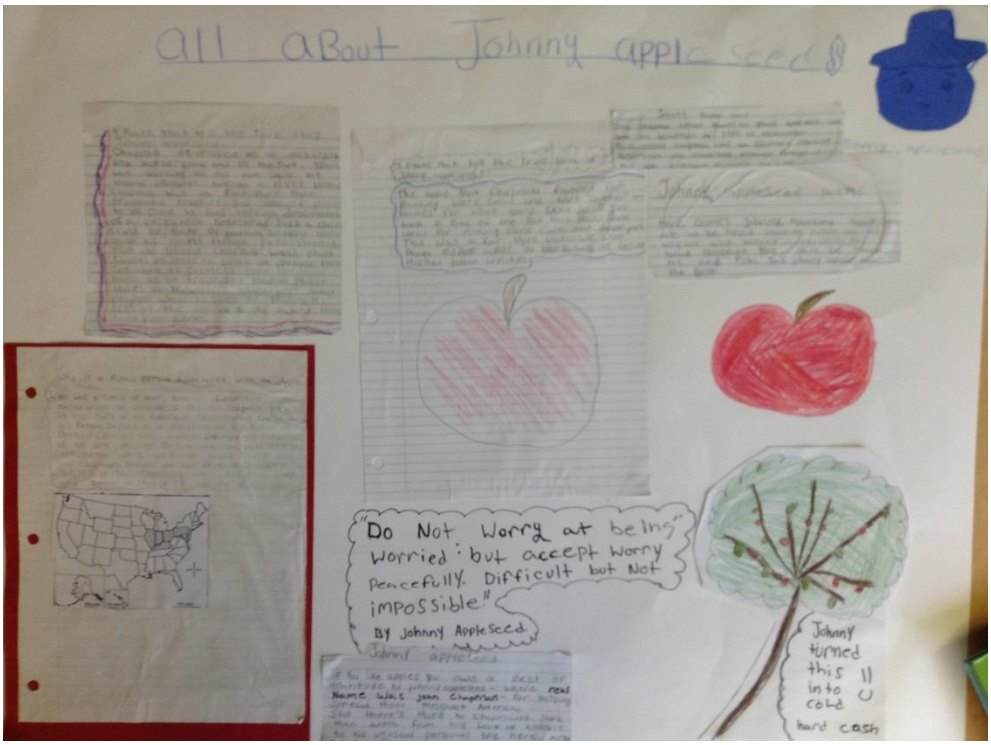
chances for students to ask questions of me. Many students asked me when I was going to give my presentation, as they were excited to hear mine as well. In the future, I would create my own presentation to share.

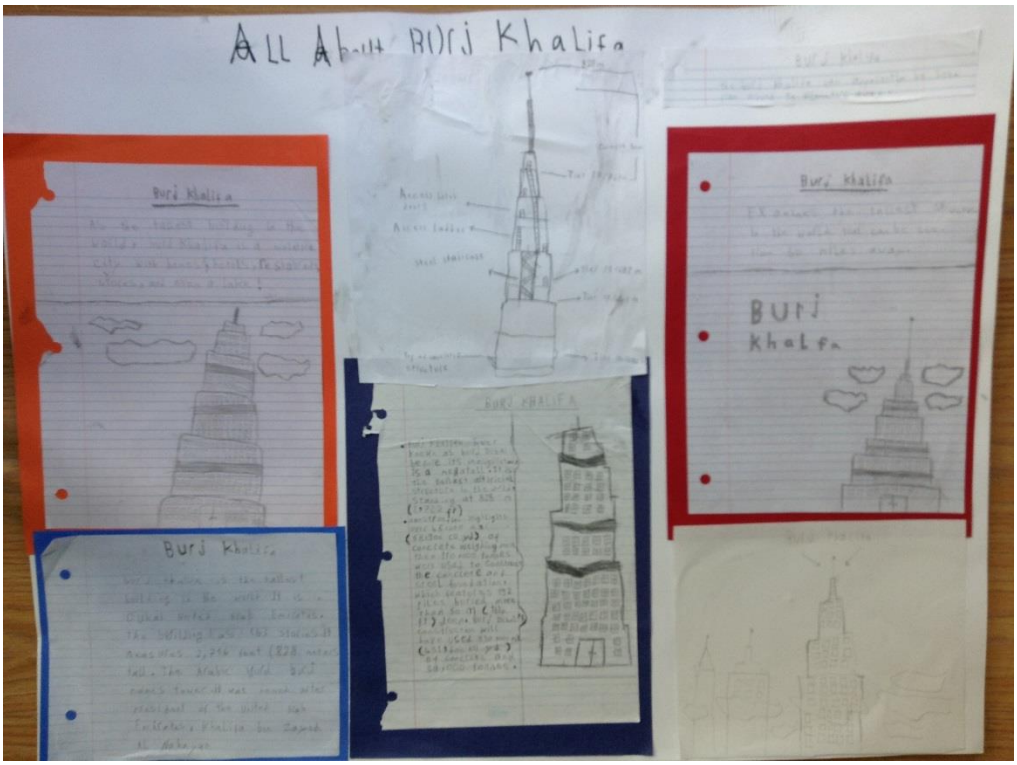
Moving forward from our projects, I let the students know that their presentations were not finished. I had a conversation with the other LiD teachers in the school, and they had suggested that we group all the three classes together for the students to share about their topics together in small groups. It presented itself as a perfect opportunity for the students in my class to improve upon their presentations and to share their learning with others in the school.

