Research Article

Information Literacy Education (ILE) through School Project Work: Stories From Developing Country Teachers

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Abstract. This paper explores information literacy education (ILE) through a school project work in selected Malaysian schools. This qualitative study investigates how IL is taught by teachers and experienced by students on a big scale,nationwide-standardized school project. The research participants were five history teachers and twenty-three students from four schools. The data collection techniques employed were teacher's individual interview; students' focus group interview; document analysis (project journal and project report); and classroom observation. The findings show that while teachers employ five different teaching techniques to facilitate the students with their project, these efforts were geared towards accomplishing a predetermined learning output, rather than guiding students on how to do research. Teachers relied heavily on project guidelines to help the students produce a pre-determined project report, suggesting shallow research instruction. Results on students' project experience similarly reveal compelling evidence of students' preoccupation with the project guideline to produce their report. They only employed basic searching strategies and did not explore more sophisticated search techniques. The students used information mainly from the Internet resources that directly answered their project questions, and did not evaluate or filter information as suggested by IL models. They also were found to have serious problems concerning the ethical use of information. Further findings suggest that IL was not adequately delivered and integrated by teachers in classrooms. The findings are hoped to provide baseline information on IL development in less-developed countries where IL awareness is still minimal.

Keywords. Information Literacy (IL); Secondary schools; Project work; Teaching approaches; Plagiarism

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1. Introduction

Producing skillful and independent learners is one of the key focus in school education today. Schools are striving in this direction to generate knowledge workers who will contribute positively to the society [1–3]. Studies show that there is a link between being information literate, and being independent learners [1, 4], suggesting the importance of IL mastery to become skillful and independent learners. Increasing recognition of IL has resulted in the introduction of numerous ILE programs in schools worldwide. Recent studies [5, 6, 12] point out the potential of resource-based learning, such as project work to efficiently develop students' IL skills. The researchers argue that these assignments expose students to authentic and problem-solving activities, enabling them to engage in deeper and more meaningful learning experiences.

In Malaysia, project work assignments have been formally introduced in the school curriculum for many decades and have been revised and amended several times to accommodate the different needs and challenges of the decades. Presently, the secondary school project curriculum includes a secondary 3 (age 15) history project which started in 2002. The Malaysian Ministry of Education (MOE), among others, aims to bring forward positive outcome, by enabling more holistic assessment of learning. It justifies that project assignments use more holistic assessment approach to evaluate students' overall competency level, as students are assessed not only based on academic achievement but also in terms of creativity, talent, and initiative, which are reflected in their final project report. Other intrinsic values that can be revealed through these projects are in terms of punctuality, validity and reliability of information, neatness, and cleanliness of work, responsibility, and collaboration in completing the task, all of which are proven to be impossible to assess through regular written test [9]. [6, 8] point out that the secondary three history project is an ideal platform to embed IL to engage students in formulating meaningful questions, planning tasks, gathering resources, evaluating information, collaborating with others, and reporting findings (which constitute elements of IL).

2. Literature Review

In the past decades, researchers began to take a more critical look at IL programs and challenge school curriculum that is less successful in delivering the IL skill. Recent studies [4, 10, 11] show that high school graduating students may not be necessarily competent in the fundamental lifelong learning skill despite continuing emphasis on IL in the last decade. Scholars [11, 12] voice their concern that most school curricula are focusing too much on technology programs, such as how to use computer software, do web design, and create power point presentations, and pay less attention to ILE. The researchers, for instance, report that important IL elements such as doing a citation, learning how to use web search engines and online databases effectively, and applying the information retrieved to solve learning problems are often not included in school programs. Concern about IL development in schools, researchers [12, 13] underpin

the need to have a solid curriculum framework to equip students with IL competencies to thrive in the information-rich society. Resource-based projects provide a good opportunity for researchers to examine students' information seeking and make use of experiences as the researchers were able to observe how the students work with information in completing their project. Findings from studies [10–12] on students' project experiences, in general, conclude that students encounter great challenges in looking for and use information to solve their academic information needs. Other studies [11, 14, 15] observe cases where students merely engage in the copying of information or ideas. These researchers also notice that the incidents of plagiarism among students are higher when there is a better opportunity for students to do so, such as in well-defined assignment tasks, or very broad or general tasks, where students can easily find ready answers for their tasks. Besides inferior quality assignment that makes it possible for students to find ready answers for their task, scholars [14] also suggest that a common reason for plagiarism among students is their inadequate understanding of IL.

