

Stimulating Autonomy of FSL Students at Secondary Level Through Inquiry-Based Learning-Mauritius

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Abstract

A fresh perspective for considering a twenty-first century framework for a pedagogy of discovery, inquiry, and analysis in secondary education flows from a commitment to develop independent learners at each successive level of study (Dewey, 1938; Bruner, 1960; Spronken-Smith and Walker, 2010; Guccione, 2011; Sadaghiani, 2008; Justice et al., 2009; Montuori, 2012; Elrod et al., 2010). This paper sheds light on the correlation between the research question, the key concepts of Inquiry-based Learning and of learner autonomy in the learning process of French as second language (Cuq, 1991) to be analyzed from a socio-constructivism perspective (Bruner, 1960, 1985; Dewey, 1938; Piaget, 1953; Vygotsky, 1978). An ethnographic style underpinning the use of focus groups interviews (Krueger and Casey, 2009; Doody et al., 2013) and the teacher's diary is analyzed through the interpretative phenomenological analysis (Smith, 2004) and the thematic analysis (Braun and Clarke, 2006). The conclusive findings reveal that Inquiry-based learning support is (i) an asset in relation to capacity building and development of skills and (ii) a liability through recurrent challenges for complete engagement. The other relevant theme that emerge is (iii) the complementary relationship between autonomy support and motivation which revealed out of the level of autonomy, the degree of involvement and the purpose of investigation.

Key words: Inquiry-based learning, Learner autonomy, Second language acquisition, Socio-constructivism, Thematic analysis.

**For correspondences and reprints*

1. INTRODUCTION

While students of the 21st century will need skills, freedom, support and imagination to continue learning in order to adapt to new condition and to create new solutions to problems (Beare and Slaughter, 1994), all educational systems will prove to be effective only if new innovative ways and projects are found and promoted while enhancing existing traditional ways of teaching (Jere, 2011). Our contemporary innovative society creates novel challenges for the educational system taking part in corresponding collaborative practices and hence personal and collective capabilities should start from the very beginning of education (Seitamaa-Hakkarainen et al., 2010). In the context of a fast-changing world and a competitive global context, it is imperative that each learner's wisdom and imagination is respected and each one's creativity is cultivated (Mauritius National Secondary Curriculum Framework, 2009).

The focus is hence on keeping away from traditional methods which tend to concentrate on passive instruction - didactic, hierarchic, teacher controlled and dependent, with passive student involvement rather than active student involvement (McGill and Beaty, 2002). Several recent studies have claimed that high school students are graduating without the necessary basic skills they need to be successful in college or at work (Olson, 2006). The Mauritian National Secondary Curriculum Framework clearly states that the knowing-how-to skills, thinking skills and behavioural skills need to be placed at the centre of the curriculum development process and learning how to learn is important. The learner needs to be at the heart of the learning process, constructing meaning, understanding reality and developing greater autonomy in learning (Mauritius National Secondary Curriculum Framework, 2009).

The overall purpose is to shed light on the social nature and importance of learning since modern ideas about learning started to be developed (McCulloch and Woodin, 2010). Ideally students will become self-directed learners, capable of reflection and self-critique and able to give constructive criticism to others (Chung and Behan, 2010) and change agents (Ortlieb and Lu, 2011). Students will be engaged in ways that create a sense of mattering, of being able to make a

difference in today's complex world through the spark of creativity and innovation while creating space for them to demonstrate their knowledge inside school as they see themselves as competent learners (Coiro and Moore, 2012).

Inquiry-based learning is primarily a pedagogical method, developed during the discovery learning movement of the 1960s as a response to traditional forms of instruction - where people were required to memorize information from instructional materials (Schwab, 1960). Thus, undeniably it is not a new teaching and learning strategy to be used in the educational process but much emphasis is laid on a culture of independent study and investigation of truth in the areas queried by the students in French language. This method is considered to be a main engine to shy away from formally taught classes, opting instead for participatory methods leading by a tutor whose role is to facilitate the rhythm and pace of the study of French language topics. In this way, the learners are expected to become active participants of their own learning process (Ruhi Institute, 1996). Furthermore, Inquiry-based learning develops abilities and attitudes that equip students for the varied demands of modern life including the requirements of the work place as students become increasingly skilled at organizing an inquiry or tackling a complex problem or issue with other people (Lee, 2011). In the subsequent sections, this paper unveils the basic concepts linked to Inquiry-based learning in relation to its implementation in a second language while stimulating autonomy in students.