Examples of Final Projects






all about Johnny apple seed
"Do Not Worry at being Worried: but accept Worry Peacefully. Difficult but Not impossible"
By Johnny Appleseed
Johnny turned this 11 into cake
hard cash


All About Burj Khalifa
Burj Khalifa
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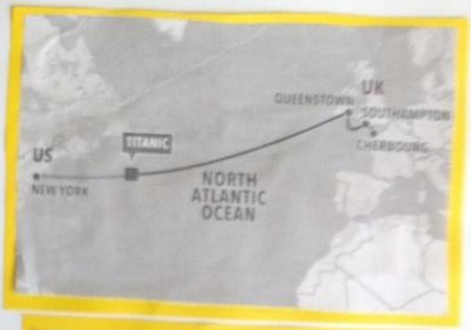
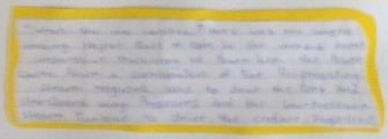
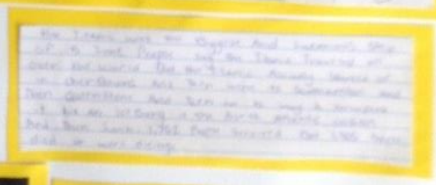
All about the Titanic







SECTION VIII RESULTS

With the projects completed and presentations given, the students seemed to show not only a greater enthusiasm around their topic, but also a greater, deeper understanding of their topic as well. During their presentations, as I walked from one to the other, I listened in to hear students excitedly talking about their topics and what they had created. It was clear from their excitement that they weren't just reading off from the page, but really knew and understood what it was they were saying.

Immediately following the presentation, I conducted post-surveys regarding their feelings/understandings around LiD.

Surveys

The following survey was administered the day of their final presentations. The questions are the same as the original survey. The resulting answers from the students, however, show a marked difference from the pre-survey.

Post-Project

Question				
I enjoy doing Learning in Depth			5	15
I am excited to share what I learn about my topic with others	2	4	6	8
I know a lot of things about my topic		9	4	7
I have lots of questions I want to know about my topic		6	3	11
I can work by myself to learn more about my topic		2	8	10
I know how to find out more about my topic	1	3	4	12

Student Sample: 20

"Mr.Stephens you're the best teacher because you made me learn about my topic TEETH."
"My topic is a little too hard but that is fine I guess ☺"
"I love learning about my topic and I love the topic I have and I love learning in Depth."
"I like to find new things about my topic."
"I want to be able to know about my topic and write a lot of it on my lid project."
"Lots of info but that's alright!"
"I feel good about LiD"

There is a marked improvement in the students' feelings regarding doing learning in Depth. One fourth of the participants now claim they enjoy it, and three-fourths claim that they really enjoy it.

Only 6 students have negative feelings around sharing their LiD with others, as opposed to the 12 before. This may be because they now see the great work they have put into their projects and are truly excited to share what they've learned with the class. As this survey was taken before presentations of their projects, that excitement looming may have affected these numbers.

There is evidence for students now feeling that they know more things about their topic. There are no students now who feel the most extreme negative about what they know, and a marginal improvement of those who really feel they know a lot more. There are still many who feel neutral, and this is not necessarily a negative. Upon learning more and more about their topic, students may also have come to understand how little it is they know about their topic, and how much more there is to learn. The increase in this column may be due to this realization of their own smallness in domain knowledge, which can be inspiring.

There is also a giant jump of students' positive responses to having questions about their own topics. Half the class now feels very positive about having lots of questions, whereas before only 3 did. I hope these questions lead them to further study on their topics. Ironic as we only looked at one question about their topic, but it branched into much more questioning.

There was also an increase in positive feelings about working independently on their projects, with half of the class feeling very positive about working by themselves to learn more about their topic, and an increase in students knowing how to find out more about their topics.