[2] claims that her various researchers confirm the need for instructional intervention and "guidance" in students' information-based assignments, adding that students need support "beyond finding information sources". Researchers [5, 8, 10] observe that existing ILE methods, most of which are stand-alone IL instructions may not be always successful to equip students with the desired IL competencies. Amidst growing popularity of resource-based learning for ILE, studies [5, 8, 16] also reveal inadequate IL guidance through information-based tasks. In general, students are found to receive too little guidance from their teachers on how to work on their projects. Other studies [10, 16, 17] reveal that the teachers' own inadequate IL competencies have deterred them from providing proper guidance to their students. Situated cognition theory, introduced by [18], proposes an alternative teaching method to teach students in schools. The researchers explain that knowledge and learning are situated and progressively developed through activities and propose cognitive apprenticeship (CA) model to be implemented in classrooms. The CA teaching method consists of six different approaches to teaching; they are modelling, coaching, scaffolding, articulation, reflection, and exploration [19].

3. Problem Statement and Research Questions

Although a large body of literature promotes IL development through resource-based assignments, many of these studies explore learning experiences through the IL-focused curriculum in the western countries [4, 10, 14]. Not much is known about IL development in less developed regions [3, 8, 15]. It is imperative to understand how IL is understood and experienced outside the western culture, such as, in the developing region of Southeast Asia. This is in line with the situated cognition theory employed, which theorizes that there could be differences on how IL is understood and experienced by teachers and students in different cultures. The search on the local literature in Malaysia has failed to identify studies that investigate the contribution of school projects towards students' IL development. This qualitative study is set

to discover how IL is understood, integrated, and experienced through a school project work in selected Malaysian schools.

This study aims to add a new dimension of IL insight from a learning context where IL is not the central curriculum focus. The research questions of the study that guide the research are:

1. How do teachers embed IL through project instruction?

2. How do students experience IL through project work?

Methodology

This study adopted a qualitative case study approach. It took place in selected secondary schools in Malaysia. A total of 23 students and 5 teachers participated in the study. The five teachers were Mrs. Anna, Mrs. Brenda, Mr. Chan, Mrs. Dora, and Mrs. Emma. They were from 4 schools in the state of Selangor, Malaysia, namely, *SekolahAmanah*, *SekolahBijaksana*, *SekolahCendikiawan,* and*SekolahDedikasi,* respectively. Two teachers, Dora and Emma came from the same school, that is *SekolahDedikasi*. The student participants were 5 students from each school namely, *SekolahAmanah*, *SekolahBijaksana,* and *SekolahCendikiawan* schools, and 8 students from *SekolahDedikasi* school. For convenience purposes, the students are referred to as student 1 to student 8 (S1-S8) throughout this paper.
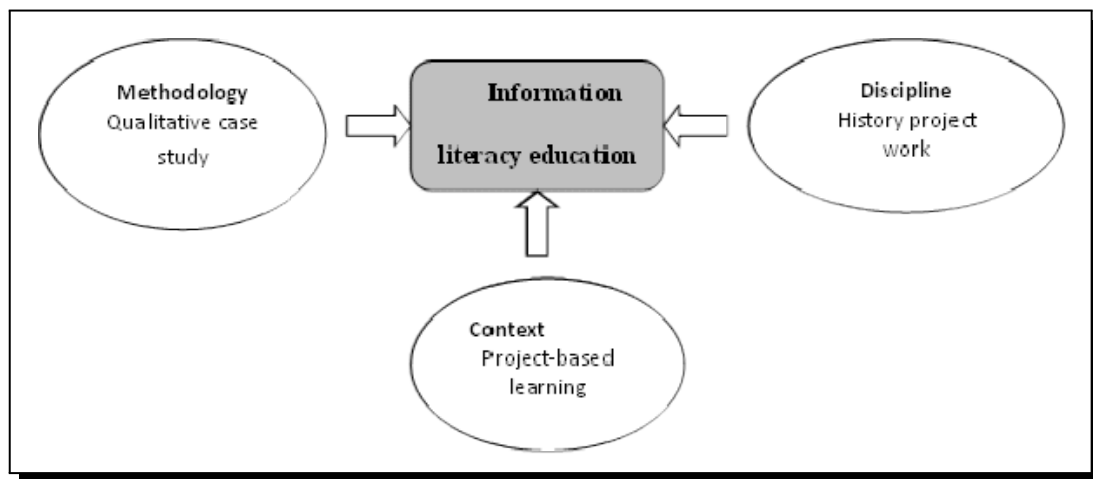
Figure 1. Research territory and area of study

The study was conducted through a multi-stage, simultaneous data collection procedure over a prolonged one-and-a-half-year time span, detailed in [9]. Four data collection techniques were used: (a) teacher's individual interview; (b) students' focus group interview; (c) classroom observations of four classroom instructional sessions; and (d) document analysis (students' project journal and completed project report). The data collection techniques and scope of investigation were as follows:

(a) In-depth, open-ended teachers' individual interviews: to ascertain their understandings of IL and the instructional methods they employed to teach the history project.