Saunders-Stewart et al. (2012) underline the lack of published research for outcomes in the areas of metacognition, societal contributions, or lifelong effects of inquiry. They also put forward that there is a lack of research in investigating student inquiry outcomes across disciplines and across cognitive and affective domains. Much less is known about the effectiveness of the inquiry method with different population of underprepared students and its impact on student motivation (Wang, 2011). In addition, the majority of empirical studies have been performed in the disciplines of science (Basaga et al., 1994; Bredderman, 1983; Lowery et al., 1980; Shymansky et al., 1990; Greene, 2010), in the social sciences, mathematics, ecology, geography and others aimed at multiple disciplines (Delcourt, 1993; Janzen, 1995; Martino-Brewster, 1999; Osborne and

Seymour, 1988; Austin and Webb, 2007), with ESL learners (Varelas and Pappas, 2006; Guccione, 2011) and inquiry outcomes have been addressed in specific contexts (Chang and Mao, 1999; Shymansky et al., 1990). Moreover, several quantitative research studies measure the advantages of inquiry highlighting effectiveness in learning, student teachers' engagement, academic achievement and higher order learning outcomes (Prince and Felder, 2006) but not focused specifically on learner autonomy through Inquiry-based learning in second language acquisition.

2. METHODOLOGY

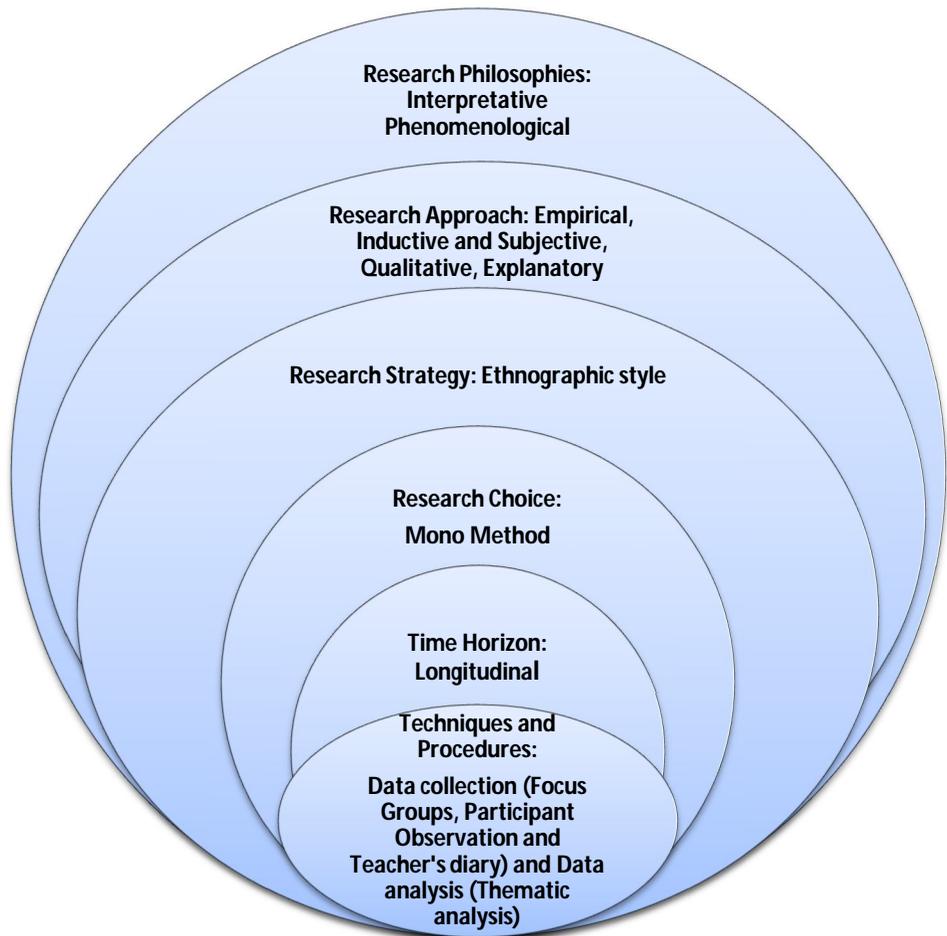


Figure 1: Research Methodological Framework

The above diagram represents the different parts of the methodology adopted for this study. An Interpretative Phenomenological Analysis is implemented since this research philosophy recognises the central role for the analyst in making sense of the personal experiences of research participants (Smith, 2004). Ethnography has much to recommend it in seeking to answer the research question of this present paper, which is “How can Inquiry-based Learning help in stimulating autonomous engagement of students in the learning process of French Language?”, particularly because it focuses on the ‘meanings, functions and consequences of human actions and institutional practices, and how these are implicated in wider contexts’ (Hammersley and Atkinson, 2007:3).

2.1 Data collection techniques

Robson (2002) suggests that the quality of social research can be enhanced by combining complementary data-collection methods. Therefore for this study, interviews, teacher’s diary and observation sit well together in this respect.

2.1.1 Focus Groups interviews

Focus groups were therefore used to gather in-depth knowledge about attitudes, perceptions, beliefs and opinions of individuals regarding this specific topic but also to generate constructs and hypotheses; in-depth understanding of phenomena of interest and clarifying the meaning of certain behaviours (Then *et al.*, 2014).

