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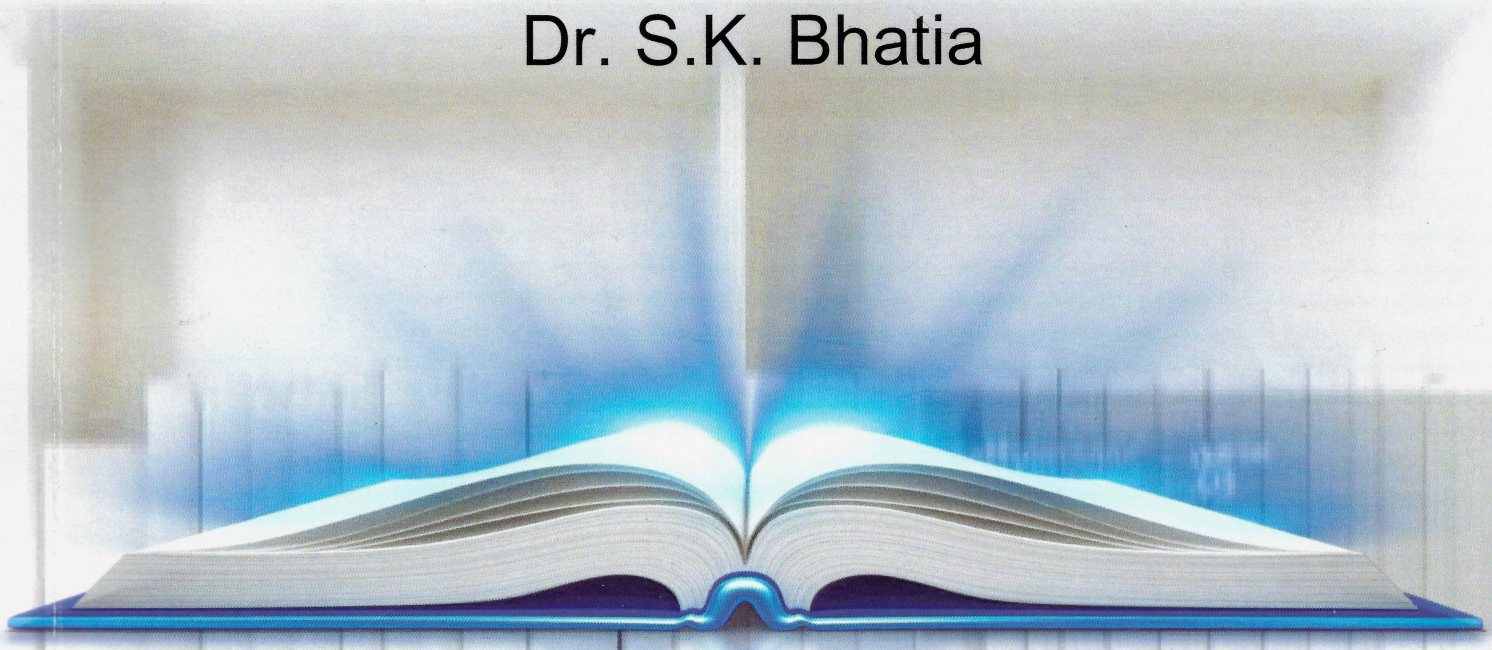
Editor-in-Chief
Dr. S.K. Bhatia



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International Journal of Teacher Education and Teaching

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Would like to appeal to the learned readers to send us their views, counter views, suggestions, comments, and observations etc. via "Letters to Editor" (which will be published in the next Issue) on the articles published in this Journal so that an academic discussion may start and our efforts may become more participative and thereby more meaningful and interesting.

Editor-in-Chief

The Themes for the next Issue July-2022

Section I.

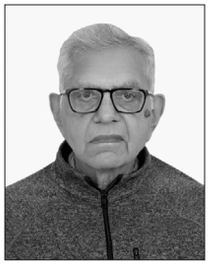
1. Valuing professionalism and training in Teacher Education courses.
2. Changes in perspectives on areas of research in Teacher Education.
3. Perspectives on how learning in Curriculum and Pedagogy are demonstrated in Teacher Certification Programs.
4. Perspectives on effective Evaluation Practices in Teacher Education Programs.
5. Innovations and Innovative practices in Teacher Education Programs.
6. Diversity and Inclusion: Different International perspectives.
7. Ensuring access and equity in high quality Teacher Education programs.
8. ICT-related Innovations and practices in Teacher Education Programs.
9. Policy perspectives in Teacher Education.
10. Reports on related conferences, seminars and workshops, including International offerings.
11. The Prolonged Online Mode of Teaching-learning - Challenges, Innovative experiments, Findings.
12. Tailored Interventions in Learner-centered Education.

Section II. Innovative Experiments in Schools:

1. Teachers' Professional Growth
2. Optimising Students' Achievement
3. Students' All-round Development
4. Experiments in the area of Experiential Learning.
5. Objective Evaluative Strategies During the Prolonged Closure of schools.
6. Solving School Problems through Action Research
7. Measuring Students' all-round Achievements through Ensemble assessments.

Thanks and Regards
Editor-in-Chief
Dr. S.K. Bhatia

Editorial



A very Happy 2022 to our esteemed stakeholders. May our writers, reviewers, advisory-board members, subscribers and all other interest groups grow in their pursuits of growing professionally, prosperously and healthily. Our earnest wish to the almighty is that the prevailing pandemic be completely curbed and all the humans should lead a happy and a disease-free life. May the institutional campuses bustle with enthusiasm of teaching-learning and all the related co-curricular activities to nurture the students for their future aptitude-based pursuits. May the scholars intending to pen down their ideas produce their creative papers and articles in the right perspective.

It is always a pleasure to bring out the subsequent regular bi-annual issue of the International Journal of Teacher Education and Teaching. After bringing out each bi-annual issue of the journal, its stakeholders proceed towards introducing the subsequent issue with the hope that a corona-free period will prevail and the learned authors will develop their respective papers in the natural perspective. But new variants of the corona virus emerge in some or the other form and induce a sizeable section of our learned authors to view the target population and its sample while sitting before the laptop and other allied electronic gadgets. Of course, some authors contemplate and try to capture their views and develop the teacher and school-education related articles for our journal on the basis of their objective and rationalized thinking. All the papers and articles, after passing through the plagiarism test, have to be explicated through the sharp lens of our referees' team. Only the best ones find a place in the journal before going to its esteemed subscribers. Thus, here is the new issue of our International Journal of Teacher Education and Teaching.

Some authors do share the reactions on their published papers and articles. The resulting felicity, on its first sight, can be felt and of course, difficult to describe. They go through each word of their creations and even acknowledge the words, phrases, etc. inserted by the editors to make their creations richer. These promulgated pieces lodge them in the saddle where they can contemplate and further think of creating advanced level creative papers and articles. Such published papers become a source of learning for the subscribers and enable them to give their constructive reactions on the themes of their choice.

The readers might have observed the different categories under which the different papers have been published. These are mainly the areas which were suggested along with the editorial of the last issue. However, a few pieces, other than those circulated, have been included which fall under the purview of teacher and school education. Most of the papers received pertain to teacher-education and only a few fall under the category of school innovative projects. Though the teacher-education papers may also, indirectly, be meant for the benefit of schools, we will welcome more research reports direct from schools for the innovative projects undertaken by them.

Along with the approval of certain academic writings, our referees come across some odd pieces also. The norm for the approval of a submission is a well-articulated paper, precisely researched or philosophically oriented and scholarly developed with a brief abstract and 5-10 key words. Such expectations are well circulated through the 'call for papers'. In spite of this, some deviations are observed in some submissions. The articles with minor lapses are sent back for remediation and those with gross violations are not considered.

The atmosphere in academic institutes has been vitiated by the rise of the pandemics. The coronavirus variants, one after the other, have created instability in such institutes. When one variant is close to its curb, the other appears with a havoc and grips the humans. The ill- effects of the Delta Variant are not yet over, when the Omicron has appeared to grip the humans with three-fold attack. The administrators' plans of opening and reopening of academic institutes get jeopardized with the spread of viruses. The frequent switch-over of teaching learning modes, from offline to online and vice versa, adversely affect the students' academics. Of course, this throws challenges to our worthy authors also who have to suggest ways and means of providing education, trying out new vistas and penning down the same.

It has become a regular feature of this journal to annex the themes for the next issue before the editorial page. The themes of the last issue were finalized after a lot of brain-storming with the intelligentsia the world over and these are perennial in nature. This list keeps on growing with the addition of knowledge by the researchers, as also with the circumstantial challenges. A few more themes have been added for the next issue with a hope that the worthy authors will deliberate upon these themes and contribute their innovative products on the same.

The editorial board keeps on pondering to add meaningful dimensions to our journal. In this regard, the suggestions of the contributors and the subscribers are also kept in mind. For implementing certain suggestions, the permission of some competent authorities is also needed. We started with the distribution of hard copies of our journal. From the present issue onward, online circulation will also be available and thus the subscribers will have the option of getting the online and/or off-line versions. Our next milestone is getting our journal indexed which will pinpoint our sequential merit in the list of other similar journals. The preparation for this is under process. With this, the present issue is handed over to our subscribers with a request to keep on providing their constructive feedback for producing a real blueprint.

Dr. S.K. Bhatia
Editor-in-Chief

Contents

Teachers' Attitudes on the Efficacy of Mother Tongue-Based Multilingual Education Curriculum

Jhon Albert B. Alvero, Jeffrey M. Asuncion, Rick Kevin L. Lopez, Benigno Reniel I. Ramos III, & Jedmars D.R. Taylo

Abstract

Despite appearing to be a well-established topic of research, language of instruction policy has continued to be the locus of attention for language teachers and linguists. In the Philippines, Mother Tongue-Based Multilingual Education (MTB-MLE) Curriculum was recently adopted by their educational system. Thus, this paper examines the teachers' attitudes on the efficacy of the implementation of MTB-MLE and their implications to local and national community. This study follows a qualitative research design and is carried out using a phenomenological approach. The participants were 15 teachers from two different locales – Apalit-Pulilan and Apalit-Baliwag borders. Data were gathered through interviews and observations and were analyzed using a thematic content analysis. The researchers found out 4 main attitudes of teachers (extent of involvement, consistent use of mother tongue/degree of application of mother tongue, actions taken in improving one's mother tongue, and teachers' role) and 4 main difficulties in the implementation (mother tongue differences of learners, difficulty in translation, inadequacy of instructional materials, and similar treatment for Mother Tongue subject and Filipino subject). These findings imply that they were just forms of adjustments made by the teachers which mainly root from what the language policy is giving. With this, recommendations were discussed in the end.

Key Words: Mother Tongue-Based Multilingual Education (MTB-MLE), Attitudes of Teachers, Efficacy, Difficulties in Implementation, Language Policy

Introduction

The language of instruction policy has been a never-ending issue of debate in the field of education. The Philippines, a country which is not only rich in resources but also in languages – having 187 languages in total as specified by Ethnologue, is one of the big partakers of this issue. Having shifted from the separate use of English and Filipino as the mediaum of instruction in specific subject areas in the Department Order No. 25 of 1974 and in the revised Bilingual Education Policy of 1987 or the Department Order No. 52 of 1987 to whichever first language of the learners as the medium of instruction in Grades 1, 2, and 3 under the Mother Tongue-Based Multilingual Education (MTB-MLE) Curriculum of 2009 or the Department Order No. 74 series of 2009, it can be drawn out that there is a struggle on which language will either facilitate or impede learning. Many studies have been conducted on both aforementioned education policies, but since MTB-MLE Curriculum is in its early and formative years in the country, it

The authors are senior students of the program Bachelor of Secondary Education major in English at Bulacan State University, Philippines.

will be the focus of this paper. In particular, this paper will examine teachers' attitudes on the efficacy of MTB-MLE Curriculum.

As many studies point out the effects or outcomes of MTB-MLE on learners, based on the perceptions of teachers-- i.e. it provides a better learning experience among learners (Singh, 2017; Wa-Mbaleka, 2014); it promotes active involvement of learners in classroom lesson (Bachore, 2014; Cabansag 2016; Richardson, 2001; Singh, 2017; Villalba, 2013); it helps learners build more self-confidence (Cabansag & Medilo, 2016); and it also helps to promote cultural heritage (Singh, 2017), it is still considerable for this study to succeed by generating new knowledge.

While most of the studies only highlight the beliefs or the mere perceptions of teachers on the effectiveness of MTB-MLE curriculum through learners' learning and behavioral outcomes, this study will focus on teachers' attitudes which are more of a way of doing and are a great factor in student learning. With that, this research intends to contribute important findings to narrow the gap in the problematic scenario of Philippine educational system in terms of national language policy.

Research Questions

This study attempts to examine teachers' attitudes on the efficacy of MTB-MLE curriculum by analyzing the responses of the participants to the following research questions:

1. What are the teachers' attitudes on the implementation of MTB-MLE curriculum?
2. What difficulties arise during the implementation of the MTB-MLE curriculum?
3. What are the implications of teachers' attitudes on the on-going implementation of MTB-MLE curriculum?

Methodology

Research Design

Qualitative research design was utilized in this study because it focuses on the experiences or way of doings which are related to professional practices of teachers under the Mother Tongue Based-Multilingual Education (MTB-MLE) curriculum. According to Qualitative Research Consultants Association, this design is used to gain a deep understanding of underlying reasons, opinions, and motivations. It is a method designed to reveal a target audiences' range of behavior and perceptions that drive it with reference to specific topics or issues. It lets the meaning emerge from the participants.

The current research also used a phenomenological approach because it focuses on the examination of an event, activity, or a phenomenon in a particular place (Sauro, 2015). A combination of methods was used such as conducting of interviews (written and oral), visitations, and observations. It is also a descriptive research, since it aims to collect descriptive data and provide insights based on participants' experiences and perspectives.

Participants

This study is limited to 15 teacher-participants under MTB-MLE curriculum who came from two different locales – Apalit-Pulilan and Apalit-Baliwag borders. Specifically, the participants came from 4 different

schools – Balucuc Elementary School and Sta. Peregrina Elementary School from the first locale and Galang Elementary Memorial School and Calantipay Elementary School from the second locale. These schools fall under a prevalent phenomenon. Due to their geographical location, teachers enter classes faced with students whose mother tongues are different (i.e., Kapampangan and Tagalog).

Instruments

In gathering data, an oral and a written interview were conducted. The oral interview took place after the participants answered the written interview or the questionnaire. It was done in order to seek additional information and for further clarification or verification of their claims. The questions asked aimed to assess the existing attitudes of the teachers in the MTB-MLE program and their implications to local and national community to formulate insights in describing the efficacy of the MTB-MLE curriculum. Also, observation notes gathered from the visitations were used.

Data Collection

For the data collection, the researchers visited the schools for 2 days in order to conduct interviews and observe classroom instructions. Through these, the Researchers have a double-edge basis which can support stronger arguments and evidence. The Researchers can validate if the participants' claims are in consonance with what really takes place in the MTB-MLE classroom.

Data Analysis

Analysis took place after the data collection period. The collected information was reviewed, synthesized, and documented in order to keep careful notes. Since the research instruments suit to provide thematic information, transcripts were coded using *thematic content analysis* as the main technique. Responses were analyzed following an incident-to-incident coding strategy, instead of a word-for-word or line-by-line coding strategy, in order to generate main themes, sub-themes, and categories, which is necessary to extract meaning and make sense of the participants' utterances.

Results and Discussions

After analysis of the collected information, 4 significant themes emerged on the attitudes of teachers on the implementation of MTB-MLE and 4 significant themes on the difficulties that arise during the implementation of MTB-MLE.

Teachers' Attitudes on the Implementation of MTB-MLE

Table 1 Distribution of Faculty Profile

Particulars	Number	Percentage
1. Extent of Involvement [a]		
1.1 0-2 years	5	33.33%
1.2 3-5 years	5	33.33%
1.3 6-9 years	5	33.33%

(*Continued*)

Table 1 Distribution of Faculty Profile—cont'd

Particulars	Number	Percentage
2. Consistent Use of Mother Tongue/Degree of Application of Mother Tongue		
2.1 Yes, because it is easier for learners to understand.	8	53.33%
2.2 Yes, because it is required.	5	33.33%
2.3 No, because English is more appropriate and applicable to use in a subject and learners learn it well.	2	13.33%
3. Actions Taken in Improving One's Proficiency in Mother Tongue [b]		
3.1 Attending seminars	8	53.33%
3.2 Adopting different methodologies and strategies	5	33.33%
3.3 Reading books	5	33.33%
3.4 Daily use of mother tongue	4	26.67%
3.5 Asking guidance or advice from superiors	1	6.67%
4. Role of the Teacher		
4.1 Controller	7	46.67%
4.2 Facilitator	8	53.33%

Note:
[a] The number of years are rounded off to the nearest figure.
[b] Some of the respondents participated in more than one action.