(b) Students' focus group interview (FGI): to discover how students apply and experience IL while working on the history project.

(c) Students' project journal: to ascertain how students approach the project, handle and manage information, and experience the whole project.

(d) Students' completed project report: Served as an important source of data as they provided "evidence" of IL elements, and how the skills were presented in the reports.

The data analysis was done manually and carried out in two stages, primary and secondary data analysis. Data analysis occurring during data collection is the primary analysis, while analysis conducted after data are collected is a more rigorous, secondary data analysis. In the primary analysis, the analysis, especially data reduction, was made while collecting the data. In the second stage, closely examined data were transferred from interview transcripts and journal pages to data analysis matrices.

4. Findings

4.1 How teachers embed IL through project instructions?

The history project instructional approaches were studied and analyzed using the (CA) theory made popular by [19]. The theory was selected in accordance with the fundamentally situated cognition theory employed in the study. The CA teaching method consists of six teaching approaches namely: modeling, coaching, scaffolding, articulation, reflection, and exploration. Only four out of the six suggested teaching approaches were practiced by the teachers in the study. They are; a) modeling; b) coaching (or equally known as facilitating in the study); c) scaffolding, and d) exploration. In addition to that, another conventional teaching approach that is e) "instructing" was also employed by the teachers. A combination of the five teaching methods was employed throughout the different stages of the project. The project instructional approach was organized according to the Big6 research stages to systematically discuss and report the presence of IL lessons throughout the project instructions. However, to simplify the discussion, the six IL stages were further squeezed into four broader subtopics, namely: a) initial or task definition stage; b) information seeking and locating & accessing information stages; c) use of information and writing stage; d) synthesis and evaluation stages.

4.2 Instructional focus during *Task Definition* stage

The teachers' focus at this stage mainly revolved around delivering the project task to the students. Two instructional methods, namely, a) briefing/instructing and b) coaching/facilitating methods were employed. The briefing/instructing method was employed by teachers to educate all the students on the project task, while the coaching/facilitating method was only used to

provide further assistance, especially to the weak and unmotivated students on how to approach the task.

An important observation made at this point is that all five teachers used two different approaches to treating (a) good and able students (students who were willing and able to work on their own); and (b) passive and unwilling students (students who were not interested to work on their own and needed further assistance). Personalized coaching has become a central theme in discussing additional help provided to the reluctant students. Overall, the findings did not reveal much data on IL-focus or research elements, such as attempts to develop research questions or problem statement. On the contrary, teachers spent a lot of time explaining the project where the discussions revolved around compliance to the project guideline and manual (provided to all teachers and students as it was a standardized project nationwide). The teachers not only used the guideline to assist the students on the scope and content of the project but also referred to it to evaluate students' report.

4.3 Information seeking, locating and accessing stage

The teachers' discussions of project instruction in these two stages revolve around letting the students explore information seeking and information locating processes independently. However, the teachers still had to provide further coaching, scaffolding, and modeling information seeking processes for the weak students. Upon further probing, it is found that most of these extra supports were aimed at getting the students to collect their resources rather than guiding students to develop information seeking skills. Four teaching methods, namely 1) exploration, 2) coaching/facilitating, 3) scaffolding, and 4) modeling strategies were employed during these stages to ensure that all students had collected enough resources to proceed with their project. All five teachers started their instructions by requesting the students to explore potential information on their own. In addition to that, the coaching, scaffolding, and modeling strategies were selectively employed to assist students in more difficult areas or to help the weak and/or unwilling students to keep them moving. Although the students were adequately briefed on the task at the initial stage of the project, most of the information seeking and information locating activities were done outside of school. This suggests inadequate guidance from the teachers. Some teachers also discussed the need to provide further help to some problematic students who were reluctant to do their work. In some extreme cases, the teachers even had to collect resources for their students instead of teaching the students how to look for the resources. Modeling is considered as one of the more serious teaching efforts as it requires real demonstration to teach the intended skills. Only two teachers, Mrs. Brenda and Mr. Chan provided extra help by demonstrating information locating skills to the students.