Final Interviews

Interviews Near completion of project:

What have you liked about this project so far?	Roads: I like searching stuff. It's kind of fun. I like looking at how to make it. It's kind of interesting. I learn facts I didn't know." Buildings: :I like to search and see pictures" Birds: I like searching about our topics. They have different beaks in different colours. Flowers: I like the life cycle about flowers so I can be an expert about the flowers. Teeth: I like it Airplanes: I like making the project. The posters, I like that. And finding more stuff. I wanna learn more.
Can you tell me something interesting that you've learned about your topic?	Roads: Some roads are made of asphalt, and asphalt is made of rocks and the rocks are crushed into cement. And after the paint mix is hot you put it on a truck and then you have to get

	it ready to cool down and it depends on if the temperature is cold. Buildings: The Burj Khalifa is 828 meters tall. It's the tallest building in Dubai. Birds: The hook of bird's beaks tear apart their food and hold onto worms for their young. Pigeons have magnets in their beaks. Flowers: I've learned some flowers are females and they have baby flowers, like a baby tree. Teeth: If your teeth fall out, bugs will come off it. Airplanes: It takes 2000 engineers to make a jet. They throw dead birds in engines to test them for when birds fall in the engines when they're in the sky.
Out of 10, how much do you think you've learned about your topic? Why?	Roads: 9 because I know lots of stuff now Buildings: Maybe 3 because I'm learning new about it (changed topic question late) Birds; 8 because I'm about halfway there now. Don't think I'll finish in time. Flowers: 6 because I've been learning 3 or two about the flowers like about the ovum and the pistil, so ya. Teeth: 9, I've learned so much info, but I'm still learning more and writing. Can I go do it now? Airplanes: 6 because I'm still finding stuff like a video and stuff
Is there anything you would like to be able to do with your topic?	Roads: No, I'm just going to talk (no pictures or anything) Buildings: I'm just going to make a poster. I'll put the info on there. (copy down aimlessly?) Birds: - Flowers: I need to plan the whole flower cycle Teeth: I'm looking for info, and if it's interesting or good I'll write it down Airplanes: Maybe find weird stuff about different stuff about it
What do you need to help you? What have been the best activities that have helped you learn about your topic?	Roads: Using iPad to search for info because they're no books to search for info. Buildings: - Birds: Just iPad Flowers: IPad. I use my mom's phone at home because we have no iPad. Teeth: IPad. I have one at home. Airplanes: Sometimes my sister helps. I feel like I can do it on my own.

From all students, there is clearly more understanding about their topics, as they all have something interesting to tell me about them now. Roads, who could tell me nothing at the beginning, now is learning about all the details of how asphalt is made and roads are painted. Flowers, who was really struggling, is now on the right track and learning all about the life cycle of a flower, learning terminology and what happens at every stage. Resoundingly the students claim that iPad are the thing they need. One student claims that he gets help from his sister at home too.

Focus Groups

Focus groups were held with groups of 4 students per time after the projects had been presented to the class. Those that came were volunteers. I told the students that they were encouraged to talk freely about the questions that I asked, and could talk to each other too. I told them they could be very candid, and did not have to worry about hurting my feelings as this was all to improve LiD, to better their learning. I made notes while the students talked to each other.

Participants: Flowers, Fossils, Bats, Cooking

How did you feel about your project? What was the thing that made you the most interested?
- I feel not done yet - I'm making two; one here and at home - I feel kind of embarrassed - I don't know what's missing, but it feels done. - Good.
What was something you liked about doing the project?
- Liked making poems - Liked making life cycle so I could learn about it more - I liked making my poster, but I need time away from my iPad and stuff and help to focus - I like my topic, it's helped me t want to cook
What was something you maybe didn't like so much about doing the project?
- Having to talk about it - I feel like my topic is really hard. We're kids, so we don't really know everything about it, so we can't really type in all the cool stuff we need to know about it. - If you want to do something like growing a plant you need more days. I planted an apple but it didn't work. - It's hard to draw the pictures - I want a different topic - I want to choose one
Out of 10, how much do you think your learning has improved on your topic since starting the project? Why?
9, 5, 6 - I didn't learn everything. - I get really into it sometimes, other times I'm focusing on other. I get focused on my phone rather than my homework. - I think there's more I could learn.

Is there anything that you, I, or someone else could have done to help you more on your project?
- My dad takes me to the library. We picked up some books about my topic. I learned about how the meteor killed the dinosaurs. - When we went to Guildford library I got some flower books - Some one needs to change the password on my phone so I can focus.
Where do you see yourself going next with your topic?
- I want to find all the flowers - I want to make real dishes - I want to learn how the dinosaurs got lava'd by the meteor - I want to learn how bats fly

Despite most of the students saying they needed iPads and nothing else during interviews, the focus groups showed that there was more to that. The students brought up some negatives regarding iPad use, and some arguments for using books instead. First of all, a negative that came up was awareness of their own distraction while using technology. Cooking made it clear that she needs someone to take away her devices so that she can focus on her homework. " I get really into it sometimes, other times I'm focusing on other. I get focused on my phone rather than my homework." She talked about the phone as if it was a separate entity, calling to her and demanding attention, and only intervention from another human, taking it away, would be able to save her. It may require self-discipline on her part, but as well at home there may need to be times without technology, where they only use books to do their research. It begs the question as to if the iPads used during class time are distracting as well. There was also the argument that they are just kids, and don't know what they need to learn/search for on the internet. A student said that adults know what to search for, but that kids just don't. This speaks to the vastness of the internet, and how sometimes children may not even have a clue where to begin. Again, it's an argument for finding books on their topic that are concise and filled with information under text-feature headings.