Simple random sampling was chosen where data was selected using lottery method. The list of all the 140 participants was made available and this constituted the sampling frame. All the students in their respective classes were enumerated in ascending order. The 35 participants selected by lottery method had their particular number struck off from the random number table and it was a sampling without replacement. In making this choice, to anticipate the absence or refusal of some participants, one more number per class was struck and kept aside. For the seven focus groups comprised of five students each, several factors have contributed towards this choice, for example, the class population is low in La Gaulette State Secondary School between 10 to 25 students; the relationship among the students will not hinder sharing of feelings, thoughts and opinions; the

easiness to facilitate the conversation of the moderator for the latter does not work with all the students of the school. The seven focus groups were conducted over a period of 6 months and each focus group interview lasted approximately 35 minutes, the equivalent of a normal working period in La Gaulette State Secondary School. The interviews were done during the activity periods that are officially scheduled twice a week.

Permission was sought from parents and the administration to hold the interviews in the school premises and the researcher's classroom was chosen since it provided a familiar and cosy atmosphere for the students with windows, doors locked and a "Do not disturb" sign on the door knob, mobiles were switched off and students were made at ease through ice-breaking games. Drinks and snacks were provided during the focus group discussions. To allow more interaction, the time allotment for the ice-breaker activities, the introductory note and the conclusion lasted for 15 minutes maximum and for some focus groups, particularly, for upper classes, the interview sessions lasted 5 to 10 minutes beyond the 35 minutes as interaction was more intense. Recognizing the multilingual culture of Mauritius, the set of questions were translated into the French and creole languages and the focus groups were conducted in French language though they were initially prepared in English language using a prepared script. Moreover, the focus groups were carried out using dynamic sets of languages since participants were asked to speak in the language that they are more at ease. For the purpose of safeguarding the identity of the participants, they were identified only by assigned numbers (1 to 5). All focus group discussions were audiotaped with permission of the participants and at the very start of the interview, it was emphasized that all opinions were to be respected and that the discussions would be recorded.