Extent of Involvement

At first glance, extent of involvement does not actually appear to be an attitude. The Researchers opted to include this due to the reason that they believe that teachers' actions, practices, and attitudes will be greatly biased and influenced by the number of years they are involved in the program. In order to create a more detailed analysis and to see if there are significant differences of experiences and perspectives among teachers with varying extent of involvement in the MTB-MLE, the Researchers opted to categorize them into three.

Category 1: (0-2 years)

Participants from this category stated that they deliver the lessons effectively. They believe that their short extent of involvement in the MTB-MLE curriculum does not automatically constitute to them being not fully effective teachers. They believe that no matter how new or not they are in the MTB-MLE curriculum, as long as they use the mother tongue that the learners use as well, they will be effective in achieving the goals and objectives of the MTB-MLE.

Category 2: (3-5 years)

In this category, participants pointed out that they deliver the lesson better and help learners be more motivated and engaged in the teaching-learning process. They believe that they have the ability to enrich the vocabulary of the learners more by making them easily acquire the competencies being taught.

Category 3: (6-9 years)

Participants from this category mentioned that since they have been long exposed with the curriculum, they have acquired more experiences in delivering lessons. They learned different methods, strategies, and techniques which in turn lead to learners' easy understanding of concepts and mastery of required

competencies. But despite this strength, one weakness was commonly raised by them as well. There is a dominant existence of difficulty in translation especially in language classes such as English and Filipino.

Consistent Use of Mother Tongue/Degree of Application of Mother Tongue

MTB-MLE, like any other national policy, clearly demands attention, support, and compliance. Cabansag (2016) pointed out that compliance to this program in the educational sector means attainment of its goals and objectives. Reflecting, from the participants' responses, it can be concluded that they support this claim. When the teacher-participants were asked if they consistently use mother tongue as the medium of instruction (MOI), most of them answered affirmatively.

Although most of the participants answered *yes*, as shown in Table- 1, their reasons still vary. Eight participants or 53.33% of them use mother tongue as the MOI *because learners understand it easier*. To support, Cabansag (2016) stresses that MTB-MLE instruction benefits the learners by having better retention of the lessons. Another one is that 5 participants or 33.33% of them use mother tongue as the MOI *because it is required*. With this, it is understandable that participants adhere to the program in order to achieve its goals and objectives. On the other hand, even if it is lesser than the first one, it is alarming. This creates an implication that stakeholders in the grassroots sectors, most especially the teachers, act as "soldiers of the system" who carry out the orders given to them (Shohamy, 2006, as cited by Burton, 2013). When it comes to the remaining 2 participants or the 33.33% who answered *no,* they do not actually mean to not support the national policy totally despite its little consideration to the perspectives at the ground level (Burton, 2013). It is just that they are only acting toward the problems they encounter in the MTB-MLE – that they only shift to English which is more appropriate and applicable if the mother tongue cannot accommodate the presented concepts or ideas in a subject.

Actions Taken in Improving One's Proficiency in Mother Tongue

Matic (2012) cited in her study that teachers' ability in mother tongue is one of the most important factors for making teaching and learning mother tongue effective. Also, Nolasco (2008) stated that in Multilingual Education, there is a need for a pool of adequately trained teachers in the required languages. In this sense, it is not only the duty of the top-level management to ensure the qualifications of teachers but it is also the responsibility of the teachers to improve and develop their skills in teaching and most importantly their proficiency in using the mother tongue.

As shown in the Table- 1, 53.33% or more than half of the participants engage themselves in attending seminars. They believe that seminars, workshops, and trainings offered by the government and schools are necessarily helpful to them. This supports what Boudersa (2016) pointed out in her study, that professional development programs like seminars and workshops help teachers improve their teaching skills and deepen their knowledge of the subject matter they teach.

When it comes to adopting different methodologies and strategies in teaching, 33.33% of them believe that it gives them the opportunity to be flexible, creative, and innovative in executing lessons. This gives strength to what Thamarana (2015) noted in his study, "With an adept use of suitable strategies in language instruction, a teacher can accomplish his goal in content presentation through using traditional as well as modern technological strategies for best teaching objectives" (p. 5).

33.33%, participants engage themselves in reading books because they believe that it allows them to gain more knowledge and skills that they can apply to lessons. According to Society of Chief Librarians (Wales) (2011), reading overwhelmingly impacts on literacy levels of a person and that literacy profoundly impacts on skills of a person.

Moreover, though the most effective way to learn a language or to become more fluent in using it, is to treat it as a way of living, only 26.67% or 4 of the participants responded that they use mother tongue in daily life in order to teach more effectively in the MTB-MLE. As what Morehouse (2017) concluded in his article *5 Key Benefits of Daily Language Learning*, everyday language learning allows people to maintain and grow their language skills indefinitely.

Lastly, only 6.67% of the participants responded that seeking for guidance or pieces of advice from superiors who are far more experienced, is one way of improving one's proficiency in mother tongue. Brooks, Gino, & Schweitzer (2015) in their study remarked that seeking advice can bring substantial benefits – it boosts perceptions of competence of the advice seeker and it makes the advisor feel affirmed.

Teachers' Role

In every classroom, the role of a teacher that must be employed, largely depends on different factors – lesson, activity, type of students, classroom environment, school philosophy/policy, and even teachers' freedom. In line with these, since MTB-MLE is faced with pressing issues as regards with its implementation, arguments about teachers' roles have also been part of it. Paulson (2010) pointed out that incorporating mother tongue changes the way of teaching and learning takes place and creates major role shift from authoritative figure to facilitator of learning. As with the results of the teachers' responses about their role in MTB-MLE classroom, it supports Paulson's claim, though with a marginal advantage.

The 7 authoritative figures or the controllers believe that in a MTB-MLE classroom, they are the fountain of knowledge. They believe that they are more competent in using the language and that they have a wider range of knowledge, so learners will be able to learn more from them. On the other hand, there are 8 participants who believe they are facilitators of learning in MTB-MLE classroom. With their role, they believe that learners actively engage themselves in learning since they easily understand and freely express themselves and it provides a friendly environment within the classroom (Bachore, 2014; Cabansag 2016; Richardson, 2001; Singh, 2017; Villalba, 2013; Wa-Mbaleka, 2014).

Difficulties in the Implementation of MTB-MLE

Table 2 **Distribution of Faculty Profile**

Particulars	Number	Percentage
1. Mother Tongue Differences of Learners	6	40.00%
2. Difficulty in Translation	6	40.00%
3. Inadequacy of Instructional Materials	3	20.00%
4. Similar Treatment for Mother Tongue Subject and Filipino Subject	2	13.33%

Note: Some of the participants responded to have experienced more than one difficulty.

Mother Tongue Differences of Learners

Due to the schools' geographical location, one of the most serious problems that the participants face is the variety of mother tongues spoken by learners in one classroom. This puts great burden on their part. As shown in Table- 2, 40% of them reported that they experience this phenomenon. They need to deliver the lesson or at least part of the lessons in Kapampangan and Tagalog to address the needs of their learners. Also, delivering lessons using two languages means that they need to be proficient enough of the two languages to effectively execute the lesson and make sure to be understood by the learners. Even if let's say that the teachers can master the use of two different mother tongues and can deliver the lessons using the two different languages, still issues arise. Difficulty of pupils in learning will still prevail. Confusion may arise due to the simultaneous shift of the teacher from one language to another. Another one is that there will be lesser time for the learners to learn since language shifting of the teacher in discussing the lessons takes time.

Difficulty in Translation

Translating lesson content in the local languages to another language is a big challenge to teachers. Also, it is one of the biggest issues concerning MTB-MLE instruction. Here, 40% of the participants pointed out that there are really words which learners hardly understand so they stick or switch to its English equivalent, sometimes in order for the learners to understand. Aside from that, difficulty in translation does not only apply for teachers delivering the lesson, it applies to learners in using the language. Many studies have claimed the benefits of using mother tongue as LOI in the early years of children (Burton 2013; Gacheche, 2010; Llaneta, 2010; Supnad, 2014, and Wa-Mbaleka, 2015), but further exposure on mother tongue can cause reliance to it making the learners have difficulty in understanding and learning English, which is a lingua franca in the country and a core subject in the Philippine curriculum, thus, leading to difficulty in translation as well.

Inadequacy of Instructional Materials

Another issue raised by the participants is the inadequacy of instructional materials. Three or 20% of them have pointed out that it affected the delivery of instruction and the learning of the pupils. Matic (2012) stated that these results were alarming. In multilingual education, the materials that are of interests to the children are very important in facilitating and understanding of the lesson and it is by the help of teaching materials the children learn by doing. But despite this negative issue, the participants tend to build a positive attitude over it. Instead to stick with what the government has provided, they opted to do their own research, ask a more knowledgeable other, and look for different strategies and techniques.

Similar Treatment for Mother Tongue Subject and Filipino Subject

One feature of MTB-MLE curriculum is the occurrence of the separate Mother Tongue and Filipino subjects at the same time. Though it looks like the same, there is actually a dividing line between the two, in which the former focuses on reading while the latter focuses on language. Here, participants pointed out that repetition and redundancy of objectives arises – that most features of Mother Tongue can be also found in the Filipino

subject. This implies that since objectives appear to be similar, teachers tend to prepare one lesson for the two different subjects or two semi-identical lessons or activities. They do not bother much since the language used in the two subjects are very much the same. As an effect, learners will also tend to not see the difference between the two subjects.

Implications

The attitudes of teachers in the implementation of MTB-MLE curriculum, in all of its form and sense, clearly manifest a recurrent pattern. The teachers' attitudes root from what the MTB-MLE policy gives. The efforts done by the teachers, in one way or another, are only forms of adjustments aimed to satisfy this national language policy. This implies that there are existing problems or lacking aspects in its implementation. If these phenomena keep on happening, the Researchers believe that it will be hard for our education system to improve. It is for this reason that our government or the top-level implementers will continue these kinds of doings – *treating the teachers, ultimately, and other grassroots sectors as only devoted followers of the directives above.* This situation proves the real nature of a top-down implementation. If not critically addressed, this *cycle*, as it has begun, will continue to prevail in local communities and will have a further and greater national impact in the long run.

Conclusion and Recommendations

The purpose of this research is to contribute important findings to narrow the gap in the problematic scenario of the Philippine education system in terms of national language policy.

Although the participants justified their acceptance and provided honest statements in support for the national language policy, they also expressed uncertainty on the total efficacy of the program for the learners. Their deviating actions in the classrooms prove that the policy does not promise consistent and compact benefits and advantages on the part of stakeholders, especially teachers and learners. This, points again to the very apparent nature of the policy – that just because it was issued through the directives above, does not mean there would be an assurance for its successful implementation. In this sense, it then creates a challenge among the top players here to grasp the actual scenario at the ground level from where the implementation is being executed – that since insufficiencies and imprecisions were notably evident, it may be time to end the accustomed image of compliance of teachers through consultations or by fully involving them in the planning process and by recognizing their concrete experiences in the field.

By adopting this bottom-up approach in implementation, it can create avenues for positive outcomes, like :

(1) Teachers will no longer need to abandon their belief systems since the huge part of the perspectives of the implementation will be anchored to them,

(2) Unaddressed special issues like the prevalent phenomena in schools near provincial or regional borders would likely to be given more attention; and

(3) Iinstead of being viewed as a highly imposing entity, it can contribute to a better image of the government in education welfare by trusting the grassroot agents (that is, teachers) of education in curriculum planning and language policy implementation.

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Evolution of Junior Secondary Schools in Nigeria: Issues and Insights

Abubakar Ukashatu and Hudu Ismail Mahmud

Abstract

Junior Secondary School was evolved as a result of introducing of 6-3-3-4 system of education in Nigeria. It is post primacy education and first stage or stage I of secondary education. Recently, the FG re-launches Universal Basic Education Programme to cater to both primary and junior secondary school. The paper attempts to look at the nature and objectives, management, curriculum development and transformation, teacher education and training, continuous assessment, challenges, and prospects of Junior Secondary Schools in Nigeria. The paper concluded that JSS education should be free and compulsory for every child, as it remains the bridge between primary and senior secondary schools of various fields and equips a child to acquire permanent literacy, communication and numeracy skills expected to be a functional member of the society. The paper also recommended that JSS education should be properly managed and funded to achieve its objectives, JSS certificate should be awarded to candidates that successfully finish and sit for placement examinations and JSCE should be used for gaining admission into senior secondary schools, as applicable to SSCE in higher institutions. Separate commission should be established for management and supervision of JSS education, JSS Certificates should be highly recognized, and external examination bodies should be established to certify / award certificate to JSS as Junior Secondary Certificate Examination (JSCE) among others.

Keywords: Education, Secondary, School, Post-primary and Junior Secondary School.

1.1 Introduction

The importance of junior secondary education in educational system cannot be overemphasized. Apart from serving as the link between primary and senior secondary education, it provides opportunity for a child to acquire additional knowledge, skills, attitude and traits beyond the primary level. A major factor that necessitates the acquisition of junior secondary education in Nigeria is that the education being provided at the primary level is insufficient for a child to acquire permanent literacy and numeracy skills expected from him/her to be a functional member of the society.

Education is one of the most important needs for the well being of individual and that of the society. Thus, education is a powerful instrument of social, political and economic progress and development, without which neither an individual nor a society can attain professional growth. Secondary education in Nigeria has duration of 6 years: three years for junior level and three years for senior level.

Junior Secondary School (JSS) in Nigeria is compulsory, that means a child cannot skip it. After finishing the JSS, children are ready to enter to senior secondary schools, based on their performance and placement by the state ministry of education. The JSS students may sit for science and technical school examinations and/or placement examinations. Those that pass the science and technical examinations may proceed to

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various science colleges or technical colleges and those who fail the examination, may be placed based on their performance in the placement examinations to art or commercial and other senior secondary schools.

In view of the above, therefore, the objectives of this paper are to discuss the nature and objectives, management, curriculum development and transformation, vocational/technical education, business studies, continuous assessment, challenges, and prospects of Junior Secondary Schools in Nigeria among others.

1.2 Nature and Objectives of Junior Secondary School

Junior Secondary Schools are connoted and well abbreviated as JSS. It is the education which a child receives immediately after primary education (NPE, 2013).

JSS is a 3 year post primary education that children receive between the age of 10 -14years, it is comprised of vocational, technical and business studies and other subjects. There are core and elective subjects offered among the subjects at this level.

Now all Nigerian primary and junior secondary schools may have the 9-year basic educational curriculum (BEC). But in practice, it is 6-3-3-4. Presently, the subjects offered in JSS have been reduced to 10, both core and elective.

Section 2, item 22 of the National Policy on Education (2013) stated the objectives of Junior Secondary Schools as follows: -

i. To provide the child with diverse knowledge and skills entrepreneurship and educational advancement;

ii. To develop patriotic young people equipped to contribute to social development and performance of their civic responsibilities;

iii. To inculcate values and raise morally upright individuals capable of independently thinking and who appreciate the dignity of labour; and

iv. To inspire national consciousness and harmonious co-existence irrespective of difference in endowment, religion, colour, ethnic and socio-economic background.

The above objectives can be achieved through good management, funding, availability of human and material resources, good background from primary school, qualified teachers and instructional materials.

1.3 Management of Junior Secondary School

Universal Basic Education of the federation and various states are supposed to manage the JSS, since the introduction of the board. But presently, JSS is still being managed by the board of senior secondary.

The management of secondary schools comprise numerous tasks of the principals. The principals are the pivots around which all major and important school activities revolve. This means that, the managerial qualities that principals bring to their work have far reaching impact on how the overall enterprise of the school is done.

JSS is part of basic education programme for purposes of policy coordination and monitoring. The federal government instituted a universal basic education (UBE) with the main objectives of the provision of compulsory, free and universal basic education for every Nigerian child of school age as stated in the NPE, 2013.

> "Basic education to be provided by government shall be compulsory, free, universal and qualitative, 3 years junior secondary education inclusive. And the main aim is to provide opportunities for the child to develop manipulative skills that will enable the child function effectively in the society within the limits of the child's capability"

For effective teaching and learning at that level, the teacher-student ratio shall be 1:35. Okeke (2005), explained that basic requirements for management of JSS is infrastructure that include necessarily -- buildings, classrooms, laboratories, workshops, administrative blocks, furniture and work benches . Invariably, funds are needed to properly put all these basic requirements in place.