Another point that came up was how the students overwhelmingly want to change their topics. I did not respond to this, but listened as they said they want to choose one, and change to a different one. As I sat, I thought to myself, "Yeah, that would be great actually." For myself, I feel like I'm going nowhere with learning about dogs, and am completely not interested. However, I understand that they are all going through that right now too. I as the teacher and them as the students are all at the point where we have learned some breadth about our topic, and now we come to the difficult part of digging into the bedrock and going deep. It isn't easy, and despite temptation in my mind coming up of wanting to change my topic to something I want, I know that they will all change as well then, and the change will never stop. I want to give them more time with their topics to go deeper, as that is where the different learning is claimed to happen. In their projects alone, students had a hard time going deep. Buildings had the Burj Khalifa, and for months learned nothing more than how tall it is. If they change topics, I know that breadth will just apply to the next thing they study. I will try to encourage them to perhaps think of what they want to learn, and how their topic can apply to it for future projects. Just because something is hard does not mean it's not worth doing. Quite the opposite: asking student to stretch their understandings of their topics to

what they want to learn about will only increase their understanding and knowledge base through encouraging them to make connections.

Participants: Apples, Birds, Codes, Animals Habitations

How did you feel about your project? What was the thing that made you the most interested?
- I liked it. Kind of easy - It's no easy, cause the project didn't get finished in time - I'm scared because I don't want to show to people - Hard, I don't know much about it. Trying to do whats the thing we're studying. - It's easy and it's interesting
What was something you liked about doing the project?
- Liked searching up more - Liked printing and colouring stuff - Liked writing on the piece of paper and then colouring it - Liked writing poems about Johnny appleseed - Like writing and showing it
What was something you maybe didn't like so much about doing the project?
- Drawing something hard, like having to draw what looks like an animal - Whe I search about apples it goes to Apple phones - I don't like to present because I'm nervous and shy and might not make it 5 minutes.
Out of 10, how much do you think your learning has improved on your topic since starting the project? Why?
7, 9, 8, 9 - Be cause each thing I searched up, it's more interesting and gets easier and easier - I feel like the presentation you know you are doing a good job because you have to present for people and know it.
Is there anything that you, I, or someone else could have done to help you more on your project?
- Just the ipad - Learning about your topic. I want to understand more about it but don't know what to do. - When you help me: When you tell me what to search it helps because my brain shuts down because it goes to the wrong thing. -
Where do you see yourself going next with your topic?
- How do animals fight for food - How do birds die and how old can they be? - I don't know. I thin that what's the biggest apple seed? I dunno (sighs)
Asked them bonus question, how do you feel about staying on the one topic?
- I just get tired of searching about apples - I get mixed up of lines - I really want to have a new topic

Another negative for using the iPads was presented in this focus group. Apples, when searching her topic, complains that she always ends up on recommendations for Apple phones, and not necessarily about apples themselves. While I guess that could be a serendipitous path that she could be encouraged to take, she seems more interested in real apples, so I want her to uninhibitedly be able to travel that path. It would certainly be much easier for her to learn about if she had a concise book on apples, rather than an iPad that shows her Apple advertisements.

This may also be linked to the students just not knowing yet where to go with their topics. Much like Cooking, Apples required light jabs from me to encourage her to think about what to learn about her topic. Her pattern was to search "Apples" and then randomly click. I just offered her search lines in the form of queries: Who is a famous person that has to do with apples? She chose to learn about Johnny Appleseed. But again, she did get stuck. She found a few things about him, but I would jab with things that were missing. "Why is he famous? What did he do? I see his path there, where did he go?" These leading questions become necessary for her to move on in her topic. She was able to create a beautiful project, but needed those questions to keep going when she got stuck. These questions would have never come from another student, I know that. This is another argument for adult mediation to the next ZPD. Apples is at the crisis now of trying to think carefully about what she wants to know, and I am guiding her along. The next stage should be that she can learn to ask some questions on her own about what she wants to learn, with me guiding her along, before hopefully later her able to ask these questions to herself internally. With future projects and LiD time, I will do just that, ask her to try to think of questions she has, piping in with guiding lines to help her along.

I'm glad they did present on their topics. As one student said, "I feel like the presentation you know you are doing a good job because you have to present for people and know it." This upping of the ante really encouraged them to dive deep and learn something about their topics.

Expanding LiD into the School – Combining the Experiences from Other Teachers

LiD was initially something I planned to implement only in my own classroom. However, at the end of last year we had the opportunity to apply for a grant for some money for using Inquiry in the classroom based on teacher action research. There were three other teachers who were interested in applying for this grant and looking into how to use action research in their own classrooms. I suggested and sold LiD to them as a possibility that we could look into. Without much hesitation they took interest and we formulated an inquiry question around using LiD for our school and ordered some kits.