4.4 Use of information and writing stage

At this stage,theteachers are found to play central roles in coaching and scaffolding the students toselect, filter, and apply the acquired information in their task.They appeared to be very

concern about students selecting only the "right" resources, for instance, a comment from Mrs Emma:

> Mrs Emma: *"we (teachers) checked the resources to see whether they could be used. If it is not relevant they would have to look for new ones"*.   L334

The findings also uncovered serious plagiarism problem among the students. Among serious concerns that emerged in this regard were teachers' tolerance for plagiarism and their lack of power to stop the practice. The term "copy and paste" was consistently used to signify plagiarism throughout the discussions as teachers presented the term to discuss plagiarism or direct copying activities from the Internet resources. In general, most teachers admitted being aware of the plagiarism activities as they could detect different quality and writing styles between students' writing and that from other sources (besides claiming to have the same resources used by the students). However, some teachers openly admitted that there was little they could do to prevent the activities as the technology has made it so easy for the students to "copy and paste" from the Internet resources. The whole scenario demonstrates low IL awareness and low IL education level among teachers and students.

4.5 Synthesis and evaluation stages

The overall finding shows that there was no evidence of information synthesis lessons in the report writing supervisions. The teachers' discussions were mainly revolving around getting the students to select a few resources that could directly answer the project questions for use. This is consistent with the earlier findings discussed above, where the students only "copy and paste" parts of information that they wanted without having to compare and synthesize information from several resources. Likewise, far too little was also discussed on project evaluation issues.

4.6 How students experience IL through project work

The findings on how the students experience the project come from multiple data sources i.e. students' group interviews, students' project journal, and students' project reports. Three central themes that emerged in the findings are a heavy reliance on project guideline; convenience/comprehensive information and fact-finding assignment. The students recounted on starting their task by having to decide on the specific topic for their project. Since the project broad topic (traditional festivals celebrated in Malaysia) was given by the examination board of the MOE, the students had to choose which specific festival they wished to work on. In discussing their topic selection, most of the students confessed to choosing a topic (festival) where they could easily get a lot of information. For this reason, most of the students also decided to work on a festival that they celebrated themselves for very obvious reasons; convenience, and able to find a lot of information (comprehensive information) about the topic. Findings from both the students' interviews and students' journals also revealed the fact that the students started their

task fully guided by the project guideline (reliance on project guideline). Below is an example of a response:

> *SIBijaksana*: *"(I choose information) based on the guideline...it (guideline) has provided all the subtopics you need to have in your report...so, we just take those resources that are related to the subtopics, it is easier to work that way"*.
>
> <div align="right">L1012, 1014, Intv1.</div>

Two themes emerged on how the students selected their information for use. They are *fact-finding* and *guideline-oriented* themes, once again consistent with the themes discussed earlier. Further findings also revealed a serious plagiarism problem. The students were encouraged to talk freely about how they worked with information to understand how they treated and used information for their task. When they were asked to comment about *plagiarism*, they appeared to be bemused at the question and paused for a while before admitting that they have never heard of the term before(hinting low IL awareness). Since they were not familiar with the "plagiarism" term, "direct copying", "word for word copying", or "copy and paste" were used to discuss plagiarism throughout the interviews. Although the students admitted to "copy and paste" from the Internet, they explained that it was not their intention to cheat. They defended their actions and justified that they merely wanted to learn to understand their task and that those work provided more ideas on how to approach it. A considerable part of the plagiarism discussions was on plagiarism from the Internet resources. Below is dialogue demonstrating students' opinion of plagiarism:

> *S1Amanah*: *"(on plagiarizing) hmm...it depends, if both the sentences and ideas are good, I just use (copy) them, but I do my own writing with the rest of the report"*.
>
> <div align="right">L885, 895, intv 1.</div>

On another issue of information use, students were found to take a big chunk of information from a convenient source and simply transferred it into their work rather than synthesized ideas from multiple sources of information. This is again consistent with the findings on students' plagiarism activities. This also justifies students' preference for information sources that provide comprehensive information that they need.

In general, the students' reports were drafted and outlined according to the project guideline requirement. This finding is consistent with the data from the teachers who described how they monitored students' progress by referring to the project guideline to ensure that the students have complied with the instructions. With regards to the evaluation of information element, the project working experience is evidently found to be a highly product oriented one, with students putting conscious efforts to produce the predetermined project report spelled out in the project guideline. Both teachers and students were targeting to secure good grades by doing so. To conclude, the findings point out that the history project instruction was a cursory fact-finding

and information gathering and compilation type of assignment, focusing on the subject matter and grade-oriented focus. No specific attention has been placed on educating the students on IL.