1.4 Curriculum Development/Transformation of Junior Secondary Schools

A new 9-year Basic Education Curriculum (BEC) which has only ten subject listings instead of the one presently being used at the basic education level which has 20 subject listings is to be used for teaching and learning throughout the country, task of revising the BEC has been concluded by the Nigerian Educational Research and Development Council (NERDC). It is a body responsible for transforming of JSS curriculum in Nigeria.

According to the Executive Secretary of the council, Professor Godswill Obioma, the implementation of the revised curriculum will commence next year (2020) in JSS 1 classes nationwide after its ratification by the Joint Consultative Council on Education (JCCE) and the National Council on Education (NCE), adding that the workshop is the final phase of the series of workshops and consultations with critical stakeholders of education for the review of the curriculum.

The process of reviewing the curriculum was finalized by the nation's curriculum developer at the editorial workshop which held in Enugu where experts in curriculum, subject- matter- specialists, teachers, education policymakers at various levels, employers of labour and parents met for two days and put finishing touches to the curriculum by correcting all grammatical and typographical errors in the document as well as identifying and eliminating repetitions or content duplication.

The Professor of Mathematics Education and Evaluation explains that while the structure of the existing 9-year BEC comprises of 20 subjects, the newly revised structure has 10 subjects. JSS 1- 3 students are to offer a minimum of nine and a maximum of 10 subjects. This reduction in subject's listings, according to the NERDC boss, was achieved by grouping related disciplines. **His words; "Related UBE subjects curricula like Home Economics and Agriculture are brought together to create a new UBE subject curriculum called Pre-Vocational Studies. Similarly, Islamic Studies, Christian Religious Studies, Social Studies, Civic Education and so forth that focus primarily on the inculcation of values (societal, moral, interpersonal) now form a new UBE subject called Religion and National Values."**

Key concepts in the former curricula now form integrating threads for organizing the contents of the new subjects into a coherent whole. In the process of the review, particular efforts were made to eliminate content repetitions within and across subjects to further reduce the overload and encourage innovative teaching and learning techniques.

The subjects listed in the new curriculum are English Studies, Mathematics, One Nigerian Language, Basic Science and Technology, Pre-vocational Studies, Religion and Values Education, Cultural and Creative Arts and Arabic Language (which is optional) with the addition of French Language and Business Studies. The NERDC boss said; "The curricula (subjects) are up to date with current demands and practices in the disciplines. This clearly departs from the vicious cycle of theory or mere memorization".

The curricula content activities are presented in practical oriented steps and stages that enable the learners to see, touch, handle, and feel. This will enable the pupils to truly learn, internalize what they learn, and use it for problem solving and for living. The curricula encourage learning by doing and use of self-learning strategies."

However, the new plan consists of 10 subjects for JSS 1-3. English, Mathematics, Cultural and Creative Arts, One Nigerian Language, Basic Science and Technology, Pre-Vocational Studies (Home Economics and Agriculture) Religion and National Values Education, French, Business Studies, Arabic Language (optional).

1.5 Teacher Education and Training

The National Commission for Colleges of Education (NCCE) has responsibility for teacher education and training in Nigeria. At present there are colleges, controlled and funded by the Federal Government, various state governments, and there are some owned by private agencies.

The NCCE was established to lay down minimum standards for all programs of teacher education and accredit their certificates and other academic awards after obtaining the prior approval of the minister. The Commission was also given responsibility to approve guidelines setting out criteria for accreditation of all Colleges of Education and other teacher awarding institutions in Nigeria.

Section 5, item 27 of National Policy on Education stated that the minimum qualification for entry into the teaching profession shall be the Nigeria Certificate in Education (NCE). The goals of the teacher education shall be-- to produce highly motivated, conscientious and efficient classroom teachers for all levels of the educational system, provide teachers with intellectual and professional background adequate for their assignment and to make them adaptable to changing situations, enhance teacher commitment to the teaching profession etc.

1.6 Continuous Assessment in Junior Secondary Schools

The Federal Ministry of Education (2004) states that Continuous Assessment is a mechanism whereby the final grading of student in the cognitive, affective and psychomotor domains of behaviour takes account in a systematic way of all his/ her performance during a given period of school.

In reference to National Policy on Education (NPE -2013) that spelled out the rationale for implementing continuous assessment in the Nigerian schools, JSS inclusive, states that "when the details of continuous assessment system are explained, at least the system has been liberated from a pupil assessment based on only on a single final backward looking examination which assessed only one aspect of the pupils, that is his academic progress and ignores other aspects such as character, attitude, interest and physical skills which are in practice the major determinants of a person's worth in life".

Section 2, items 24 (NPE, 2013) states that Continuous Assessment (CA) and school examination shall be on a ratio of 40:60 and shall be used as basis for advancement from one class to another in both public and private schools.

Ojerinde, (1984) agree that assessment is an integral part of the teaching learning process and therefore, it is very reasonable and necessary that the teachers should be involved in playing an active role in the final assessment of the learner. And this is done through the practice of continuous assessment.

1.7 Challenges of Junior Secondary Schools

Junior Secondary Schools are facing a lot of challenges in Nigerian education system. Some of the challenges are:

i. Integration of some subjects and taught as a single subject--this brings about lopsided view into one area especially if the teacher is not well trained or qualified.

ii. The ratio of teacher to students in JSS is 1:35. But students' population in the class is not manageable in size in most of the classes nowadays.

iii. Misconception of the natures and roles of JSS. Most teachers and parents misinterpreted the roles played by JSS in the development of child literacy and numeracy skills. Training on the nature and roles of JSS should be organized in the form of on the job trainings, workshops, seminars and in-service programs to raise the level of awareness.

iv. Lack of infrastructure, instructional materials and other facilities were among the main challenge in the teaching and learning process in JSS. Thus, more should be done by concerned bodies to allocate enough budget to this level of education.

v. Management of junior secondary school at both the Federal and State levels are in shallow shape as more emphasis has been laid on senior secondary school.

1.8 Prospect of Junior Secondary Schools

Junior Secondary Schools have bright future if properly managed according to its objectives. The major prospects included are the following: -

i. It can be a terminal point for some students as they learn a basic technology, basic science and basic financial accounting, so can be self employed.

ii. The combination of basic science, technology and business studies make the JSS very unique in its contents.

iii. The teaching of basic skills, knowledge, attitude and communication skills make the JSS eager to learn since they are in their tender ages.

iv. In line with the recommendations of the Nigerian Educational Research and Development Council (NERDC, 2008), what the students learn at the JSS level will lay the foundation for the students SSS education and it should be systematically connected to it.

v. Adequate attention should be provided by the government to JSS education, by the provision of incentives. Some of these incentives should be in the form of scholarships to outstanding students to senior secondary school.

1.9 Conclusion

Junior Secondary Schools remain the bridge between primary and senior secondary schools, which provides knowledge, skills, attitudes and understanding needed to perform in the various senior secondary schools. It needs more attention than senior secondary school and higher institutions, because it can be a terminal point for some students and a child can be equipped with permanent literacy and numeracy skills expected to be a functional member of the society. **JSS education should be free and compulsory for every child.**

1.10 Recommendations

The following recommendations were proffered:

i. Federal, state and local governments should establish separate commission/board to provide sufficient resources, management and supervision for effective running of JSS.

ii. JSS education should be properly managed and funded to achieve its objectives.

iii. JSS certificate should be awarded to candidates that successfully finish and sit for placement examinations.

iv. JSCE should be used for gaining admission into senior secondary schools of students' choice, as applicable to SSCE in higher institutions.

v. JSS Certificates should be recognized as Junior Secondary Education Certificate, and accord all due respect like employment, seeking political office etc. because it may be a terminal point for some students.

vi. External examination body should be established to provide certified/awarded certificate to JSS students as Junior Secondary Certificate Examination (JSCE).

vii. The training needs of the teachers should involve programs that will enable them to face challenges associated with innovations in JSS curriculum, adopt modern methods of evaluating students' performance, acquire knowledge of subject and use of modern methods of teaching, develop skills in the provision and use of instructional materials.

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Teachers' Metacognition and Higher Order Thinking Skills of Elementary School Learners in Eastern Samar, Philippines

Princess Mae M. Ellado

Abstract

This investigation primarily aims at identifying if significant relationship exists between teachers' metacognition and learners' Higher Order Thinking Skills (HOTS). The correlational method of research was employed to satisfy the primary objective of the investigation. Two groups of respondents were involved which included total enumeration of Grade VI teachers and randomly selected Grade VI learners in Can-avid District. Through the administration of adapted sets of questionnaire and analysis of data, using appropriate descriptive and inferential statistical tools, the study revealed the following salient findings: (1) Majority of the teacher-respondents indicated a very high level of conceptual knowledge of cognition and planning skills of cognition regulation rather than procedural knowledge and evaluating and monitoring skills; (2) Learners have exhibited very poor Higher Order Thinking Skills in terms of scientific inquiry skills of analyzing, evaluating, and creating; and that (3)Teachers' metacognition only manifested a negative weak correlation with learners' creating skills. The study recommends for advancement of teachers' metacognition and learners' HOTS through active integration of said skills in the curriculum and providing opportunities for teachers' professional advancement.

Key Words: Creating, Higher Order Thinking Skills, Metacognition

I. Introduction

Metacognition has been an area of interest to educational researchers for more than 40 years now. A large body of literature exists on this topic, both theoretical and empirical, relating the various definitions of metacognition. Cognitive psychologists with the likes of Stewart and Landine (1995) have tried to explain why some individuals have learnt more than others and why they remember more out of what they have learnt when compared to the others and that it "focuses on the active participation of the individual in his or her thinking process" (p. 17). Lories, Dardenne, and Yzerbyt (1998) described it as the basic characteristics of the human cognition. Some researchers define the metacognition as "thinking over thinking". In addition, Omrod (2006) expressed that metacognition includes the knowledge and beliefs of the individual related to his/her own cognitive processes. While many have been interested to understand the metacognition in relation to educational processes and outcomes, very few have dealt with investigating its impacts to learners' Higher Order Thinking Skills.

Viewed as a thinking function of the minds' ability in solving challenging situations, Higher Order Thinking Skills (HOTS) is the expanded use of the mind to meet new challenges (Rajendran & Idris, 2008). HOTS are important aspects in teaching and learning and is fundamental in educational process. Noting that a learner's thought can affect his ability, speed, and effectiveness of learning. Therefore, thinking skills is associated

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with learning process that demonstrate a positive impact on the development of their education. Yee, et al. (2011) supported this notion by stating that it enables students to learn, improve their performance and reduce their weaknesses. Also, Othman, et al. (2011) opined that thinking skills affect learners' ability to learn, speed and effectiveness of learning. Therefore, Higher Order Thinking Skills cannot be separated from the learning process.

Meanwhile, it is believed that metacognition is prerequisite to developing important critical thinking skills of learners. Supported by constructivists' ideas, Gama (2004) believed that the engaged learner demonstrates deliberateness and conscious decision-making in taking "active control over cognitive processes" and that this level of consciousness in decision-making must be achieved through leading students to be metacognitive during their learning experiences. This belief implies that there is a connection between metacognitive skills and higher order thinking skills. This is supported by Leutwyler (2009) describing that engaging classroom is one of the critical features of the learning environment for fostering higher learning skills' strategies. This is also relevant to Dewey's conceptualization about problem solving and metacognitive strategies and the importance of teaching students to think about their own thinking processes (Kauchak & Eggen, 1998).

Despite these propositions, literature reveals that there is a dearth of investigation, leading to understanding the relationship between teachers' metacognition and learners' Higher Order Thinking Skills, as teachers are the essential element in the educative process. The Researcher was prompted to investigate on the subject matter as she is currently teaching in one of the upstream schools in the district and has observed that academic performance has been a consistent problem among elementary learners in the district particularly in the upstream areas. It is, therefore, important to understand, how they, as facilitators of learning, demonstrate prerequisite metacognitive skills in the development of learners' HOTS. Hence, the Researcher was motivated, to undertake this investigation to fully grasp the connection between these two important skills, and at the same time fill in the gap on knowledge concerning the impacts of metacognitive skills on the development of learners' critical thinking skills.

Objectives of the Study

This study investigated into the relationship between teachers' metacognition and the Higher Order Thinking Skills of learners of elementary schools in Can-avid District.

Specifically, it answered the following objectives:

1. To determine the metacognitive skills possessed by the teachers in terms of:
   - 2.1. Knowledge of Cognition
     - 2.1.1. Declarative knowledge
     - 2.1.2. Procedural knowledge
     - 2.1.3. Conditional knowledge
   - 2.2. Regulation of Cognition
     - 2.2.1. Planning
     - 2.2.2. Monitoring
     - 2.2.3. Evaluating

2. To determine the perceived Higher Order Thinking Skills (HOTS) of learners in terms of:
   2.1. Analyzing
   2.2. Evaluating
   2.3. Creating
3. To test the relationship between the metacognitive skills of teachers and the learners' Higher Order Thinking Skills (HOTS).

II. Methodology

Research Design

The study employed the correlational method of research as it was deemed appropriate in determining the relationship between two or more variables. According to Bhandari (2021) a correlation reflects the strength and/or direction of the relationship between two (or more) variables, whereby the direction of a correlation can be either positive or negative. With this design, teachers' metacognition was correlated with the Higher Order Thinking Skills of learners.

Research Samples

The study was conducted among elementary schools in Can- avid District, Can- avid, Eastern Samar. There are a total of 19 elementary schools in the district. One (1) of which is in the poblacion, eleven (11) are in the upstream, two (2) are along the highways, and four (5) are interior barangays.

The first group of respondents was Grade VI teachers among elementary schools in Can-avid District. The following inclusion and exclusion criteria were followed: (1) Teachers must have been in the service for at least one year prior to the conduct of the study and are working with permanent plantilla item. Newly hired and job order/volunteer teachers who have just rendered service for less than one year during the conduct of the study are excluded from the samples.

For the learners, this study involved randomly selected learners who are bona fide Grade 6 pupils in the chosen research locale, they must regularly attend basic education curriculum. This criterion specifically extends to those who have not been dropped from the class in their previous grade level or are not repeaters or returnees. Also, returnees or repeaters were not considered as respondents.

Since there were only 43 Grade VI teachers in the entire district, total enumeration was considered for the first group of respondents. On the other hand, all Grade Six learners in the district were considered as the study population from whom learner-respondents were sampled out. Finally, to proportionately determine the sample size of Grade Six learners per school, the school's Grade Six population was multiplied by the computed number of research sample and was divided by the total Grade Six learners' population in the entire district.

Research Instrument

By taking the various dimensions of metacognition into account, the Researcher adopted the modified instrument utilized by Balcikanli (2011) in his inventory on teachers' metacognition. The modifications are

based on the Metacognitive Awareness Inventory developed by Schraw and Dennison (1994). The instrument has undergone reliability and validity tests and is therefore considered standard.

The instrument is a list of 24 statements about different parameters of metacognition. Respondents were made to rate themselves using a five-point Likert scale as to what is true to them for each of the statements. A second adopted standard questionnaire was employed in assessing learners' Higher Order Thinking Skills. This instrument was adopted from Zeidan and Jayosi (2014) which is composed of 18 multiple choice questions about scientific inquiry skills.

Data Gathering Procedure

In order to successfully address the objectives for the study, the following procedures were followed: seeking of approval from the superintendent in the division of Eastern Samar to administer the instruments in the selected locale; securing permission from the district supervisor and the respective principals in all of the schools in Can-avid District to administer questionnaire to respondents; administering the questionnaires to selected respondents and ensuring completeness and authenticity of the information obtained from the groups of respondents and retrieving the set of questionnaires after a week of data gathering.

Data on learners' higher order thinking skills were measured by computing the mean or average of the percentage scores obtained by the learners from the adopted inquiry skills test interpreted using the following scale with adjectival description adopted from DepEd Order No. 8.

For data on teachers' profile characteristics and their metacognitive skill, separate inferential associational tests were performed to find out relationships among the variables since they are of different nature and are expressed in different levels of measurements. A table for the interpretation of correlation coefficient was utilized.

Analysis of Data

The following descriptive and inferential statistical tools were utilized. To analyze teachers' metacognitive skills, the median, as a measure of central tendency was employed. To interpret learners' distribution according to higher order thinking skills, data were summarized by getting the average of the percentage scores. Lastly, to find out the correlation between teachers' metacognition and learners' higher order thinking skills, the Spearman Rank Correlation was utilized at 0.05 level of significance and at 95% confidence level.