Despite not having used LiD for myself before this year, I was the only one versed in the philosophy behind it, so it seemed to fall on me to set the example. I would report to action research meetings with how things were going: the opening ceremony, how they learned about their topics, etc. I was surprised that even a few months into the school year, all of the teachers that signed up for using LiD still had not started using it in their classrooms, still having questions that needed to be answered.

These questions seemed answered once they had a chance to go out and experience LiD from other classrooms. First, the teachers involved in LiD had a chance to come and visit my classroom to see what the students were doing. Although my experience was limited in using LiD, they were able to see firsthand what it looked like in a classroom. They wandered around and asked students about their topics. Students showed them their LiD folders.

From visiting my classroom they became inspired enough to start. They asked me many honest questions about how to choose topics and then they began it in their own classrooms. These teachers found themselves frustrated fast with using LiD, though, as when we met in our next action research meeting, they were finding that their students were fizzing out after that first elation stage. They were claiming that the students were saying, "Why are we doing this? What's the point?" And them as teachers had no answer for that ready.

It seemed that they saw it working in my classroom, and expected it would work in their own the exact same way. They seemed unclear about how to foster motivation around their topics, or what the philosophy was still around LiD. They even asked me if I could come in and teach LiD for them to their students, as they didn't know how to motivate them.

It was this point when I realized that seeing my class was not enough. I arranged for a much more experienced and much more grade appropriate 6/7 LiD teacher to have our two enrolling intermediate teachers visit her classroom for the morning. They came back much more refreshed and ready to use LiD, telling me all about the amazing ideas they had for their class now.

All in all, the point seems to be that teachers really like to talk and complain about how they don't know what to do, that is, until you show them it in action. Then, they will be excitedly trying to put it into their own practice. As well, it seems to take more than one experience. For the teachers at our school, they had to witness it twice before they really felt like they were ready to lead the students further in LiD.

As a final note on this topic, one teacher who is in our action research group still has not started to use LiD at all. She still seems on the fence about using LiD, or why we should use it. I know that the other two teachers were where she was before they saw it in action, though. All it would take is an experience in another room, seeing it in action, to change her mind.

Making LiD cross-curricular – Literacy Support

I am lucky enough to receive Late Literacy support in my room twice a week. This involves team-teaching literacy lessons to the class to target reading skills that can support them in their own reading. At the beginning of the year we focused in one-off lessons that aided them in reading non-fiction for History or Science. These proved useful when reading textbooks in class. However, we realized that the most useful non-fiction strategy lessons we could provide were ones that taught them skills for understanding non-fiction resources related to their topics. This was due to some of the patterns we were noticing about how students were searching about their topics, and the limitations of some of their comprehension. We decided that teaching them strategies that they would really be using when searching for information on their topics would be much more meaningful than one-off strategies that were only useful during class lessons, as they could not only practice the skills when searching, but also really use them to help understand the information they are finding.

When we met together mid-way through the project, I brought up some of the patterns I was seeing in some of the students when working with information they found on the iPads. I was noticing that around the room while doing LiD, the students were just copying down entire pages of information on their topics without considering carefully about what it is they were copying down. Codes transcribed almost an entire Youtube video on how barcodes work, which was good for him, but time consuming as he didn't copy down just the main points, but the whole content, even the useless side-jokes. And Teeth girl, I found her mid-project copying down something from Google about Minecraft bats. I asked her why, and she said that she googled teeth and this was the first thing that came up. It was apparent that she was blindly copying down information without even reading it or considering if it was related to what she was learning about. "Why are you copying it down? What does it say," I asked. She just shrugged.

Fact	Question	Response

1 - Blackline Master for helping students to take notes and think carefully about what they read.

So, in our late-literacy meeting we decided we would be looking at searching for important information and key points in the text. We continued to use the resource for non-fictions strategies we were currently using, and decided to focus on how to note-take: finding important information and not just copy down everything, how to ask questions to what you learn to guide you to find more related information in your next search, and not just random next searches and to make sure your searching stays focused and you know what to look for and how to see if doesn't make sense, as well as summarizing for when writing up what they are putting on their boards how to write what is the most important and re-write it in their own words. There are blackline masters that can help us along:

Our first lesson plan was to model how to use note-taking effectively using the Literacy teacher's own topic: bees. The students followed along with reading, and she demonstrated how to stop and think when she had found interesting facts from the text and modelled copying down, just the main important fact, into her first column. She then spurred the students to come up with questions they had to that question.

Literacy Teacher: "Bees cover the larva chambers with wax. Hmmm, I am going to write that down because it is an interesting fact. I have questions though about it. What questions do you think I would have?"

Students: "How do they get out if there's wax? Where does the wax come from? What is the wax made of? Why do they cover it?"

Thirdly, she also had them think of their own responses to the facts they found, and questions they came up with. Some example responses from students were:

"I think the wax is made by the bees. I think the wax is made from nectar and pollen. I think the wax maybe protects the larva while it grows."