5. Discussions

The teachers in this study employed five instructional approaches to teaching the project, namely; (a) instructing; (b) coaching/facilitating; (c) scaffolding; (d) exploration; and (e) modeling. The personalized coaching, scaffolding, and modeling approaches were mainly employed to provide additional help to students who needed extra help, while the other students worked mostly on their own (i.e. exploration method). These students would only need several supervision sessions with their teachers, mainly to check and approve their work, rather than to ask for inputs for the project. This points out that the students only received little guidance on how to work on a research and writing task. This is in contrast with the tutoring, facilitating, coaching and scaffolding efforts discussed by [5, 19, 20] to help students working on research or information-based task. [5, 10] for instance, emphasize the need to guide and mediate students to help them "learn how to learn" and to develop the intended skills.

These findings also imply shallow project instructions, focusing only on subject-matter syllabus but providing little mediation on IL and other learning skills. Although the teachers employed five different teaching approaches in the project instruction, these efforts were geared towards accomplishing the learning output, rather than to provide research skills. Findings from the teachers mainly revolved around their challenges to help the students completing their work and to produce the project report. As a matter of fact, IL, research skills, and other learning skills were never a part of the subject matter discussed in the study. Although rather discouraging, these findings are not at all uncommon, as other studies [10, 11, 17] also reported having comparable problems of teachers focusing on the subject matter and grades over learning experience. However, results from the other studies show that their participants have a far better awareness of IL and demonstrated conscious efforts to work systematically in conducting research. They also talked more about IL, meaningful learning, and lifelong learning, suggesting more in-depth learning engagement, and involvement in larger learning, beyond project work experiences. The discussion on larger learning, and learning beyond project work is missing in the present study, hinting a shallow instructional practice, merely focusing on the immediate learning product.

On the issue of information use, school children, regardless of their background and origin are found to have the tendency to plagiarize other people's work if they are presented with the opportunity to do so [13, 14, 20]. However, the nature and extent of the practices vary according to a number of factors such as nature of the assignment or other curriculum factors [12, 13]; students' awareness of IL [6, 15]; and contextual and cultural factors [8, 20], among others. Researchers such as [17] reveal the fact that many school assignments are focusing too much on gathering facts, rather educate students on IL and deep learning. The prevalence of information

gathering rather than information use is also discussed in various studies [10, 13]. Unethical use of information, particularly plagiarism among school children proves to be an area of concern in research work, addressed in numerous studies [11, 14]. Scholars are suggesting that students are more likely to plagiarize if the topic they are working on falls within a broad category (as in the case of this study), as it becomes easier for students to get direct answers for their tasks. This, in turn, suggests that there is a connection between the nature of a learning task and the manner it is implemented by teachers and experienced by students. [18] concur with the view, stating that students are more likely to plagiarize when they are dealing with a familiar topic or learning task, or when there is a clear guideline from which the expected answers are predictable. Meanwhile, [20] sees how different learning tasks conducted in different school environment/social practices result in different learning practices and learning achievements. She addresses the fact that learning tasks of different complexities result in different information seeking and use experiences and, in return, results in different learning outcomes. This means students' learning experiences could be shaped by the imposed curriculum and learning conditions.

6. Implication of the Study and Further Research

Findings in this study indicate that successful IL development depends on at least two factors:

(1) How IL is addressed in the curriculum/ project syllabus design?
Results in this study show: (a)poor IL practices among the students; and (b) poor exposure to IL for both teachers and students through the general school curriculum and specific project syllabus. This suggests the fact that IL must be clearly addressed in the curriculum, and that learning task must be carefully designed with IL in mind in order for the students to develop them. It is also very important that students are introduced to the various IL models to help both teachers and students evaluate the later's progress and development.

(2) How IL is taught by teachers?
There is a need to formally teach the students on IL, particularly through research-based projects to ensure the successful development of the skill. This should begin by providing the teachers with proper IL training before they are expected to deliver the skill to their students.This study highlights the critical needs for teachers' IL training, and to design resource-based assignments with clear IL focus for improved IL development. It provides a foundation for further research on IL programs for students, especially those in developing countries, where IL awareness is still low.

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Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All the authors contributed significantly in writing this article. The authors read and approved the final manuscript.

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