Ethical Consideration

The study adhered to acceptable ethical standards, such as securing letter of consent and permission from authorities prior to administering the questionnaires to intended respondents. The researcher ensured that anonymity was observed while obtaining relevant information to assure the respondents that all information extracted from them remain confidential. Also, respondents were informed of their participation in the study and the type of data to be obtained from them. Finally, respondents were made to give consent on the condition that all information derived from the questionnaires and their participation in full volition will not in any ways incur harm or pose any type of risks.

III. Result and Discussions

Level of metacognition skill on knowledge of cognition of elementary school teachers

Table-1 provides a descriptive summary of the teachers' level of metacognitive skills on knowledge of cognition. The result shows conditional knowledge with a "very high" level of metacognitive skills (median = 5), while the respondents have shown "high" level on procedural knowledge (median = 4.0).

The findings are aligned to the result of Wilson and Bai (2010) who revealed that teachers who have a rich understanding of metacognition report that teaching students to be metacognitive requires a complex understanding of both the concept of metacognition and metacognitive thinking strategies. Also, Pressley (2002) noted that learners need to see that strategies are flexible and that good readers implement different strategies depending on the purpose of the reading and the demands of the text. These imply that the teacher-respondents have a very high level of self-motivation that enables them to use various effective teaching techniques in their respective classes. Also, they highly recognize their strengths and weakness and are aware of the needed skills required to their instructions, effectively as possible.

Table 1 **Table 1. Level of metacognition skill on knowledge of cognition of elementary school teachers**

Indicators of Knowledge on Cognition	Median	Interpretation
Declarative Knowledge		
I am aware of the strengths and weaknesses in my teaching.	4.0	High
I know what skills are most important in order to be a good teacher.	5.0	Very high
I have control over how well I teach.	4.0	High
I know what I am expected to teach.	5.0	Very high
Aggregate Median	**4.5**	**Very high/High**
Procedural Knowledge		
I try to use teaching techniques that worked in the past.	4.0	High
I have a specific reason for choosing each teaching technique I use in class.	4.0	High
I am aware of what teaching techniques I use while I am teaching.	5.0	Very high
I use helpful teaching techniques automatically.	4.0	High
Aggregate Median	**4.0**	**High**
Conditional Knowledge		
I use my strengths to compensate for my weaknesses in my teaching.	4.0	High
I can motivate myself to teach when I really need to teach.	5.0	Very high
I use different teaching techniques depending on the situation.	5.0	Very high
I know when each teaching technique I use will be most effective.	5.0	Very high
Aggregate Median	**5.0**	**Very high**

Legend: 5 – Very high, 4 – High, 3 – Moderate, 2 – Low, 1 – Very low

Level of metacognition skill on regulation of cognition of elementary school teachers

Table-2 provides a descriptive summary of the teachers' level of metacognitive skills on regulation of cognition. The result shows planning with a "very high" level of metacognitive skills (median = 5), while an aggregate "high" level on monitoring (median = 4.0). These imply that the teacher-respondents plan out the lessons ahead of time with due consideration to their teaching goals and availability of teaching materials. Also, they highly employ self-check assessment on whether they have met their goals via the use of appropriate tools and by asking their students, personally regarding their instruction.

Table 2 **Level of metacognition skill on regulation of cognition of elementary school teachers**

Indicators of Regulation of Cognition	**Median**	**Interpretation**
Planning		
I pace myself while I am teaching in order to have enough time.	4.0	High
I set my specific teaching goals before I start teaching.	5.0	Very high
I ask myself questions about the teaching materials I am going to use.	5.0	Very high
I organize my time to best accomplish my teaching goals	5.0	Very high
Aggregate Median	**5.0**	**Very high**
Monitoring		
I ask myself periodically if I meet my teaching goals while I am teaching.	4.0	High
I find myself assessing how useful my teaching techniques are while I am teaching.	4.0	High
I check regularly to what extent my students comprehend the topic while I am teaching.	5.0	Very high
I ask myself questions about how well I am doing while I am teaching.	4.0	High
Aggregate Median	**4.0**	**High**
Evaluating		
I ask myself how well I have accomplished my teaching goals once I am finished.	4.0	High
I ask myself if I could have used different techniques after each teaching experience.	5.0	Very high
After teaching a point. I ask myself if I'd teach it more effectively next time	4.0	High
I ask myself if I have considered all Possible techniques after teaching a point.	5.0	Very high
Aggregate Median	4.5	Very high/High

Legend: 5 – Very high, 4 – High, 3 – Moderate, 2 – Low, 1 – Very low

Level of higher order thinking skills of the learners

The higher order thinking skill also known as HOTS is the highest part in Bloom's taxonomy of cognitive domain. It has three main components namely; analyzing, evaluating, and creating (Moore & Stanley, 2010). In this investigation, an adopted questionnaire was utilized to assess learners' higher order thinking skills in which learners were made to answer the 18-item test and scores were transmuted to percentage adopting grading scale as indicated in Department of Education office order number 8, series of 2015. The results of which are presented in Table- 3 below.

It can be noted from the data, that in all of the three cognitive skills, there is higher frequency of learners who "did not meet expectations" of acceptable national literacy standard which is 75%. Around 81.5% of the learners did not meet the expectations for the skills in analyzing, 92.3% for the skills in evaluating, and 66.7% for the skills in creating. It is also significant to note that while 6.8% and 23% obtained satisfactory rating for skills in evaluating and creating, while no one performed at satisfactory level in terms of the skill in analyzing.

It is from these findings, that a declining scientific literacy in the district is implied. Based on these results, it is clearly manifested, that more and more of younger Filipino learners are not meeting the national literacy and skills standards in the country. This is a saddening performance which may further create a negative impact to learners' performance in some nationally-administered tests like the National Achievement Test and may pose serious implications to the entire national educational system**.**

Table 3 **Level of higher order thinking skills of the learners**

Grading Scale	Descriptor	Analyzing		Evaluating		Creating	
		f	%	f	%	f	%
90 - 100	Outstanding	0	0	2	0.9	23	10.4
85 - 89	Very satisfactory	5	2.3	15	6.8	51	23
80 - 84	Satisfactory	36	16.20	0	0	0	0
Below 75	Did not meet expectation	181	81.50	205	92.3	148	66.7

Teachers' knowledge of cognition and the learners' higher order thinking skills

The third objective looked into the relationship between teachers' metacognition skills and the learners' higher order thinking skills, with metacognition being divided into knowledge of cognition and regulation of cognition. After employing Shapiro Wilks Test of Normality on the two sets of data, a Pearson r test of correlation was employed due to the normal distribution of the data sets. Table- 4 shows low negative non-significant relationship between the three indicators of teachers' knowledge of cognition and the learners' levels on HOTS in terms of analyzing and evaluating, while moderately significant relationships were observed in terms of learners' creating skills and teachers' metacognition (p values < .05). This means that teachers' ability to plan out the lessons impact learners' creating skills. Hence, this

imply the need to improve teachers' ability to bring-out creativity among their learners by any means possible.

Table 4 Test of relationship between teachers' knowledge of cognition and the learners' higher order thinking skills

Criterion Variables (Learners' level of HOTS)	**Predictive Variables** (Teacher knowledge on cognition)	r_s	**Level of correlation**	**p-value**	**Interpretation**
Analyzing	Declarative	-.188	Low	.226	Not Significant
	Procedural	-.115	Low	.463	Not Significant
	Conceptual	-.233	Low	.132	Not Significant
Evaluating	Declarative	-.083	Low	.598	Not Significant
	Procedural	-.217	Low	.162	Not Significant
	Conceptual	-.145	Low	.354	Not Significant
Creating	Declarative	-.475	Moderate	.001	Significant
	Procedural	-.445	Moderate	.003	Significant
	Conceptual	-.521	Moderate	.000	Significant

Teachers' regulation on cognition and the learners' higher order thinking skills

Table-4 provides statistical information relative to the inferential test to find out relationship between teachers' regulation of cognition and learners' higher order thinking skills. It is shown that all parameters of regulation of cognition did not exhibit significant relationship with learners' analyzing and evaluating skills. However, all of these parameters namely planning (r_s = -.401, p= .008), monitoring (r_s = -.312, p=.042) and evaluating (r_s = .344*, p= .024) have shown moderate significant relationship with learners' creating skills at 0.01 level of significance. Suprisingly a positive relationship was drawn between teachers' evaluating and learners' creating skills supported by p-values lower than 0.05. This implies the direct and positive impact of teachers' use of various evaluation techniques to the attitude of students in creating new concepts and inventions.

Some literature reveals that teachers' knowledge of metacognition and learners' HOTS are related to each other (Wilson & Bai, 2010). However, overall findings of this study imply the opposite. This may be supported by Zohar (2004) pointing out that teachers are not always proficient with this cognitive knowledge and skills (Zohar, 2004) as supported by the descriptive aspects of this investigation and thus implies that they may need development of varied types of metacognitive styles for the diverse thinking strategies they would address to in class in order to develop HOTS. The findings of this study also run contrary with previous literature espousing that metacognition is prerequisite in developing important critical thinking skills of learners as supported by constructivists' ideas (Gama, 2004).

Table 5 Test of relationship between teachers' regulation of cognition and the learners' higher order thinking skills

Criterion Variables (Learners' level of HOTS)	**Predictive variables** (Teachers' regulation on cognition)	r_s	**Level of correlation**	**p-value**	**Interpretation**
Analyzing	Planning	-.133	Low	.394	Not Significant
	Monitoring	-.006	Low	.972	Not Significant
	Evaluating	.006	Low	.968	Not Significant
Evaluating	Planning	-.179	Low	.250	Not Significant
	Monitoring	-.107	Low	.494	Not Significant
	Evaluating	-.102	Low	.517	Not Significant
Creating	Planning	-.401	Moderate	.008	Significant
	Monitoring	-.312	Moderate	.042	Significant
	Evaluating	.344	Moderate	.024	Significant

The findings may run contrary with previous literatures-- that metacognition is prerequisite in developing important critical thinking skills of learners. Supported by constructivists' ideas, Gama (2004) believed that the engaged learner demonstrates deliberateness and conscious decision-making in taking "active control over cognitive processes" and that this level of consciousness in decision-making must be achieved through leading students to be metacognitive during their learning experiences. This belief implies that there is a connection between metacognitive skills and higher order thinking skills.

But looking at the descriptive aspects of this investigation, teachers only exhibited strong agreement mostly in terms of conceptual knowledge of cognition while learners did not meet expectations in all of the inquiry skills. This descriptive finding could perhaps explain why skill in creating is negatively associated with metacognition because of the fact that majority of the teachers cannot translate into action and outputs their knowledge of cognition. Finally, considering that the skill in creating is the highest cognitive skill, it does not only require high conceptual and declarative knowledge but more of a person's ability to convert knowledge into innovations or performance of creative actions.

IV. Conclusion and Recommendations

Based on the findings, respondents possessed more inclination on conditional knowledge over declarative and procedural knowledge. These findings have shown the lack of skill or ability in translating concept or knowledge into relevant actions or activities. On regulation of cognition, a consensus of strong agreement was observed on indicators about planning compared to indicators on evaluating and monitoring. These have shown that most of the teachers possess the skills to lay out plans and make good decisions, but may have inadequacies relative to plan implementation, monitoring and evaluation which are critical aspects of teaching. With respect to higher order thinking skills of the learners, measured in terms of their inquiry

skills, it was unveiled that there is a very poor situation regarding the higher order thinking skills of Grade VI learners in Can-avid District. In all of the three cognitive skills, there is higher frequency of learners who "did not meet expectations" of acceptable national literacy standard which is 75%. Majority of the learners did not meet the expectations for the skills in analyzing, evaluating, and creating skills. It is clearly manifested, that younger Filipino learners are not meeting the national literacy and skills standards in the country. This is a saddening performance which may further create a negative contribution to learners' performance in nationally-administered tests like the National Achievement Test and may pose serious implications to the entire national educational system. Finally, the metacognitive skills of teachers have only shown significant relationship with learners' creating skills, but not on analyzing and evaluating. A result like this may be attributed to teachers' possession of conceptual knowledge over procedural knowledge which is critical to being creative.

From the findings and conclusions, the following suggestions are advanced. The middle and top management of Can-avid District should look into opportunities to provide activities that will help elevate learners' scientific inquiry skills into acceptable standards. This can be done by looking into the curriculum and redesigning specific teaching and learning activities which will focus on strong integration of these skills in most of the learning competencies. School administrators should provide teachers with ongoing support. A multilayered array of different types of assistance that help teachers to successfully enhance the transfer of learning from a professional development setting to a classroom setting. A variety of metacognitive skills and strategies should be introduced for them to develop skills that could help them meet their professional needs strategically and metacognitively. It can include administrative, instructional, resources, peer support, supervisory support and instructional support from a "more knowledgeable other." Teachers who receive on-the-job support, guidance and feedback from a supervisor or a trained support person apply new skills and metacognitive strategies more frequently and appropriately and adopt a more diverse range of instructional practices than teachers who do *not* receive such supports. Teachers should design learning activities strategically for learners to attain proficiency on higher order thinking skills. They should design learning activities such as drills which will help learners master inquiry skills. They should likewise revive giving homework or assignment to foster extension of learning from the confinements of classroom. School supervisors should not only be concerned with instructional supervision and management but must likewise consider professional growth and development of the teachers. As frontline agents in the field of education, their professional advancement plays indispensable role in achieving over-all vision and mission of the Department of Education. Hence, they should be able to design learning opportunities for teachers to grow as professionals.

INSETS, school-based training and simple mentoring may be done throughout so as to provide immediate feedback to teachers' instruction in coping with the changes in their field. With respect to the higher order thinking skills of the learners. Teachers should design performance tasks or test items that require students to use the targeted thinking and content knowledge. Making sure the assessment really does call forth from pupils the desired knowledge and thinking skills. This requires that individual items and tasks tap intended learning, and that together as a set, the items or tasks on the assessment represent the whole domain of desired knowledge and thinking skills in a reasonable way. Lastly, for future researchers, it is recommended that this investigation of a wider scope be done so as to really understand the relationship between the variables considered in this study and in order to fully appreciate the impact of metacognition to learners' skills which contrarily not proven in this paper.

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Decision-Making Styles of School Heads and Their Perceived Work Performance of Teachers in Public Elementary Schools

Raymund Delmonte Capacite

Abstract

This study correlated selected elementary school heads' decision-making styles and their perceived work performance among their teachers in the division of Eastern Samar during the school year 2020-2021. An electronic two-part survey questionnaire generated through Google was utilized in collecting the data which were analyzed via median, interquartile range, and spearman rho test of significant relationship at 0.05 level of significance. The Findings revealed that most of the elementary school heads are frequently practicing dependent decision-making styles while their teachers are performing the expected seven key result areas most of the time. Moreover, a strong positively significant relationship was established between the dependent decision-making style of school heads and their teachers' work performance. It can be inferred a direct impact brought by good decision making among school leaders to the overall performance of their teaching force. Hence, the researcher recommends extending this investigation to secondary school heads to further validate the findings.

Key Words: Decision-Making Styles, Dependent, School Head, Work Performance

I. Introduction

Decision-making is a significant and subjective management process, which reflects how an individual defines, perceives a problem, and chooses an alternative solution to it. The decision making is viewed in the form of identification of a stimulus for action, and ends with specific commitment to action. According to Colakkadioglu (2013), decision making aims at changing schools or organizations, to prevent or solve a problem that influences the personnel and stands out as one of the most critical responsibilities of managers. It involves choosing the most reasonable view or alternative from a variety of views and alternatives related to an issue, and making a judgment in order to attain the desired result (Şişman & Taşdemir, 2010). In all organizational settings, including educational organizations, decision-making is an essential management task as people who hold administrative positions have to make decisions in order to accomplish their daily responsibilities (Khasawneh, Alomari, & Abu-tineh, 2011). School principals are among the main actors responsible for decision-making in the daily running of schools. However, the way they tend to act with regard to decision-making during organizational change is an issue, requiring further investigation.