With the example out of the way, the students were then given time with text on their own topics to fill in the same blackline master, practicing the skill of notetaking and thinking about what it is they were notetaking about. While it started off as an initial practice, the students now have a framework for effective notetaking that they can practice during their own LiD times when learning about their topics. We also have a starting ground for discussion when I conference with them, as well. Now when I see them copying down information, I ask them "what is the main fact you copied down/what questions do you have about it/what are your responses?" If they can't answer, I can encourage them to take a blm, which I have available in the class, to help guide them when notetaking. The most useful part of this taught skill is just this, that they are able to use it to really inform their own practice in learning about their topics; it isn't just some one-off lesson.

SECTION IX RESEARCH PROJECT SCOPE

Delimitations

To make my research manageable, I chose to delimit it in certain ways. First of all, the research on this project was only conducted within the limits of my own grade 3 / 4 classroom. Within my classroom, I allowed all students who gave consent to participate in the pre and post surveys, as well as the participation in the project. For interviews and focus groups, however, I only chose students that I believed would be able to give me thoughtful responses and would be able to speak up in a group setting. It should be noted that I did not select students based on ability level, and had a variety of different student outputs involved in each focus group and interview.

Assumptions

To complete my research, I made the following assumptions. For the pre and post surveys, I assured the students that their honest opinions were what I was hoping to find out. I assumed that they answered truthfully, and did not answer just to impress me. To encourage this, I allowed students to not put their names onto any surveys. I also made the assumption that they clearly understood the questions as I went over the questions with them before administering the surveys. For the interviews and focus groups, I assumed that, again, they were speaking candidly about their experiences with Learning in Depth, and again I assured them that I would not be insulted by their frank opinions. I assumed that they were not influenced by the others in their focus groups, or by accidentally hearing any interviews that I had done with other students.

Terminology

To understand my research more completely, the following terms must be defined:

Cognitive Tools- Egan proposed that there exist five kinds of understanding (or cognitive tools) that individuals usually master in a particular order during the course of their development that reflect psychological, epistemological, and cultural factors. (Davey, 2015) Teachers can encourage the development of these tools by designing activities around the toolset that the students are working in. For example, students working in a Mythic kind of understanding would benefit from songs and chants, jokes and humor, storytelling, binary opposites, and play.

Learning in Depth – LiD is a program developed by Kieran Egan at Simon Fraser University in which each student is assigned a topic, and then entrusted to learn as much as they can about that topic over the course of their educational career.

Mediation – According to Vygotsky's theory of constructivism, a mediator is a tool that is used to help people interact with their environments. In the terms of this research, the mediator is the teacher, and mediation becomes the act of helping the students interact with the details of their Learning in Depth projects and thought processes.

Modelling – An instructional strategy in which the teacher demonstrates a new concept and students learn by observing the example.

Scaffolding – In education, the term scaffolding refers to a process in which teachers model or demonstrate how to solve a problem, and then step back, offering support as needed.

ZPD – The **zone of proximal development** is the difference between what a learner can do without help and what he or she can do with help. It is a concept introduced by Soviet psychologist Lev Vygotsky (1896–1934).

SECTION X CONCLUSIONS

Based on my research findings, I have come to the conclusion that, yes, using a project-based approach to Learning in Depth encourages more in-depth understanding for the students on their topics. As seen in the initial observations, interviews and surveys, the student confidence and understanding in their topics was generally lower than the responses after the post surveys and interviews. I attribute this to a number of reasons.

First of all, the students experienced a heightened sense of responsibility with a project to do. Before in Learning in Depth time, they had been aimlessly looking for information on their topics, but had no deadline or assessment to worry about. In my experiences with the students, I found that some of them didn't take the time we spent on LiD as seriously as they could have. With the project, they were expected to produce something and to present it to the class in a finite timeframe. This awareness that their learning would be made visible was a motivating factor for some students.

Secondly, the students had a clear goal of what they wanted to accomplish with their topics. Before in LiD, the students just aimlessly looked at information, gleaning whatever random facts they could from the internet. With this project, they weren't just bumping into walls, but had to sit down and really think hard of a question they wanted to answer. Having a clear question acted as a clear goal to motivate them towards what they needed to understand next about their topics. It also acted as a guide for me when conferencing with them. If they were lost or stuck, all I would need is to remind them of their goal and we could work together to think harder about how to answer it.

Thirdly, many of the students learned skills for searching/note taking that they did not have before. Besides motivation, just pure logistics of not knowing what or how to search may have been a factor for some of the students. As I mentioned earlier, some students just searched the same things again and again without considering what it was they were reading or what it was they wanted to learn next. With the combined aid of the Literacy Helping teacher, we were able to give structured lessons on how to note-take on our topics. The students were able to transfer those skills to their own as they practiced using note-taking skills with their own topics.

Lastly, many of the students felt pride in their final projects, and have internalized the knowledge. Unlike the random objects that they would find and print off the internet, then ask to hang up in the hall, the students really worked hard on these presentations. Many practiced for a few days exactly what they would say in front of their peers. Many considered carefully exactly what they would put on their posters. Even after the presentations were finished, the students were easily able to talk about their experiences of learning, and what they had learned about their topics when working on their presentations.