A moderator's guide was devised ensuring the introductory notes, the engagement questions and the conclusion note including also the ice-breaking games. Furthermore, a moderator's script was created in the form of a study information sheet where information about the purpose of the study, location and duration of focus groups, consent, voluntarily participation, recording and conservation of data, anonymity and confidentiality were distributed to the rector,

the parents and the students. Both the study sheet and the moderator's guide comprising of these topical issues were peer reviewed beforehand with the supervisors, the English and French spell-checker and they were considered in terms of their relevancy, clarity, and efficiency. Each focus group was facilitated by the researcher, who acted as the moderator for the research study but there was no assistant moderator or observer. Notes were taken during the discussions through the whole group processes making sure not to overlook any participants trying to add comments and feedback was provided to the participants at the end of the interviews. To obtain standardization, a structured protocol - including a semi-structured interview guide – has been developed, reviewed, accepted and used for this research study. The interview guide was formulated to investigate the students' perspectives of influences of Inquiry-based learning on the teaching and learning process of French language. After intensive collaboration with the supervisors with ample focus group experience, the questions were carefully developed using appropriate literature and the interview schedules were examined. When development was completed, the question guide was spell-checked, tested within and revised by the research team as well as pilot-tested in a group of five students. The question guide consisted of opening and introductory questions which allowed participants to get acquainted and feel connected, and to start the discussion of the topic. Transition and key questions were used to, respectively, guide the group towards the main part of the discussion and to focus on the purpose of this study. At the beginning of the process, time was spent in discussing key terms found in the questionnaires. The questions provided were broad and open-ended and more detailed optional questions were asked when the discussion did not start up or continue spontaneously. An interview conversation in which the participants were free to express their subjective interpretations and meanings provided an opportunity to gain an understanding of Inquiry-based learning in French language teaching-learning process. With the use of open ended questions whenever any of the participants do not understand any of the questions, rephrasing and explaining for clarity sake was done whereby questions were clarified in an effort to seek further details. It is to be noted that members of each focus group responded to the same set of co-constructed questions. For each question, a sample of possible

answers was noted in the interview guide to ensure that interaction is enhanced in the sessions.

2.1.2 Participant observation

This method is often used by interpretive researchers, who believe that the social world must be discovered and that this can only be achieved by first-hand observations and participation in natural settings, guided by exploratory orientation (Hammersley, 1997). The researcher has immersed herself in the research site and gained in-depth knowledge of an environment and its practices. Opportunities to explore actions were given and new insights into the implementation of Inquiry-based learning were gained by working together with the participants. In this way, the participants were co-researchers in the research process while the researcher participated in practice.

2.1.3 Teacher's diary

A research diary was also used as a way to log decisions made and to write down reflections on the research process (Gibbs, 2007). Some guidelines for the diary-keeping process that were followed by the diarist as highlighted by Allwright and Bailey (1991) were: regularity, security, spontaneity, examples, note-taking. The teacher wrote weekly in diary template about the lessons and on her own impressions and evaluations of the process. The template consisted of two parts: the structured project diary, which guided the teacher to describe the activities done in her class for the project and the reflective diary focused on the teacher's impressions of the learning process: The structured diary template guided the teacher to note down the organizing practices (Time frame, target group), topic content, the aim of the activity and process stages. The reflective diary template progressively suggested the following perspectives for reflecting as per the learner's oral narrative accounts of: (1) how practices were organized; (2) what themes and contents were addressed and how the inquiry was developing; (3) how the class functioned; (4) the role of tools supporting the process; (5) the benefits and challenges of implementing Inquiry-based Learning in the lessons.

2.2 Data Analysis

The previous step was followed by the data analysis step which Schwandt (2007:6) defined as “the activity of making sense of, interpreting, or theorizing data” or the process of systematically searching and arranging the interview transcripts accumulated to come up with findings. An inductive approach was employed to make sense, analyze common threads and the themes identified were strongly linked to the data themselves having been collected specifically for the research via interviews of the focus groups (Braun and Clarke, 2006).