Policy changes and the development of school organizations and the pressures of the need to improve the quality of education in schools require an appropriate response by the principal in making decisions. Conversely, Aydin (2010) described decision-making as a process of selecting the most suitable choice from among the probable alternatives to the solution of a problem. Forman and Selly (2002) posited decision making as a process of choosing between alternative courses of action in order to attain goals and objectives. Unfortunately, several scholars with likes of Al-Omari (2013) revealed that no significant correlation exists

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between decision making styles and leadership styles of school principals, while Thunholm (2004) who investigated the relationship between decision-making styles, self-esteem and self-regulation suggested that decision-making style is not a skill but rather a process that involves self-evaluation as well as the capability to initiate and maintain self-regulation. Essentially, decision making is in the form of flexible behavior, which means that individuals may act and decide differently from each other in similar cases.

School heads play a critical role in good decisions and mobilization of the teaching and non-teaching staff towards achievement of school objectives. Joda and Olowoselu (2015) view principals' position as a position of dominance and prestige accompanied by the ability to direct, motivate and to assist teachers and students in achieving specified purpose. Darwazeh's (2003) study showed that the percentage average of taking decisions by the principals was 83.2% with most decisions taken from learners and teachers' domains, whereas the decisions related to school's environment and the curriculum domains were the least. The point was further debated that the dominance of one style or the other depends on the specific situation. However, the school principal has an onerous task and decision to make on a daily basis for effective management of school resources and students. Research suggests that where decentralization has occurred within schools, it tends to be about administrative rather than education matters. This situation should be of concern, especially given evidence teachers are attracted to, and stay in, the profession if they feel they belong and believe they are contributing to the success of their school and students (Mulford, 2003). Certainly, principals do make many decisions which have an effect on teachers in schools. These decision-making styles might be rational, dependent and avoidance that postures as challenges to teachers' performance.

In the aspect of literature review and past studies, adequate numbers of researchers found significant effect and correlation between decision making styles and other areas such as the following: Bamidele and Ella (2013) decision making and job satisfaction; Olcum and Titrek (2015) school administrators' decision making styles and job satisfaction of teachers; Pacheco and Webber (2012) participative decision making and job satisfaction; Irawanto (2015) employees' participation in decision making; Hariri (2011) decision making and teacher job satisfaction. Based on the reviewed research, the present study is directed towards examining school heads' decision-making styles and teachers' performance in selected elementary schools of San Julian District. Finally, the significance of principal decision making is geared towards assessing and evaluating teachers' performance in order to achieve the school objectives.

Hence, this study is directed towards uncovering the following research objectives:

1. Assess the decision-making styles of school heads in terms of
    1.1 Rational,
    1.2 Dependent, and
    1.3 Avoidant,
2. Determine the work performance of teachers as perceived by their school head in terms of the following parameters:
    2.1 Content knowledge and pedagogy,
    2.2 Learning environment,
    2.3 Diversity of learners,

2.4 Curriculum and planning,

2.5 Assessment and reporting,

2.6 Community linkages and professional engagement, and

2.7 Personal growth and professional development, and

3. To find out the significant relationship between the school heads' decision-making styles and the work performance of teachers based on their Individual Performance Commitment Review Form (IPCRF) in public elementary schools during the COVID-19 pandemic.

II. Methodology

Research Design

The study utilized a correlation design through a survey method to describe, analyze, and interpret the data gathered on the relationship between the school heads' decision-making styles and their perceived work performance of teachers among public elementary schools of Eastern Samar Division for the School Year 2020-2021. The researcher divided the variables into predictive and criterion variables. The school heads decision making styles divided into rational, dependent, and avoidant served as the predictive variable, while their perceived work performance of the teachers on the seven key result areas served as the criterion variable. The testing of significance in terms of correlation value was set at 5% level of significance.

Research Samples

This study was conducted among 43 public elementary schools in the schools' division of Eastern Samar. A total of 43 respondents consented to fill out the electronic survey questionnaire via google form. Among them are 35 full-fledged school heads, seven (7) teachers-in charge, and two (2) schools-in charge as shown in Table 1. The researcher employed referral sampling usually which involves identifying individuals who meet inclusion criteria, gaining their cooperation, and then asking them to recruit additional respondents with the same conditions via the google form link.

The respondents are regularly employed licensed professional teachers who are given special order from the office of the school division superintendent to handle and manage small up to mega-scaled public elementary schools in the division of Eastern Samar. They are willing to be respondents to the study, and have internet access.

Table 1 Profile of The Respondents

Profile Indicators	Frequency	Percent
Role		
School Head	35	79.50
School-in charge	7	15.90
Teacher-in charge	2	4.50
Position		
School Principal I-IV	30	68.20
Teacher I-III	14	31.80

Data Collection Method

A two-part electronic survey questionnaire via google form was utilized. The first part dealt on the decision styles of the school heads in terms of rational, dependent, and avoidant characteristics through a 15-tem Likert items rated, using a 5-point rating scale from 1-never to 5-frequently. The second part was taken from the existing requirements of teachers in their annual key result areas in their IPCRF. The validation of the said instrument was made among three experts; one is a research expert - researcher, a public elementary school teacher who holds a Master's degree in education, and a school head from a non-participating school via a five-point Likert scale for quality assurance. An over-all Cronbach alpha of 0.84 signified that the instrument is acceptable and valid to use for the present study.

Analysis of Data

In analyzing the data, descriptive and inferential analysis were utilized at a 0.05 level of significance. Prior to the actual analysis, the researcher sent the raw data for testing of normality. It can be gleaned from table 2 below that none of the variables were able to show normality since their p-values are greater than the .05 level of significance. This ensures the use of nonparametric tests to answer the final research objective. The researcher utilized median and interquartile range in assessing the school heads' decision-making styles and their perceived work performance of teachers assigned to their school. Finally, the Spearman rho test was employed to establish a significant relationship between the two sets of variables.

Table 2 Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
TR	0.301	43	0	0.565	43	0
TD	0.245	43	0	0.755	43	0
TA	0.224	43	0	0.768	43	0
TCK	0.278	43	0	0.641	43	0
TLE	0.29	43	0	0.59	43	0
TDL	0.228	43	0	0.751	43	0
TCP	0.234	43	0	0.719	43	0
TAR	0.32	43	0	0.445	43	0
TCL	0.286	43	0	0.629	43	0
TPG	0.297	43	0	0.644	43	0

Ethical Consideration

This research followed the appropriate research ethics guidelines. Electronic consent forms were given and collected from the involved participants, and a permit from government sectors directly concerned in this investigation. The respondents were assured that these data would be kept confidential and cannot be used in

any legal actions against them. Finally, the researcher provided electronic copy of the survey instrument to avoid contact, especially this time where pandemics currently plague the society.

III. Results and Discussion

Decision-Making Styles of Public Elementary School Heads in Eastern Samar

The first objective of this study aims to determine the decision style of the respondents in terms of rational, dependent, and avoidant using median scores and interquartile range as shown in Table 3. The results show that rational decision style is the frequently employed style among public elementary school heads (x=5; IR=1), while they infrequently employed avoidant style (x=2; IR=1).

A similar result was shown by Olcum and Titrek (2015) mentioning rational decision style bearing the highest mean value, followed by dependent and avoidant decision styles. Also, Ugurlu (2013) noted avoidant decision style to be the least practiced one among original five aspects of decision-making. The result implies the huge competence portrayed by the respondents which is expected from them. Surprisingly, dependent type of decision makers come after the rational ones. This shows that elementary school principals are willing to take risks and are innovative. They will be better able to bring schools to their intended goals through a harmonious atmosphere between superiors and colleagues. Thus, they will feel happy, feel recognized, and motivated to work earnestly.

Table 3 Decision-Making Styles of Public Elementary School Heads in Eastern Samar

Indicators	Median	Interquartile Range	Interpretation
Rational	5	1	Frequently
Dependent	4	1	Quite frequently
Avoidant	2	1	Infrequently

Work Performance of Tteachers as Perceived by Public Elementary School Heads in Eastern Samar

The second objective of this study focuses on examining the school heads' perceived work performance of teachers in the new normal in terms of the seven key result areas namely; content knowledge and pedagogy, learning environment, diversity of learners, curriculum and planning, assessment and reporting, community linkages and professional engagement, and personal growth and professional development as shown in Table 4 below. All these seven key result areas were perceived to be performed "most of the times" (x=4; IR=1).

The results share the same view to that of Kuncoro and Dardiri (2017) that teacher performance is aligned to the competence specifications/criteria that every teacher must possess. According to Pellegrino (2010), the creation of a healthy learning environment is of paramount concern to most teachers for them to improve the quality of teaching. Hence, the result justifies all the actions made by school head to ensure that the school is both a haven to students, but also to their colleagues for the improvement of the teaching and learning process.

Table 4	Work Performance of Teachers as Perceived by Public Elementary School Heads in Eastern Samar		
Indicators	**Median**	**Interquartile Range**	**Interpretation**
Content Knowledge and Pedagogy	4	1	Most of the times
Learning Environment	4	1	Most of the times
Diversity of Learners	4	1	Most of the times
Curriculum and Planning	4	1	Most of the times
Assessment and reporting,	4	1	Most of the times
Community linkages and professional engagement	4	1	Most of the times
Personal growth and professional development	4	1	Most of the times

Spearman rho-test of Significant Relationship Between the Decision-Making Styles of Public Elementary School Heads and Their Perceived Work Performance of Teachers in Eastern Samar

The last research objective covered in this study looked into the correlation status between the decision-making styles of public elementary school heads and their perceived work performance of teachers in Eastern Samar during Covid 19 pandemic using Spearman rho test as shown in Table 3. The results reveal dependent-centered decision-making style to bear positively strong significant relationship with all the seven KRAs of teachers' work performance. Also, rational-centered decision-making style is found to be moderately and significantly related to content knowledge and pedagogy (rho = .356; p-value = .025) and learning environment (rho = .387; p-value = .016). On the other hand, avoidant types bear no significant relationship with all the key result areas of the teachers as shown in Table 5.

The overall results contradict the findings of Baluyos, Rivera, and Baluyos (2019) who shared that the satisfaction of teachers on school heads' supervision and job security inversely affect the teachers' work performance. The result justifies Olcum and Titrek (2015) findings which revealed the positive relationship between principal decision on teachers' job satisfaction in schools. This implies that principals tend to use dependent decision making to assess teachers' performance in schools.

Table 5	Table 5. Spearman rho-test of Significant Relationship Between the Decision Styles of Public Elementary School Heads and Their Perceived Work Performance of Teachers in Eastern Samar					
	Rational		**Dependent**		**Avoidant**	
Decision making/Work performance indicators	**rho/ p-value**	**Interpretation/ Decision**	**rho/ p-value**	**Interpretation/ Decision**	**rho/ p-value**	**Interpretation/ Decision**
Content Knowledge and Pedagogy	0.356	Moderate	0.477	Strong	0.211	Weak
	.025[s]	Reject H_0	.003[s]	Reject H_0	0.071	Retain H_0

(*Continued*)

Table 5 **Table 5. Spearman rho-test of Significant Relationship Between the Decision Styles of Public Elementary School Heads and Their Perceived Work Performance of Teachers in Eastern Samar—cont'd**

Learning Environment	0.387	Moderate	0.493	Strong	0.014	Negligible
	.016^{s}	Reject H_0	.002^{s}	Reject H_0	0.109	Retain H_0
Diversity of Learners	0.138	Negligible	0.406	Strong	0.129	Negligible
	0.23	Retain H_0	.012^{s}	Reject H_0	0.108	Retain H_0
Curriculum and Planning	0.274	Weak	0.438	Strong	0.056	Negligible
	0.068	Retain H_0	.007^{s}	Reject H_0	0.116	Retain H_0
Assessment and reporting	0.275	Weak	0.534	Strong	0.202	Weak
	0.067	Retain H_0	.001^{s}	Reject H_0	0.083	Retain H_0
Community linkages and professional engagement	0.239	Weak	0.562	Strong	0.247	Weak
	0.098	Retain H_0	.001^{s}	Reject H_0	0.101	Retain H_0
Personal growth and professional development	0.225	Weak	0.56	Strong	0.245	Weak
	0.112	Retain H_0	.001^{s}	Reject H_0	0.096	Retain H_0

IV. Conclusion And Recommendations

Based on the findings of the study, it was found that dependent-centered decision-making style is the most preferred and practices styles among elementary school heads in the division of Eastern Samar during the CoVid 19-pandemic. The respondents perceived the seven key result areas among their teachers to performed most of the times. Finally, a strong significant relationship between the respondents' dependent-centered decision-making style and perceived teachers' work performance was established, while no significant relationship was established to that of the avoidant-centered decision-making style.

The findings of this study are quite limited to the perceptions of the school heads. The researcher did not look into the actual IPRCF performance of the teachers as no theoretical underpinning support such indirect undertaking at the moment. Likewise, the results are bound to the experiences of school heads among elementary schools in one school division in Eastern Visayas. Hence, it is recommended to continue analyzing the established variables among secondary school heads in other schools division in the country.

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Inculcation of Values through Science Textbooks: An Analysis of NCERT Science Textbooks at Upper Primary Stage

Anjni Koul and Gunjan Gupta

Abstract

The National Council of Educational Research and Training (NCERT) develops National Curriculum Framework to provide guidelines for the development of textbooks. The textbooks are essentially developed to guide the teaching-learning of the curriculum in a particular subject. The present paper presents the analysis of NCERT science textbooks of upper primary stage to find out the scope of inculcating values among learners along with the subject knowledge. This study will be important for teachers and teacher educators to identify and understand the hidden values given in the textbooks and can be implemented among learners during teaching-learning process. The analysis will also help curriculum planners and development team (authors) while revising the textbooks of science at upper primary stage.

Key Words: National Curriculum Framework-2005, Human Values, Science, Textbooks, Upper Primary Stage.

Introduction

The textbooks in schools are generally used to learn facts and methods about a certain subject. Textbooks play a vital role during teaching-learning process. They provide the basic framework within which much of the classroom activities occur and also give every child the best possible opportunities for learning. In science, good textbooks are usually child centric which gives various opportunities to learners to interact and involve them in the process of learning. It is a known fact that values cannot be enforced among learners, while these can be inculcated during the process of socialization and always occurs in a context. A research study reveals that value education is important component of education for administrators to train staff and organise workshops on teaching strategies and school exchange programme for teachers as well as students for inculcation of values at national as well as state level. The study also reveals that parent also plays a very important role in value transmission (Deepshikha et al., 2015). It has been found that when values are inculcated during the teaching-learning of subject, the students relate values with their daily life and transaction of the lesson becomes easier (Tan et. al., 2010). It is a known fact that the role of teachers has the greatest importance in the acquisition of values. Teachers while teaching values to students should use appropriate instructional strategies, methods, resources such as handbooks, reference books, textbooks etc.

The National Council of Educational Research and Training (NCERT) is an apex body constituted by the Government of India for school education. It develops National Curriculum Framework to provide guidelines for development of curricular materials. The National Curriculum Framework-2005 (NCF-2005) emphasizes

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that value education must be a concern that penetrates the school life through curriculum, classroom environment, school management, teacher-pupil relationship, teaching-learning processes and entire range of school activities. The intention of this paper is to analyze the content of Science Textbooks developed at upper primary stage (NCERT, 2006, 2007 & 2008) with reference to human values. The present study is descriptive in nature and will be helpful for teachers, teacher educators and society to know more about human values. **This will also help teachers and teacher educators to transact values among learners during teaching-learning process. The study will be important for curriculum planners and development team (authors) while revising the textbooks of science at upper primary stage**.

Research Questions

Is the content related to human values included in science textbooks at upper primary stage?

Is there further scope for enriching content with respect to values in science textbooks at upper primary stage?

What kind of values can be developed among learners of upper primary stage through science textbooks?

Methodology

This is a qualitative study which aims to derive and comprehend the values reflected in the textbooks of science through first-hand experience and honest reporting. The textbooks of science at upper primary stage developed by NCERT have been taken as the sample of the study.