While not all of the student experiences with their projects were an easy one, it was clear that all students involved experienced success with their presentations. By success, I mean that the students learned something that they did not know before. That is the main purpose of LiD, is it not? That students learn something for the sake of learning it about their topics? With the steps that were done in project form, I can attest that I feel more confident leading through LiD now, with more direction and with more intervention on how to help students to meaningfully find information on their topics.

SECTION XI IMPLICATIONS

With the conclusions and data from the project in mind, I can make some suggestions for using LiD in the classroom. Some of these suggestions do not fit with the main proposition of what LiD is, as described by Egan. However, in my own classroom, I have found that one must hold philosophy in one hand and reality in the other, and make decisions for your class that are to the benefit of both.

1) **Use Books, Not Technology**

   I understand that for the entirety of this action research report, I have written the work iPad multiple times. And, I also notice that the students are torn about iPad usage: Some claim that it is all they need to learn, while others say that it distracts them from learning. For myself, this entire process of learning LiD this year has been frustrated by the plain logistics of using iPads. Students don't know how to use search terms and must learn that process. Students must learn how to sift through real information versus non-useful information in google windows. Students must figure out how to read harder words, as many sites are written for adult readers. The list goes on.

   I've come to realize that the most useful thing for a student learning their topic is to have a book. Yes, a book. It's strange to say, but just looking through a single book dedicated to their topic will concisely give the student far more information than the deluge that is the internet. Most of the information in a non-fiction book is already organized into topics and headings, meaning they can find a lot about one question they have just by looking at a single page. Although it may be important for them to learn these searching skills on the internet in the future, for the sake of Learning in Depth, the focus should be on doing just that: learning about their topics, not trying to figure out where that information is. For future years of implementing LiD, I will be demanding books to be their starting points, for pure navigational purposes.

2) **Work from a goal**

   Despite the claim that Learning in Depth should be *learning for the sake of learning,* we all know students aren't born with purposes so pure. The overall topic that students have been assigned is not a clear enough goal for them to work with. As seen in the interviews with the students, many don't even know where to begin with something so vast. Having a clear goal can help the students and yourself to remain focused and not lost in endless information. Having a goal can help you as a teacher too, as it will guide your discussions with you students to always being about how you can help them achieve that goal in their own learning. The project method is merely one way this can be accomplished. The student, even without some sort of assignment, can always be working forward if he has a goal.

3) **Do regular mini-lessons on reading comprehension**

   The best part about LiD is that it is a time when they are really utilizing the reading strategies they are learning from your reading program. To guide them in leaning about their topic, get a general sense of what the students need next in their understanding of non-fiction texts and use that to guide your planning of what skills to teach next.

4) **Conference in their ZPD**

   When the students are doing LiD, it is a perfect time for them to practice the reading strategies you taught. As you will be sitting one on one with students, consider their ZPD, and lead just

ahead of development, cuing them with questions that you believe they should be asking themselves, for them to, in turn, internalize in the future. If you have a student stuck on what to learn about 'how airplanes fly', guide with questions, work together, let it be a collaborative process meant to build up the student and lead their development.

5) **Lead by Example**

One thing I did not keep on top of that I regret the most is not constantly learning about Dogs (my topic) each day and reporting back excitedly to the class. I know that if I had, it would have set a precedent and an example of how to be excited about what you are learning, how to present that information to others, how to organize it, and how to demonstrate internalizing of it for the students. I recommend fully to do your own topic as an example, excitedly, along with your students. As class time will demand your attention be on the students for conferencing, I regret to inform you that you will have to do it in your own time. The only reason I did not keep on top of it is that finding information on your topic is extremely time consuming. I found some information on 5 famous dogs, and it took me 2 hours to put together a small poster on it to show the students. I understand as teachers we don't have that kind of time. But it is necessary. As well, it really gives you a new sense of respect and awe for the students who come each week showing you a full page of information that they hand-wrote and drew pictures for.

6) **Give them Time**

If you have students that have real trouble learning about their topic at home, and you find the time you work together at school is valuable, then give them more time. For the project that we worked on, there was no way that in two weeks they could have did what they did without me giving them extra time and attention. As well, since LiD is meant to be for 12 years of their life, take your time letting them learn about it and don't demand too much. While it may seem from this project that I am demanding a lot from them myself, they still do not know that much about their topics. While Boats, my highest performing student, knows a lot about ships (who are the world's leading manufacturers, who were the Vikings, how did the Titanic sink, etc) I still consider what she's learned very little information in the grand scheme of things. There's still lots she could learn and lots of places she could go. And this project only spurred her forwards with her learning, which was my main goal.

7) **Relax on the idea that they need to stay on one topic**

I might get in trouble for this one, but as I claimed in my findings, many students and I are really exhausted with our topics. I find many of the students asking me if they can switch to something that they really want to study. I find myself thinking back to the purpose of LiD, and it is supposed to be pure learning. If students want to study something else, why am I trying to block that? Some options that I will be considering for next year are as follows: a) I can ask them to choose another topic and relate their information they learn back to their original topic each time they learn something, or b) I can let them choose an entirely new topic, one they really want to study and will be stuck with for another year.