All 35 audio recorded interviews were transcribed and translated in English to ease the process of analysis and this was done progressively as soon as interviews of each class was completed so as to remain focus on what has been said and not to forget key elements. Verification of same was done with the help of the interviewees. Data has been listened and read repetitively ensuring familiarity and comfort with the data. The transcriptions were printed with enough space on the four corners of the paper to write the codes and several colours were used to code words and/or sentences so as to create an easy way to note down all the codes and to simplify the next step, which is, creation of themes. Brackets were also used to unitize the interviews with relevance to the questions asked, the focus being on autonomous engagement. Some codes were identified as possible themes and other codes have been grouped in one theme while some codes have been temporarily rejected. In the process of merging the themes, the coding process was reviewed so as to ensure that the themes proposed are valid and reliable and moreover, that the individual themes were enough supported by literature. The same process was applied to the reflective diary backed by the interpretative phenomenological analysis proposed by Smith et al. (2009) so as to identify recurrent and predominant themes and sub-themes.

3. FINDINGS

It is to be noted that through the sources of data, themes and sub-themes were identified forming a coherent pattern whereby the students expressed their autonomy in either an absolute independence or with a certain degree of support

from others but the motivation for their investigation was varied depending on the students' experiences and interests towards investigation. In the same vein, students chose the degree of their involvement in this process and the availability of tools and resources played an important role. In particular, students related their experiences with the investigation process in relation to challenges faced and/or to the benefits gained from this process. These themes emerged from the questions of the focus group interviews and the teacher's diary as shown below:

The first question "Are you used to investigating?" revealed the different levels of autonomy that the learners had acquired: responses were geared towards an independent investigation on different areas of knowledge for personal progress and understanding. Moreover, students conducted investigation in specific school tasks and activities but nonetheless, the students had some degree of autonomy in their different explorations of the various topics which were for most of them conducted after school hours outside school premises also. This question also showed the level of involvement of the students in the investigation process in particular in terms of their active or passive role through the verbs used and categorized according to Blooms Taxonomy (1956) – High, Medium and Low level coupled with the activities proposed at school recorded in the teacher's diary: students were actively engaged in this process making use of actions like organize, analyze, categorize, gather, identify, investigate, impersonalize, link, present, produce, reflect, select, share, solve, test, write while the rest were classified as low level of activity like apply, ask, collect, find, grasp, help, interview, list, observe, recall, record, retrieve, understand.

The second question "What prompt you to investigate?" revealed the different types of motivation in the investigation process in relation to the definitions of Gardner and Lambert (1972) and Ryan and Deci (2000): integrative / instrumental and intrinsic / extrinsic respectively.

The third question "What are the means that you usually use while investigating?" detailed all the tools that the students used in their investigation process and the results were also combined with the outcomes of the teacher's

diary whereby the students used the support of other people, books and magazines and media and technology.

The fourth question “What are the challenges that you face while investigating?” showed the difficulties that the students faced while using Inquiry-based learning in their different activities – difficulties that they stated in the interviews and noted also in the teacher’s diary: No proper tools and resources, Wrong attitudes, lack of cognitive competencies and external factors.

The fifth question “Do you feel that you are broadening your skills while being in the investigation process? What are these skills?” specified the numerous abilities that the students benefited and how those benefits helped them to learn in an autonomous way as reflected in the teacher’s diary also: Metacognitive skills including affective and knowing-how skills, thinking and reflection skills, analytical skills, imaginative skills, creative skills, innovative skills, intrapersonal skills, interpersonal skills, psychomotor skills.

The above mentioned themes showed a close interrelationship as described in the examples below:

Question 1: Are you used to investigating?

Example:

Yes, {...} I did not not know some words, so, I have looked in dictionaries and I have asked my parents

Autonomy = Independent; Motivation = intrinsic; Tools used in investigation process = dictionaries and parents

Question 2: What prompt you to investigate?

Example:

I always want to have a good general knowledge since I like to share all that I know to my friends and it is this willingness that prompt me

Autonomy = Independent; Motivation = intrinsic, external factors, cognitive, affective

Question 3: What are the means that you usually use while investigating?

Example:



{...} it is a pleasure to learn on animals but since I do not have a computer at home, I go to cybercafés to do research {...}

Autonomy = Independent; Motivation = intrinsic; Tools = Technology; Support – negative = lack of resources

Question 4: What are the challenges that you face while investigating?