Analysis of Science Textbooks with Respect to Human Values

The science textbooks at upper primary stage have been developed around seven themes - Food; Materials; The World of the Living; Moving Things, People and Ideas; How Things Work; Natural Phenomena and Natural Resources. An integrated approach to science has been followed at this stage. **The most unusual feature of the syllabus at upper primary stage is that it starts with questions rather than concepts, which introduces children to the investigative process of science and nurtures their cognitive abilities.**

Cover Design of Science Textbooks

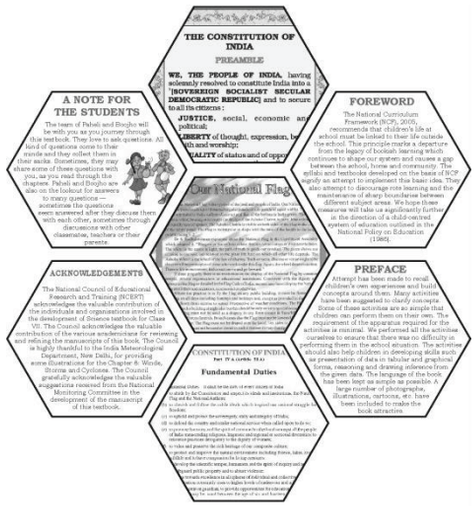
It is a well-known fact that cover design of a textbook creates the first impression on its potential readers. The visuals on cover design should make a connection between the book manuscript and the readers. The cover design of science textbooks for class VI, VII and VIII depicts pictures of nature walk, separation of different substances, flood, rainwater harvesting, experimental set-up, structure of earth etc. **The visuals such as, on natural resources portray the message to sensitize the reader about the available natural resources and their judicious use.**

Experimental set-up gives user an idea about the requirement of the experiment and motivate them how to plan, design and set-up an experiment. It allows the intellectual development and encourages students to exercise their integral curiosity that promotes discovery and learning. It allows them to learn about various disasters that happen around and also know, "how to tackle the situations in order to minimize their effect."

On flipping the cover pages, there is a beautiful message that says "*education is neither a privilege nor favour but a basic human right to which all girls and women are entitled"* and about our National Flag. **It teaches us to respect our National Flag and reminds us of many brave stories of freedom fighters, our victories, struggles etc**. Glimpses about various other books have also been given to promote reading habits among students. The important thing is that teachers must discuss about the text given on these pages not only to make children aware but also have their opinion about the given text.

Preliminary Pages

The preliminary pages include title page, foreword, preface, a note for the teachers and students, textbook development committee, acknowledgements and much more.



The Foreword of the textbook is usually written by someone other than the development team (authors). It introduces the readers to the development team (authors) and the book. The foreword of textbooks in science at upper primary stage has been written by Director, NCERT, **where he has emphasized on child-centered system of education** and appealed to principals and teachers to encourage children to reflect on their own learning and to pursue imaginative activities and questions.

A preface is a detailed introduction to the science textbook written by the chief advisor of the textbook. **He has mentioned that attempt has been made to sensitize children to the issues concerning gender, religion, environment, health and hygiene, to prepare children to assume their roles as responsible citizens**. He has also requested teachers and parents to encourage children to perform activities and learn science by doing and avoid learning by rote memorization.

A Note for the Students

A note for the students in textbooks is usually given to motivate learners about how to use the textbook and follow the instructions given while performing the tasks. Students can effectively communicate their thoughts and ideas with their peers and actively engage in their classrooms. In science textbooks at upper primary stage, a team of *Paheli* (riddle) and *Boojho* (answer) is quite motivating. **Learners may appreciate their journey by connecting with them. Students may also get motivated with the questions asked by *Paheli* (riddle) and *Boojho* (answer) and may pose questions; as questioning play a critical role in the overall success of a classroom**. They should perform various activities to seek answer to their queries, which will encourage questioning, freedom from fear, sharing ideas, cooperation, honest reporting etc., and ultimately develop critical thinking, problem solving skills among learners.

Science Concepts Organized around Themes

The science concepts at upper primary stage, i.e. classes VI-VIII are not framed along disciplinary lines, but organized around themes that are potentially cross-disciplinary in nature. Same set of themes are used from class VI to VIII, these are discussed below:

Theme - Food

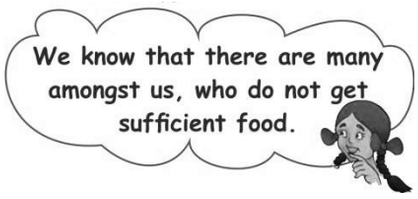
The theme **"Food"** revolves around the sources and components of food; nutrition in plants and animals, i.e., availability and utilization of food; importance of crop production and its management; about useful and harmful microorganisms etc. The content given in the theme food talks about various values, some are obvious to understand but many of them are so beautifully weaved within the content and are considered as hidden values. The major values which can be inculcated among learners during the transaction of theme 'Food' are as follows:

- Variety of food in India has been reflected in the text which communicates the 'respect for diversity'. The teacher may explain that there is a lot of variation in the food taken in different regions of our country. Food should be made easily available to every part of the nation and also to each and every one of us. The teacher may encourage students to share their food, which develops love, care and respect for each other's culture. Similarly, the festivals associated with harvest season such as, *Pongal, Baisakhi, Holi, Diwali, Nabanya,* and *Bihu* should also be celebrated throughout the nation to develop respect for each other's culture.
- Autotrophic mode of nutrition communicates that everyone must be self-dependent and take their own responsibilities. Teacher may encourage learners to do their personal chores themselves. Whereas, heterotrophic mode of nutrition guides learner to seek help of their elders in case of any kind of problem or emergency related to their personal life or otherwise. They can also seek counseling from the person they trust most.
- During the discussion on malnutrition and balanced diet, "Unity is strength" can be promoted. If each finger of our hand is considered as one nutrient and child is asked to lift bag of goods by one finger, it will not be possible; but it will be easier to lift the bag using all five fingers and easiest by closing the fist. Teacher can encourage students to have balanced diet and exercise regularly to stay healthy. Balanced diet can be compared with the silos of wealth to keep healthy. Make habit to chew food properly needs to be discussed.

- Adding fertilizers to plants increases their nutritional value. Similarly, regularly inculcating positive values may shape learners future, they may grow up as an independent learner and always encourage them to take challenges in life.
- Farmers are responsible for our crops and livestock that are needed for us to survive. Various separating methods are being used by farmers to provide us the clean food items, which reflect their hard work. They

are the ones who provide us food for our living; this generates respect for farmers and sense of 'dignity of labour'.

- Symbiotic relationship shows the bond of friendship between leguminous plant roots and rhizobium bacteria. It gives a good example of intentionally and willingly working together for the benefit of all. As fertility of soil is increased by vermicomposting and microbes, it promotes the spirit of team work and cooperation.
- Some micro-organisms can survive under extreme conditions. Similarly, we should also try to survive in all walks of life. We should try to face challenges and hurdles with confidence and never loose heart under any odd circumstances. Children should appreciate that the Polio, smallpox have been eradicated due to the production of vaccines made from microorganisms.
- Different preservatives are added to avoid spoilage of food. Similarly, different methods can be followed to approach diverse problems in life. Learners may appreciate traditional knowledge like adding *neem* leaves to the container having grains may protect grains from insects.
- The teacher may develop the curiosity among learners about the information given on the packets of food such as weight of the packet, date of packaging, expiry date etc. This will help the learners to know the most important information whether the material is still safe to use or not. This will protect their health. Teacher must motivate learners to have home cooked food and say NO to junk food and always wash hands properly before and after having food.
- India is a country with large population. To meet the demand of large population, food grains have to be produced in large quantity. The questions raised by *Paheli* (riddle) ignite the inner consciousness of learners to save food and use it judiciously. It is important for children to realise, the difference between food spoilage and wastage of food.



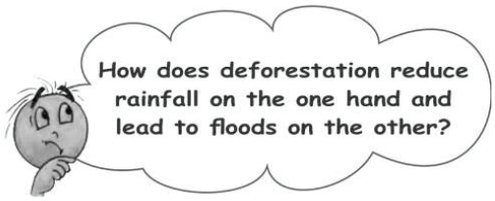
Theme - Materials

The theme **"Materials"** discusses about different types of materials such as, fibres; acid, bases and salts; various types of soils; metals and non-metals; various changes that take place in our surroundings etc. Along with the content given in this theme, one can inculcate various values among learners. Some of the major values which can be inculcated among learners during the transaction of the theme 'Materials' are as follows:

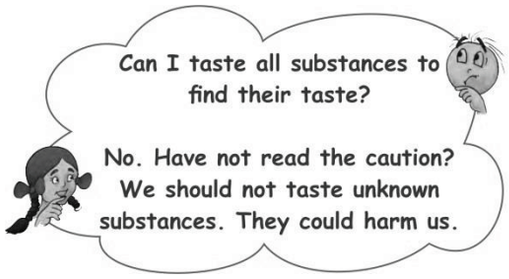
- A visit to textile industry/ handloom unit/ fields where cotton is grown, not only inculcates "respect for labourers" but also sense for "dignity of labour". In India, women are significantly involved in various kinds of industries related to silk production. This promotes 'gender equity' in our country.
- While discussing about weaving process that turns a raw material such as cotton yarn into fabric, one has to realize that without weaving the strands of yarn are weak. This means when we work together, we are strong. This shows that working in collaboration in a community can help us to solve problems. We should always value each member for making his/her contribution. Similarly, the process of knitting is not only being fun and creative, but reduces stress and also connects us to our traditional knowledge. History of

clothing material gives idea to learners how clothing evolved with time. A large variety of different style of clothes used in different parts of country connects learners with the "Indian knowledge and tradition."

- Use of charkha was popularized by Mahatma Gandhi as part of the Independence movement. This generates a sense of patriotism among children and promotes homespun yarn. Let us join hands and promote *khadi*. It also supports the 'Make in India' theme.
- Students may be motivated to classify materials on the basis of their properties. Through this exercise, they may develop a passion towards knowing and exploring new things around them, which will develop belongingness among them towards nature. Similarly, as a human being we should try to collaborate with like-minded people.



- Materials are used after removing harmful or non-useful substances by using different methods of separation. Similarly, in our daily lives, we learn many useful things while interacting with people in our surroundings. Let us imbibe good habits from them and completely ignore bad ones.
- Shearing is just like getting a haircut. However, it requires skill so that the sheep is not injured. It conveys the message that let us not be cruel to animals. We should learn proper skills to take care of our pets and stray animals. Knowing the names of various animals in local and other languages can enhance creativity, adjustment in society, appreciation of local language etc., (Okal,2014).
- A number of different changes occur around us. Changes can be temporary such as, physical changes and can be permanent such as, chemical changes. Changes may be good or bad. One should accept and adjust according to the changes happening with one's body and life gracefully.
- During discussion about acid, bases and salts, teacher must talk about dental care, brushing and flossing the teeth. This will make them aware of proper oral hygiene. Disobeying this might lead to oral infections, such as, tooth decay and gum diseases.

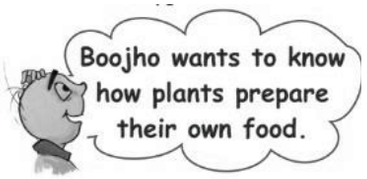


- While discussing about malleability and ductility about metals, these properties indicate that one has to be as malleable as metals in life and try to get adjusted in the society with harmony. Similarly, displacement reactions give a sense of competition. Healthy competition inspires students to do their best.

Theme – The World of the Living

The theme **"The World of the Living"** discusses about the living and non-living things; their characteristics, habitat, surroundings and the adaptations; the forms and functions of different plants and animals; life processes such as respiration, transportation, reproduction, reaching the age of adolescence etc. Some of the major values which can be inculcated among learners along with the content during the transaction of the theme 'The World of the Living' are as follows:

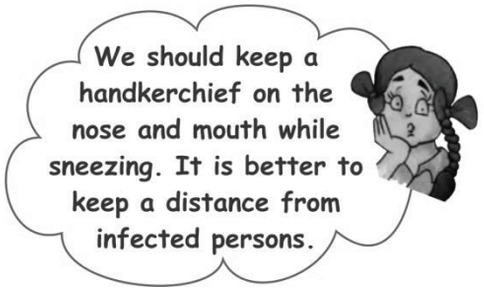
- Let us be sensitive and respectful towards plants, promote discussion about how plants and human beings are dependent on each other. Celebrating festivals based on plantation of trees and adopting plant will develop the sense of belongingness and kindness towards nature.
- Various parts of a plant play significant functions and work for the survival of the whole plant. Similarly, every individual is important and equally responsible to his/her roles and responsibilities when living in a cultured society. That is why, it is said that "alone we can do little and together we can do so much."



- Soils provide anchorage for roots, hold water and nutrients. Soil plays a vital role in the Earth's ecosystem. Pots and toys made up of soil in *haat* (bazar), develop respect amongst the children towards potters and it seeks interest among children to learn pottery. Also, teacher may discuss that the way soil particles bind together, similarly, human population should unite together to fight against all kinds of negativity and contribute to the overall development of a country.
- While discussing about various organs and their functions is a perfect example of team work. Breathing and respiration are two processes that occur simultaneously without any interruption. This indicates that division of labor makes any difficult task easy in efficient completion. In different environmental conditions i.e. aerobic and anaerobic respiration, cells follow different pathways to produce energy. Similarly, there can be various approaches to solve a problem. Encourage students to keep trying, until they succeed. Also, the primary function of kidneys, liver and urinary system is to expel toxins that result from body's metabolism, similarly, one should follow good habits in life and keep away from bad habits.
- The blood circulation is an essential bodily function since it supplies the enough oxygen and nutrients to body's vital organs to operate. Teacher may discuss about the risk of anemia in adolescent girls due to high growth spurt. They may be encouraged to have more of leafy vegetables, poultry, fish, whole grains, nuts, eggs etc.
- Reproduction in plants is a natural phenomenon to continue the survival of plants on this planet. Teacher may have discussion and promote afforestation. Let us not pluck flowers as they are the parts of plant to increase population of plants. Field trips to different farm locations may be organized so that students get the onsite demonstration of various agricultural techniques and practices. This will not only develop respect towards farmers but also promotes agriculture as a profession. Similarly, in the process of budding, a small bud grows on the body of the parent organism and when the time comes it detaches itself to form a new organism. Teacher may relate this with a bond parents have with their children and it is indeed important to take care of parents especially, when they are old. Teacher may have discussion about natural changes that occur in teenage boys and girls. Teacher may encourage students that sex discrimination should not be tolerated. Girls should be sensitized towards early marriage and motherhood.
- The discussion on skeletal system can be related with the importance of physical exercises such as yoga, sports etc., to maintain fitness, strength and alertness to reduce stress and anxiety; nurture self-confidence and self-belief.

- One of the ways, that humans cause the air pollution is by burning fossil fuels, which causes respiratory problems. Teacher should talk about air pollution and also have discussion on how smoking is injurious to health. Say NO to drugs, *gutkha*, tobacco, cigarettes, *bidis*, *hookah* etc. If by any chance or mistake, anyone has indulged in smoking or in any bad habit, he/she must seek help of his/her teacher or any elderly person of his/her family.

- *Paheli* says that while sneezing we should cover our nose and mouth and maintain a distance from infected persons. Children may relate this to the present COVID-19 situation. A person suffering from common cold when sneezes in open, fine droplets of moisture carrying thousands of viruses are spread in air. During breathing, the virus may enter the body of a healthy person.



Theme – Moving Things, People and Ideas

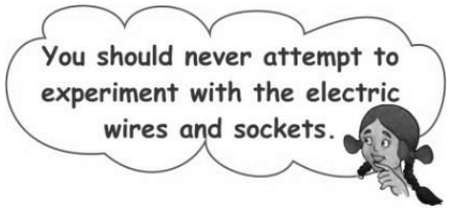
The theme **"Moving Things, People and Ideas"** discusses about motion; measurement of distance; motion and time; force and pressure; friction; sound etc. Along with the content given in this theme, one can inculcate values among learners. Some of the major values which can be inculcated through the theme 'Moving Things, People and Ideas' are as follows:

- While discussing about motion and measurement of distance, teacher may first develop skill of measurement among students and make them aware of the precautions one should follow during measurement. Students may also be asked to explore for various modes of transport of ancient times till date, this will help students to know that "necessity is the mother of invention".
- The most important value to inculcate among students is about the value of time and to adopt the habit of punctuality. Teacher may motivate students by saying, "early to bed and early to rise, makes a person healthy, wealthy, and wise".
- Relate motion with traffic rules. Make students aware that not to drive four-wheeler or two-wheeler except bicycle till you attain 18 years of age. Once you start driving vehicle in your life, always follow traffic rules. Short distances should be covered by walking or using bicycle. This habit will not only keep you fit and healthy but also protect the environment. Traffic rules need to be discussed thoroughly to make students understand that the rules are designed for our safety.
- The forces such as, gravity, friction etc., are important concepts to learn. Friction teaches us to handle small and big challenges in life with courage. Gravitational force, a force of attraction teaches us that one should always be grounded, without any ego and hate towards others.
- While dealing with graphs, teacher may encourage students to draw graphs of their strengths and weaknesses, good habits and bad habits etc. Teacher may appreciate their strengths and good habits. Motivate them to work more on their weaknesses and try to replace bad habits with good ones. This will ultimately make them successful in life and good citizens of a country.