All of these implications I only base on my own experiences with LiD with the students so far this year. I understand that each teacher has their own strategies and ways of doing things. As well, I know that the classroom composition can decide what you end up doing as well.

With everything in mind, the project approach to Learning in Depth is merely a single way to increase responsibility for learning within the students. As I continue using LiD in my classroom, I will be actively searching out ways to encourage students to learn about their topics in a more in-depth way. My hope is that as I grow to learn more in-depth about best practices for Learning in Depth, the students will grow also.

A final snapshot is a poster that Caves, Mines and Tunnels made post-project. She found all the flowers and stones related to Canadian provinces, and posted them up on a poster. When I asked her about each one, she told me which province it was from; she was finally able to really tell me what she learned. When I asked her why she did it, she said she found information in a book and thought it was really interesting and wanted to share, so she made something like our presentations. It is good to see that the process of the project approach to LiD transferred to other areas of learning for her. I hope to see the same happen for all other students in the future.

10 - Caves Girl creates a poster on Canadian symbols to share with the class.

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Appendix

Participant Consent Form

Feb 14. 2017

Dear Parents and/or Caregivers,

I am currently working on my Master of Education in Imaginative Education through Simon Fraser University. This program enables me as an educator to reflect upon my practice and its impact on my teaching, as well as on my students' learning, with the intention of developing my own best practices. As part of my studies I have developed an inquiry project to examine Learning in Depth and how to encourage students to go deeper in their topics. I anticipate that my inquiry will provide me with insights that will help me develop a meaningful way for my students to represent and understand what they are learning. It will also help me to reflect on my practice as a professional and improve my teaching.

My inquiry will be primarily informed based on my own observations and reflections on my work as a teacher. Over the course of the next two months I will also collect student work samples, surveys, reflections, videos, and photographs to inform my understanding of my practice. All elements of my inquiry will take place within the context of my normal instruction and practice.

This letter of informed consent is part of my ethical responsibilities as a teacher-inquirer. I am asking your permission to use your child's work samples, surveys, reflections, videos, and photographs to present to members of my graduate cohort and my instructors to demonstrate my own learning. As part of my responsibility as an educator, professionalism around issues of confidentiality will be ensured. Consistent with the ethical protocols of teacher inquiry, if your child is mentioned in the presentation of my work, an alias (pseudonym) will be used at all times to respect and protect his/her privacy. I would like to reassure you that regardless of my inquiry, my ethical best practices as a teacher will remain the same.

This inquiry process is not intended to assess, place, or evaluate your child in any way, but will serve to strengthen my teaching practice. Regardless of your decision, the integrity of the relationship I have with your child will not be affected, and you can withdraw your consent at anytime.

If you have any questions or concerns please don't hesitate to contact me at (604) 572-4054. If you agree to give your permission, please sign below. **Return one signed copy and keep the other for your own records.**

Thank you for your consideration in this matter. I look forward to hearing from you.

Sincerely,

Clayton Stephens
Hjorth Road Elementary
Grade 3/4

Child's full name: _____

I, _____give permission for my child to be included in the inquiry and for the collection of work samples, surveys, reflections, audio recordings, and photographs as described above.

Parent/guardian --- Signature: _____ Printed Name: _____

Date: _____

Pre/Post Survey

Name: _____ Learning in Depth Survey

Date: _____

My Learning in Depth Topic: _____

Circle the face that best expresses your feelings about each question.

I enjoy doing Learning in Depth.

I am excited to share what I learn about my topic with others.

I know a lot of things about my topic.

I have lots of questions I want to know about my topic.

I can work by myself to learn more about my topic.

I know how to find out more about my topic.

Is there anything you want to share about your feelings around Learning in Depth? Any comments or questions?

_____

_____

Interview Questions

Interview Questions: Name: _____ Date: _____

PRE-PREOJECT

What have you liked about Learning in Depth so far this year?

Can you tell me something interesting that you've learned about your topic?

Out of 10, how much do you think you've learned about your topic? Why?

Is there anything you would like to be able to do with your topic?

What do you need to help you? What have been the best activities that have helped you learn about your topic?

Interview Questions: Name: _____ Date: _____

Post-Project

How did you feel about presenting your project?

Tell me how you created it.

Is there anything you want to learn more about your topic now that you're finished?

Is there anything you would do differently with your project?

Anything you need to help you?

Anything else you want to share or comment about your project

Focus Group Questions

POST-PROJECT / FOCUS GROUP

How did you feel about your project? What was the thing that made you the most interested?

What was something you liked about doing the project?

What was something you maybe didn't like so much about doing the project?

Out of 10, how much do you think your learning has improved on your topic since starting the project? Why?

Is there anything that you, I, or someone else could have done to help you more on your project?

Where do you see yourself going next with your topic?