Example:

Sometimes, internet does not help, when I ask a question, I do not get the answers that I want and this forces me to go to books and encyclopedias but as any youth, I do not like to read many things and there is discouragement and there is also a lack of tools and time since youth have many things to do

Autonomy = independent; Motivation = cognitive, intrinsic; Tools = Technology, books; Support – negative = lack of cognitive competencies, wrong attitudes, lack of tools, external factors (time)

Question 5: Do you feel that you are broadening your skills while being in the investigation process?

Example:

Yes, this gives me creative ideas for my essays and imagination and I have learnt how to work in groups and I have developed many values like patience, sacrifice and some communication skills in doing so like how to transmit my opinions and to inform people of what is happening in the world. I know better now how to sort out information and I know how to analyze what is important and I know how to synthesize the results obtained on net

Support – positive = skills and values; autonomy = independent; motivation = intrinsic, cognitive, affective

When Garrison and Archer (2000) maintain that the aim of higher education is to develop the thinking and learning abilities of students, many other researchers

sustain this standpoint. They further put forward that for this aim to achieve, students must actively direct their own learning and develop meaningful knowledge constructs on the basis of their experiences. The following findings that emerge from data in relation to considering Inquiry-based learning as an asset are:

1. Cognitive and metacognitive skills
2. Imaginative skills
3. Affective skills
4. Interpersonal skills

The issue of liability of using Inquiry-based learning was addressed through four recurrent challenges which constitute the sub-themes:

- Personal attitudes
- Lack of competencies
- No proper tools and resources
- Other factors

Though there are other factors which enhanced motivation, autonomy is a necessary prerequisite for increased motivation (Deci and Ryan, 1985). By autonomy support, it is meant to find ways to support and to increase students' inner desire to undertake their classroom activities (Reeve et al., 2008). Motivation can be personally driven (necessary aptitudes) or determined by outside factors (reasons for learning a language) and it this driving force that guides the learners' urge to learn a language (Chalupa and Haseborg, 2014).

This theme is revealed out of some key factors which constitute the sub-themes:

- Level of autonomy
- Degree of involvement
- Purpose of investigation

4. DISCUSSION ON FINDINGS

Rivera-Mills & Plonsky (2007) claim that there is a strong correlation between the use of metacognitive learning strategies and learner autonomy or self-regulatory learning. The proponents of Inquiry-based learning argue that the results of this approach include higher-order thinking skills such as critical thinking, self-directed and self-regulated learning, and learning how to learn, that is, the metacognitive skills (Hanuka, 2006; Naylor, 2011). Moreover, Inquiry-based learning stimulates students' motivation to inquire and learn, enabling them to use cognitive and metacognitive strategies to develop higher-order thinking (Areepattamannil, 2012; Lee, 2011).

Inquiry-based learning develops self-reflection and critical thinking skills. Besides, students are able to undertake independent inquiry taking charge of their own learning. The learning outcomes of such an approach are the development of intellectual growth and maturity (Lee et al., 2007).

Inquiry-based learning helps students to understand theories, to put into practice their skills and to adopt specific behaviors and attitudes (Piyayodilokchai et al., 2013). Besides, the more learner-friendly the contexts in which students are, the greater the sense of ownership they have. Therefore, students engaged more in inquiry activities and they understand better since they have greater motivation to learn. Inquiry-based learning results also in outcomes linked to the affective dimensions of the process, including motivation and task persistence provided that the learning context are favorable for the students (Calder and Brough, 2013).

Inquiry-based learning with a view to learner autonomy development is usually undertaken in groups and therefore, a social aspect is incorporated into their learning. This social aspect has the benefit of combining the acquisition of knowledge with transferable skills such as teamwork, sharing of knowledge, ability to manage conflict and to accommodate with others, respect for different learning styles (Naylor, 2011; Hutchings, 2007; Justice et al., 2009).

However, some students feel insecure in adopting such a self-directed approach. Students feel anxious, frustrated and find difficulties in tackling what is expected of them in relation to enhancing their knowledge (Naylor, 2011; Anderson, 2002). Students might express wrong attitudes towards an independent form of learning because of a feeling of uneasiness from teachers as this way of teaching requires a teaching philosophy that is student-centered (Spronken-Smith et al.2011).