Theme – How Things Work

The theme **"How Things Work"** discusses about electric current and its effects; fun with magnets etc. Along with the content given in this theme, one can inculcate various values among learners. Some of the major values which can be inculcated among learners during the transaction of theme 'How Things Work' are as follows:

- While discussing about the concepts of electricity, teacher may have discussion in the class about the importance of ISI mark on electrical devices. Always switch off and unplug electric devices after use to save electricity. Sustainable use of energy should be promoted.
- Teacher may also aware students to be cautious near electricity poles. Advise them not to touch electric poles with bare and wet hands or feet. Always wear rubber gloves and proper footwear while handling electrical equipment.



- Magnets attract iron articles; teacher can motivate students to relate properties of magnet with persons having positive attitude and values in life, which should always attract us. Like poles of the magnet, male member of the family may have respect for female members of the family and vice-versa. Always have strong bond and respect with family and friends

Theme: Natural Phenomena

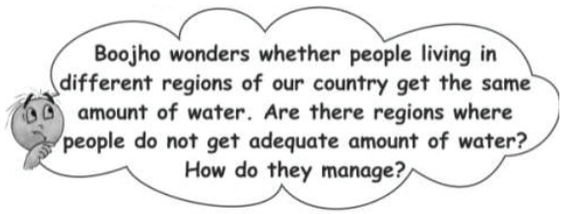
The theme **"Natural Phenomena"** discusses about light and lightning; rain and thunder; shadows; reflections; earthquakes; sound etc. Along with the content given in this theme, one can inculcate various values among learners. Some of the major values which can be inculcated among learners during the transaction of concepts discussed in the theme 'Natural Phenomena' are as follows:

- Nearly, everything we seen around us are due to reflected light. Basically, the role of the eye is to convert light into electrical signals that the brain converts into images of our surroundings. Teacher may discuss about the importance of sight and vision. Discussion may be held about the importance of eye donation, which may help visually impaired persons to see the beautiful world. Teacher must encourage students about regular eye examination because correct vision can improve the quality of day-to-day life.
- The luminous objects are visible as they emit light on their own and they also make the non-luminous objects visible. Teacher can highlight that students with good behavior and habits are like luminous objects.
- During discussion on transparent, translucent and opaque; teacher may relate the term transparency; through which light passes, that one should always be transparent in his/her behavior, thoughts and relationship.
- Reflection is one of the important concepts. Reflection is the change in direction of a wave front at an interface between two different media so that the wave front returns into the medium from which it originated. Therefore, reflection of light can be taken as – 'what you do will come back to you'. Let us respect others to gain respect them.
- While discussing about sound, it is also important to discuss about noise pollution. Researches have shown that humans and animals when exposed to excessive noise may cause a range of health problems.

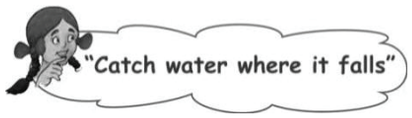
It is very important that teacher may discuss to follow the limits of noise levels, one should control noise level near sensitive areas such as hospitals, educational institutes etc. Students may be motivated to spread awareness about noise pollution and its effects on human & the environment by exhibiting role plays in community.

Theme: Natural Resources

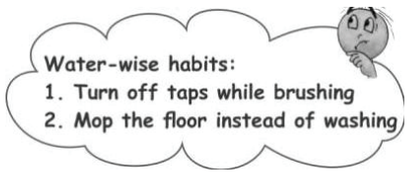
The theme **"Natural Resources"** discusses about water, air, waste materials, pollution etc. Along with the content given in this theme, one can inculcate various values among learners. Some of the major values which can be inculcated among learners during the transaction of concepts discussed in the theme 'Natural Resources' are as follows:



- Water is one of the most important substances for all the living organisms. Water is necessary not only for drinking but also for our day-to-day activities. One cannot imagine life without water. During discussion, teacher may discuss about judicious use of water and sensitize students that there are people in our country who fetch water from far off places. Have discussion in the class that 'Every Drop Counts.'

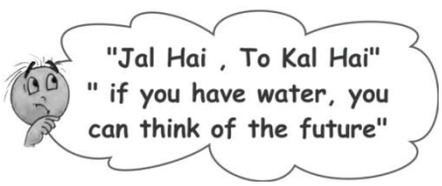


- Teacher may use rain water harvesting as an educational tool to get students realise that rainwater harvesting can fulfil demand during summers. Motivate them to start conserving water in their communities/ schools/homes.

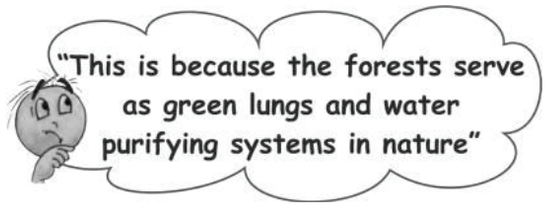


- Rainwater is not only a perfect source of water for many uses and situations, but can also be a great backup water supply for emergency situations particularly in desert areas. Discussions, quizzes, role plays, painting competition etc., may be held in schools to celebrate World Water Day, Earth Day, Environmental Day etc. so that students can understand about access to safe water, environmental protection etc. and can express their creativity and thinking towards these important days. Students' creativity may be displayed on notice board or showcase during parent teacher meet or exhibitions.

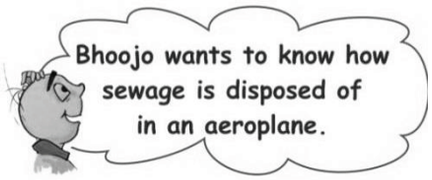
- Motivate students to avoid the area to be cemented to support the recharging of groundwater. While interviewing the farmer, educate them for maintaining *bawris* (pull of water/well) and follow drip irrigation method to save water. Group projects regarding environment management such as reviving of dead lakes, ponds, wells etc., may be assigned to students to have belongingness towards 'Mother Earth.' Discussion about collection of stagnant water anywhere in the surroundings may be prevented, which can become a breeding ground for the mosquitoes that transmit various diseases.



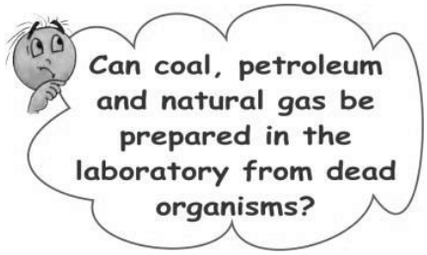
- Always discuss with students that breathing pure air is as important as drinking clean water. Debates may be held about the importance of planting more of plants to maintain the oxygen and carbon dioxide level in the atmosphere. Students may be sensitized about the minimal use of CFC based equipments, devices, vehicles etc. that deplete the ozone layer. One should promote use of Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG) as they burn cleaner. Students may be advised to promote the use of renewable resources of energy such as, windmill, solar panels, etc.



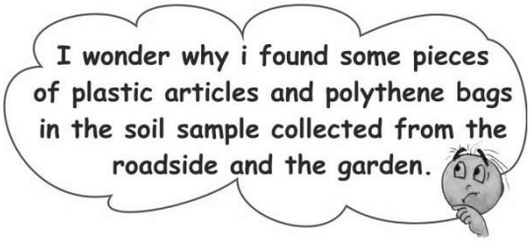
- While discussing about waste management, it is important to talk about the proper disposal of waste, which helps in improving the air and water quality. Debate with students about how to manage waste which is a huge problem. Discussion about global warming can be held which is considered to be a serious threat around the world. It leads to floods, droughts, etc. Encourage students to know about organic farming, which involves the cultivation of plants and rearing of animals in natural ways. Motivate students to follow vermicomposting in school gardens and avoid synthetic fertilizers to maintain soil fertility.



- Coal and petroleum, which are exhaustible resources, need to be used judiciously. Petroleum Conservation Research Association (PCRA) advocates various activities to follow them, not only to save fossil fuels, but also causes global warming. One can reduce emission by shifting to alternative technologies by choosing public transport over personal vehicles. If possible, opt for CNG based cars and buses. Various ways may be adopted in schools and homes by students to reduce carbon foot print. Burning of fuel leads to produce harmful products. Discussion about burning of dry leaves in open, use of burning wood/ coal (*angeethi)* in closed room in winters need to be discouraged and make children aware about their harmful effects.



- Use of plastic should be discouraged as these are non-biodegradable materials. It causes environment pollution. Students may be encouraged to promote best practices by not discarding plastic bags on roads and in water bodies; which put animals' life in danger by choking their digestive and respiratory systems. Schools should motivate children to use cloth bags, perform role plays/ road shows in the community to make people aware about Reuse, Reduce, Recycle, Refuse, Replace materials.



- It is extremely important for students to be aware about various disasters such as, fire disaster, earthquake, landslides, tsunami, COVID-19 etc. They should be aware about their mitigation. This will help them in saving their own life and others. Students should also be aware of fire service helpline numbers, mock drills of fire safety, use of fire extinguishers; all these are well addressed in textbooks. Similarly, while

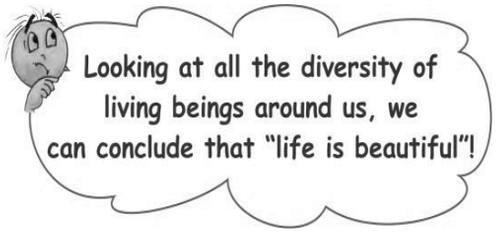
discussing about normal human body temperature and use of clinical thermometer, it becomes more important to know about its usage particularly in the period of COVID-19 pandemic. Maintenance of social distancing, importance of hand washing, use of mask etc., are equally important to know and follow.

Key Words, What You Have Learnt, Exercises and Extended Learning - Activities and Projects

For all the chapters' summary, exercises and suggested activities and projects have been given. Summary gives learners a condensed version of the material they have studied. From summary, students can easily recapitulate the important points of the chapter. Learners can self -evaluate by answering questions given in the exercises, as it is an important part of learning. **Suggested projects and activities promote the development of scientific thinking among students and discourage rote learning**. Students acquire new ways of asking questions and can understand the world around them better. Keywords given in each chapter will highlight the important focal points of the chapter.

From the above examples, one can easily spot many obvious and hidden values given in the textbooks of science at upper primary stage. These can easily be inculcated among students during transaction of concepts. **The only need is that teachers and school system have to understand these hidden values and find various strategies to inculcate them among students during teaching-learning process.** Many activities/ experiments/ projects/ group work/ creative writing etc., have been given in the chapters of the textbooks. These train learners to think critically and creatively and make them more observant and more analytical. Performing these tasks in groups enhances communication skills, discourages gender bias and promotes equal participation of all the learners. Art-integrated learning may be promoted by motivating learners to write poems, songs, stories, draw diagrams, design and develop toys and games etc., on various concepts discussed in the textbooks. This may also help in the identification of hidden talents among students.

Conclusion



Science at upper primary stage is usually taught within the cognitive level of students. Care must be taken by teachers to focus equally on all three domains of learning. One can easily conclude that while teaching science at upper primary stage, the social and moral values can receive increased attention through textbooks and classroom discussions. **If teachers are well trained, these values can be easily inculcated among students while involving them in the process of science.** Along with teachers, **parents also play an important role in shaping the future of their children.** One of the best ways to develop good habits among their children is by setting up good examples.

Therefore, right values and good habits can be incorporated through the existing curriculum of science. Values can be incubated through storytelling, integrating art with science, discussions, celebrating national and local festivals, social service camps etc.

Dealing with values and moral issues are one of the important and integral part of teacher's role. The ultimate message is, schools may bring forth a progressive society that is free of superstitions and promote tolerance among students for differing thoughts and ideas.

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Life Under COVID-19 Lockdown: The Case of University Students In Dagupan, Philippines

Sheila Marie M. Dasig and Ann Mildred M. De Leon

Abstract

This paper aims to explore the experiences of university students in Dagupan, Philippines during the COVID-19 lockdown. Data sources were reflection papers of freshmen students from the College of Teacher Education of Lyceum Northwestern University. Thirty-one papers were reviewed. Eight themes emerged and captured as the 7F's of the lockdown experience: (1) financial difficulties, (2) fear of infection, (3) feelings of isolation, (4) fulfilling multiple roles, (5) facing the future, (6) family and faith as sources of strength; and, (7) Facebook as indispensable coping tool. Overall analysis showed that first, more than a health crisis, the students perceived the pandemic as an economic crisis; second, the students juggled multiple roles and their role as family member took precedence over all their other roles; and third, despite difficulties, the students demonstrated adaptability as they looked for ways to cope with the situation. This study suggests that the students' lives during lockdown did not revolve around being students alone, thus, focusing only on improving educational infrastructures might not be enough to sustain their engagement. A holistic, multi-stakeholder approach to addressing the needs of low-income students has to be designed and implemented to ensure the sustained participation of this sector in education.

Key Words: COVID-19, Higher Education, Low-Income Students, Qualitative Study

1. Introduction

The COVID-19 pandemic of 2020 disrupted people's lives all over the world. In the Philippines, an extreme enhanced community quarantine (EECQ) was enforced in March 2020 as a control measure to prevent the spread of the virus. The EECQ, which is almost equivalent to a total lockdown, was the strictest level of community quarantine in the country. Work and transportation were suspended; and classes at all levels were put on hold.

To adapt to the situation, universities abruptly shifted to emergency remote and online set up (Simbulan, 2020). Most universities in the country were already at the tail-end of the second semester of academic year 2019-2020 when the lockdown happened. Because of this, accomplishing end-of-semester activities (e.g. final examinations, submission of final requirements, payment of fees) raised concerns for students. In Dagupan City, where this study was conducted, EECQ commenced on March 16, 2020 and lasted until April 24, 2020. This was downgraded to enhanced community quarantine (ECQ) on April 25, 2020 until May 15, 2020. Despite the downgrade, movement of people was still restricted, universities remained closed and people below 21 years old were not allowed to go out of their homes.

The unprecedented nature of the pandemic, and the measures used to control the spread of the virus such as lockdowns and shift to online classes, resulted to negative impacts on the physical and psychological

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well-being of students as shown in several studies both here (Baloran, 2020; Baticulon, et al., 2021; Labrague & Ballad, 2020) and abroad (Faize & Hussain, 2021; Salman, et al., 2020; Wang & Zhao, 2020). Anxiety and depression became prevalent due to a variety of reasons such as health and economic concerns, problems in connectivity, lack of digital competencies, increased academic workload, isolation, and future education and career prospects (Aristovnik, et al., 2020; Farris, et al., 2021; Organisation for Economic Cooperation and Development [OECD], 2020a). Despite the challenges, some studies pointed out some positive effects on students like better personal health and hygiene practices (Aristovnik, et al., 2020; Tariq, et al, 2020), while others discussed various coping strategies (Chaturvedi, et al., 2021; Nurunnabi, et al., 2020).

The lockdown resulted in new challenges for students, especially those who do not have the resources to easily adapt to the situation (OECD, 2020b; Rotas & Cahapay, 2020). Studies showed how lower income households were more disproportionately impacted (Aucejo, et al., 2020; Bonaccorsi, et al., 2020; Cho, et al., 2021); had higher risk exposure – members were more likely to be part of frontline, blue collar workers who, by nature of their work, do not have the privilege to work from home (Hibbler-Britt, 2020) – and were more likely to experience psychological distress (Rudenstine et al., 2021). According to UNESCO (2020), around 1.58 billion learners worldwide were affected. From this number, at least 24 million are estimated to be at risk of not being able to return to school; most affected would be students at the tertiary level, which is projected to suffer a 3.5% decline in enrolment, mainly due to the costs related to their studies.

While several studies have already been conducted on the impacts of the COVID-19 lockdowns on university students, most of these are quantitative and thus, nominative by nature. What is lacking are qualitative descriptive studies that reflect students' own constructions of their lockdown experience and how they made sense of this experience. These studies are important because they provide information that may be vital for the study participants but may have been overlooked, and thus excluded, in quantitative studies (Tremblay, et al., 2021; Vindrola-Padros, et al., 2020). In the case ofCOVID-19 pandemic, for example, stories on how individuals were able to sustain and survive life during lockdown might be downplayed amidst the dominant narratives of anxieties and depression (Waters, et al., 2020). These studies also play a critical role in providing spaces for the voices of underrepresented and vulnerable populations (Webber-Ritchey, 2021).