Students engaged in Inquiry-based learning within a pure discovery learning paradigm are more likely to become overwhelmed with information and may create misleading conclusions or encode errors within their investigations or experiments (Klahr and Nigam, 2004).

The success of Inquiry-based teaching/learning lies in the amount of autonomy given to students through a variety of approaches, ranging from teacher-directed structured and guided inquiry to student directed open inquiry (Zion and Mendelovici, 2012). The three modes of inquiry which are:

- Structured inquiry: The students investigate a problem posed by the teacher who has already given a set of procedures. The students then follow the guidelines step-by-step while receiving more guidance at each stage. Finally, the students arrive at a predetermined outcome. This way of doing is like people following a recipe;
- Guided inquiry: The students investigate questions posed by the teacher. The students work collaboratively to reach solutions. In this mutual environment, they consult to decide on the processes to be followed and the solutions to be targeted;
- Open inquiry: It is suggested that this kind of inquiry is the most complex level of Inquiry-based learning. Teachers define the knowledge framework in which the inquiry will be conducted while students are the ones who choose questions, select approaches and conduct inquiry (Zion and Mendelovici, 2012) were used progressively in the proposed activities that were to be implemented in classroom practices and the same tools and resources were used.

Though there are other factors which enhanced motivation, autonomy is a necessary prerequisite for increased motivation (Deci and Ryan, 1985). Moreover, Benson (2001) puts forward the positive results that have been gained in learning experiences where autonomy was encouraged, more precisely, the learner was the one who planned and assessed his own learning. Whether autonomous motivation or controlled motivation, autonomy will refer to a sense of volition and self-determined behaviors that are necessary for intrinsic motivation (Ryan and Deci, 2000, 2002).

Practices that cultivate learner autonomy have been cited as one of the most important factors influencing student engagement, particularly with adolescent learners (Hafen et al., 2012) and in language learning contexts (Benson, 2001; Dam, 1990). As the learners progress in their learning using Inquiry-based learning, they gain more and more confidence and they start to monitor their own learning. Once they become self-monitored, they gain a sense of achievement (Najeeb, 2013).

A growing body of research suggests that engaging learners in modeling-centered inquiry can help them build subject matter expertise (Besson and Viennot, 2004; Kenyon et al., 2008). Indeed, students excel academically in a learner-centered, constructivist learning environment in which the construction of knowledge is interactive, inductive, and collaborative (Ozkal et al., 2009). McCarty et al. (1991) found significant gains in Inquiry-based learning student participation levels and greater student interest in connecting content to the social, economic and cultural realities of their society.

Integrative and instrumental motivation (Gardner and Lambert, 1972) can affect and control the procedure and outcome of learning for second language learning. Motivation is a key factor in the levels of autonomy in the investigation whether in a guided/structured or open inquiry environment. The Academic Motivation Scale (Vallerand et al, 1992) consists of 28 items which are designed to assess three types of intrinsic motivation, three types of extrinsic motivation, and amotivation was used to measure student motivation. It would appear to have

reasonable reliability and validity, and its short length means that it can realistically be used in educational research.

6. CONCLUSION

The present paper was set out to examine Inquiry-based Learning implication and implementation from an instructional point of view in Mauritius so as to address the stated problem in the learning of French Language at secondary level in a public school with underprivileged students. Motivation for finding a solution for the students who aim at becoming responsible and independent citizens was a major consideration for this study and through a rigorous process of research and learning, its purpose was achieved. The key findings answered the research question and met the research objectives. However, some limitations are to be noted: the teaching process was not taken into account; external factors such as private tutoring are excluded; French language was considered only as a second language; the uniqueness of the research environment. This paper reveals the implications for implementation in regards to theory of knowledge, pedagogical practice and government policy as well as for further recommendations on research geared towards Second Language Acquisition and strategies fostering a progressive autonomous learning.

7. ACKNOWLEDGEMENT

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8. REFERENCES

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