This paper aims to contribute to the emergent discussions on the impacts of the COVID-19 pandemic on university students by exploring the experiences of College of Teacher Education freshmen students from Lyceum Northwestern University in Dagupan City, Philippines. It hopes to provide a deeper understanding of how students experienced and navigated through the crisis that was unfolding itself at the time of the study. To achieve this, this paper answers the following questions: How did the students describe their lockdown experience? What meanings emerged from these descriptions? What are the implications of these constructions in terms of student support in the new normal?

2. Methodology

Students' reflection papers on their experiences during the EECQ served as data source for this qualitative study. The papers were written between April 21, 2020 and May 8, 2020. Only the papers of those who gave their consent were included. Recruitment was conducted from November 11-20, 2020 via Facebook Messenger. The time period for recruitmentwhich was after the final grades had already been released was purposively chosen to ensure that the students voluntarily and willingly participate in the study. The request

for informed consent highlighted the following: (1) participation is strictly voluntary, and (2) their identity will remain confidential, pseudonyms/codes will be used instead of real names.

After getting the students' consent, the reflection papers were randomly divided between the two researchers and were analysed separately using Braun & Clark's (2006) thematic analysis. After individually reviewing and thematizing the contents of the papers, the two researchers did a second-level thematization where they reviewed and compared the themes vis-à-vis the raw data together. To check the trustworthiness of the results and the clarity of interpretation, the researchers presented the results to a faculty member from the College of Teacher Education for feedback. After this, the researchers came up with the final set of themes that represented the students' COVID-19 lockdown experience.

Thirty-one out of the total 73 students gave their consent. Majority were females(27), who were 18-20 years old (25). Eleven lived in Dagupan City while seven were from rurban (rural-urban) towns bordering the city. Thirteen lived in rural areas – seven from coastal fishing towns west of Dagupan and six from farming towns east and south of Dagupan. In terms of household income, majority of the participants (15) have household income sources from one or a combination of the following informal/micro-scale economic activities: construction worker, factory worker, pedicab/tricycle driver, handicraft/food store helper, *sari-sari*[1] store owner, and sidewalk vendors. Six engage in small-scale farming/fishing activities while others receive remittances from relatives working overseas as teacher (1) and domestic help (1). The rest of the participants (8) have family members who work as employees on daily minimum wage or contractual service agreements. Ten are working students.

3. Results: The 7Fs of The COVID-19 Lockdown Experience

3.1. Financial difficulties

This highlights the lockdown's economic impact on the students and their families whose household income sources relied mainly on informal economy and daily earnings, which was thus, hardest hit by the lockdown.

- *"My father got laid off as factory worker. What supports us now is our small sari-sari store but we're only allowed to operate until 12 noon. I'm worried. Where do we get the money for our daily needs?"* S15 (female, 20)
- *"My mother (street vendor) cannot sell (goods) anymore. We do not have other income sources, what happens now?"* S24 (female, 19)

The loss of daily income resulted in dependency on government food rations which limited the amount of food supplies and food choices for the students and their families. Uncertainties over the duration of the lockdown period also caused anxieties as household expenditures, like water and electricity bills, continued to pile up.

- "*We had to skip breakfast. Rice was reserved for lunch. This helps us tide our hunger throughout the day. We have to save as much food as possible since we do not know until when the lockdown will last.*" S9 (female, 19)

[1] "Sari-sari" means "variety" in Filipino. A sari-sari store is a small neighborhood, usually family-owned, micro consumer business which sells an assortment of goods that can be bought in small amounts (e.g. a piece of candy/stick of cigarette).

- "*Work stopped and it's impossible to earn a living these days. Will our money last until after the ECQ? I don't know. We don't have any savings, how do we pay our bills?*" S13 (male, 19)

Financial difficulties also affected the students' online learning. Several students did not have gadgets nor internet access at home. To comply with academic requirements, they borrowed laptops/smartphones and accessed the internet with the help of neighbours/relatives/teachers. Majority of the students also availed of promos offered by telecommunications companies to maximize data usage. Overall sentiments, however, reflect how students' expenditures were mainly influenced by their household's priority for food and other basic necessities.

- *"I do not have internet, but with the way things are right now, I'd rather use the money for food than internet data."* S28 (female, 18)
- *"My neighbour rents out her laptop, but I do not have money for that, I just type everything using my smartphone and use the money for my family's needs."* S7 (female, 19)

3.2. Fear of infection

The novelty of the virus, the lack of available information, and the surge in cases and deaths due to COVID-19 led to fear of infection amongst the students. However, more than getting infected themselves, they were more concerned about family members getting infected, especially those working at the frontline.

- *"The past months had been terrifying; the outbreak makes me anxious. I do not go out, I'm afraid that I might get sick by interacting with others."* S24 (female, 19)
- "*I am worried for my parents' safety; my father is a member of the Barangay (village) health emergency response team and is always exposed to the virus."* S11 (female, 19)
- *"My father reports at the checkpoint daily, they monitor people going in and out of our area. We always pray for his safety."* S30 (female, 19)

3.3. Feelings of isolation

The shift to online classes resulted to feelings of isolation and restlessness among the students. This was aggravated due to the problems they faced related to connectivity. A general sense of lack, if not absence of academic, psychological and moral support were expressed by the students, something that would have been readily available in a face-to-face setting. The students felt that they were on their own and that their voices were not being heard. The timing of the lockdown, which happened during the final quarter of the semester, made the situation more stressful. Feelings of anxiety and helplessness increased as students dealt with deadlines and final requirements while looking for ways to connect with teachers and classmates.

- *"I feel like a prisoner, but I cannot do anything about it, we need to follow the law for our own safety"* S19, (male, 20)
- *"It was very hard, we had difficulties communicating, much more expressing our ideas and opinions because we cannot hear and see each other due to poor internet (connection). It did not help that we had to constantly monitor our data usage"* S5 (female, 19)

3.4. Fulfilling multiple roles

Life under lockdown meant occupying a space where the students had to juggle multiple roles as a member of the family, as a worker, and as a student, at the same time. This juggling of roles affected their academic performance as students were expected to prioritize their role as a family member over all other roles, including that of being a student.

- *"It's hard. It's true I can do my schoolwork at home but my responsibility as a daughter becomes priority. In school, my attention is on schoolwork, but at home, it is divided as a daughter, a sister and a student."* S15 (female, 20)
- *"When my older brother got sick, I had to take on his role as the primary income earner of the family. I took on odd jobs to put food on the table. I sometimes had to miss classes and submit requirements late because the only time I get to do schoolwork was when I come home from work."* S20 (female, 19)

3.5. Facing the future

This theme captures the fears that the students have for their own and for their familys' future due to the uncertainties they experienced while in lockdown. Aside from health concerns and being safe from the virus, the students shared bleak prospects about going back to school, graduating on time and finding jobs after graduation. The economic impact of the pandemic worried the students the most as they anticipated how the rising prices of basic commodities and lack of income opportunities would affect them when things go back to normal. For some of the students, getting a job and temporarily dropping out of school was one option that they could take post-pandemic.

- *"I don't think I can continue with my studies after the pandemic, I need to look for a job because we don't have any money left to support my studies…"* S21 (female, 18)
- *This was echoed by S7 (female, 19) who wished that "I hope classes do not resume immediately so that I can have time to earn and save money."* S7 (female, 19)

3.6. Family and faith as sources of strength

Family and faith were strikingly positive elements in the students' reflections. These two served as sources of strength and meaning in order to continue to find ways to survive daily and move forward amidst uncertainties. Time spent with family and improvement in family relationship as positive outcomes of the pandemic were expressed in all of the papers. Family was also an essential element in the students' constructions of life post-pandemic as fears, hopes and plans for the future revolved around family security and well-being. Faith, on the other hand, was expressed through gratitude for God for not abandoning them and their families during these difficult times. The words *"may awa ang Diyos"* (God is merciful) were found across all papers.

- *"My family strengthens and inspires me, encourages me in these times of difficulties"* S2 (female,19)
- *"I will look for a job so that I can help my family rise again after the crisis and recover the things we lost during the lockdown"* S10 (female, 21)
- *"God wants us to stand still and have faith because a new and better beginning awaits us"* S21 (female, 18)

3.7. Facebook as indispensable coping tool

Social media, particularly Facebook (FB), played an important role as a coping mechanism during the lockdown as it provided ways for students to communicate with relatives, teachers and classmates. Since all students and teachers had FB accounts, FB messenger became the "official" classroom. The students also pointed out how promos offered by telecommunications companies – such as the free and unlimited access to FB messenger even in the absence of data – helped them accomplish their academic requirements. It also provided entertainment and updates on health protocols being observed in their respective localities.

- *"We used FB messenger in class because it was available to all of us. It is also free and we can communicate even without load unlike email where we need to load before we can open it"* S12 (female, 20)
- *"Thanks to Facebook, we can talk to our parents. They cannot go home yet because of the lockdown"* S11 (female, 19)

4. Discussion

The students' reflection papers conveyed three insightful constructions of their lockdown experience that have significant implications on student support in the time of the pandemic and beyond:

First, findings of this study showed that the students' overall lockdown experience was distressing mainly due to the lockdown's impact on their family's financial resources. While studies have identified financial concerns as among the causes of anxieties of students during the pandemic (Khoshaim, et al., 2020; Nelson, et al., 2020; Son, et al., 2020), it is interesting to note how this dominated the students' constructions of their life under lockdown in this particular study. Not only were the discussions on financial difficulties extensive, but they also cut across all themes except for theme 2 (fear of infection). This illustrates how the students perceived the pandemic more as an economic crisis than a health crisis. This is important because it validates and substantiates reports and projections of international organizations like UNESCO (2020), OECD (2020a) and The World Bank (Cho, et al., 2021); and echoes results of related studies (Aucejo, et al., 2020; Rudenstine, 2020) on how the pandemic has been heavily devastating on the lives of students from low-income families and how this will have long-term impacts on student outcomes for this sector.

Second, the students' constructions also demonstrated the complexity of their situation in terms the different roles that they had to play while in lockdown and how their role as a family member took precedence over all other roles. Unlike other studies that simply identified lack of physical space and household responsibilities (Baticulon, 2021; Fioretti, et al., 2020; McKie, 2020) as factors effecting students' learning at home, this finding expands the discussion by illustrating how family responsibilities influenced students' decisions and behaviour during the lockdown. This was reflected in the writings of S28 who opted to use her money to buy food rather than internet data, S15 who stated that her responsibility as a daughter is priority, and S21 who is planning to look for work post-lockdown to help her family recover.

This finding suggests that efforts to improve students' participation in online classes and sustaining students' education overall – must consider what happens "at the other side of the monitor" (Moore, 2020, p. 56). Education stakeholders and actors need to recognize that unlike face-to-face classes where students from low-income families are provided enough space where they can fulfil their roles as fulltime students, studying at home puts these students in a space where their role as students does not get prioritized.

Thus, when designing intervention and support, it is imperative to consider the learners' situation and context (Joaquin, et al., 2020), and the overall philosophy and objectives for the 'new normal' in education (Pacheco, 2000).

Third, while the experience was distressing, the students' constructions of their lockdown experience demonstrated adaptability as they looked for ways to cope with the situation. The need to cope during the pandemic has already been documented in previous studies (Agha, 2021; Labrague & Ballad, 2020) and that coping mechanisms may be adaptive or maladaptive (Farris, et al., 2021). In this case, adaptive coping mechanisms were utilized by the students. Although the coping mechanisms may be borne out of the need to manage anxiety during lockdown (Nurunnabi, et al., 2020), it may also signal optimism as can also be inferred from the students' plans of finding work when things get back to normal which can play an important role in the students' efforts to successfully navigate and survive the lockdown (Tariq, et al., 2020; Waters, et al., 2021).

Based on the results of the study, the students' adaptability and coping strategies were largely influenced by family and faith. This finding echoes that of studies that identified faith and family as critical elements for coping during disasters (Labrague & Ballad, 2020). According to Waters, et al. (2021), meanings or the "degree to which people made sense of their lives and the world around them" (p.4) are foundational components of well-being and help people cope in times of distress. However, this construction needs to be viewed within the context of the study – which is the first two months of the lockdown as Labrague & Ballad (2020) cautioned how fatigue can set in as lockdown continues and may further affect individuals' physical and mental states.

5 Conclusion

This study showed that the students' life under lockdown was generally distressing; however, it also displayed resilience as the students tried their best to adapt, cope, and plan for the future. It highlighted how: (1) the students perceived the pandemic more as an economic crisis than a health crisis, (2) the students' role as a family member was prioritized over all their other roles; and (3) the students displayed adaptability as they tried to find ways to cope during the lockdown. These findings suggest that the students' lives, based on their own constructions, did not revolve around their being students alone. They suggest that factors influencing the students' participation in education are multiple and complex, thus, focusing on improving educational infrastructures alone might not be enough to sustain participation. A holistic, multi-stakeholder approach to addressing the needs of low-income students has to be designed and implemented to ensure the sustained participation of this sector in education.

While this study offers insights on students' experiences during lockdown, it has several limitations. First, data was limited to students enrolled in a particular school in Dagupan, Philippines. Second, the time period of the study was limited to the first few months of the lockdown. Further studies with more number of participants as well as with participants from diverse contexts are recommended. It is also recommended that follow-through studies be conducted on the same group of students at different phases of the pandemic, particularly interesting would be a comparative analysis of students who were able to pursue their studies during the pandemic and those who could not, to be able to identify further factors influencing students' participation in education in times of disruptions such as the COVID-19 pandemic.

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Co-Curricular Activities as Best Practices of CIE/ Department of Education, University of Delhi, India

Pankaj Arora

The Department of Education, University of Delhi, also known as the Central Institute of Education (CIE), was perhaps the first major institute of professional learning and research in Education established just after independence. The first Prime Minister of India, Jawaharlal Nehru with the country's first Education Minister, Maulana Abdul Kalam Azad took considerable interest in the establishment, activities, and progress of CIE in the early years of independence. Maulana Azad visualized the function of CIE as not merely to *turn out teachers who will be 'model teachers',* but to evolve into *a research centre for solving new educational problems of the country*. Maulana prophesized that it would grow into "a beacon light for training institutions of the country". He said, *The Central Institute will, therefore, both train teachers for higher and secondary schools and also carry on research on the problems of basic and secondary education. The stage at which a child should be introduced to a craft as distinct from activity, the relative emphasis on craft and academic subjects and their correlation, the production of a new type of school literature to bring out the social function of all human activity, the degree of abstraction possible in the earlier stages of education, the stage at which there may be some bifurcation between academic subjects and crafts, the grouping of students according to aptitude, taste and ability, the place of art in the school curriculum - these are only a few of the many problems which arise out of a new conception of basic education and require constant and careful study in a research institution. It is my hope that the Central Institute of Education will be our laboratory for examining all these important questions under controlled conditions and offering suggestions as to the best methods for their solution*.

(Source: CIE Website)

Over these past seven decades, CIE has attempted to work towards the above mentioned vision. The Institution has shaped its unique philosophy which gets reflected in all its programs through inculcating the core values of democracy, freedom, dedication, creativity, social responsibility, diversity, inclusion, collaborative and experiential learning, innovation, sincerity and excellence. The Founder Principal of CIE, Dr. A.N. Basu, who was also an alumnus of Shanti Niketan, can be credited of defining the rich culture and practices of CIE which gradually became an integral part of CIE's institutional life. The institutional ethos envisioned by Dr. Basu were an amalgamation of rich academic activities, institutional publications, open discussions, debates, cultural activities and sports; and all of these became the center of life in CIE. Not only did CIE establish a rich academic flavor in the teacher education, it also recognized many cultural actives that eventually became part of all students' professional life as school teachers. His vision of defining the ethos of an educational institution for teachers has helped CIE become a leader in the education and professional growth of teachers for not only in our country, but in entire Asia. It has always been looked-up

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by different institutions for its ethos. CIE is known for maintaining a fine balance between academic rigor and curricular participation.

In this paper, I am going to share some of the practices that have been an integral part of life in CIE. Writing this article also has a very special place in my heart as I have lived the life of CIE for around 30 years, first as a student and now as a faculty member. In these 30 years, I have witnessed many changes in my institute. As I write this article, I feel nostalgic as well as proud of the values that got inculcated in my personality through CIE.

Student-Teacher Rapport

To begin with, I am going to tap the unique and strong bond that existed between the students and teachers of CIE. CIE is always recognized for its rich culture of nurturing young students in very compassionate, caring and empathetic manner. This belief got etched through the initial Principals, faculty members and students of CIE who lived a unique rich culture of student-teacher rapport. The high standards of institutional life which they defined in participatory mode were something which till date is known as the prodigious heritage of this institution. Teachers took pain in allocating students to various tutorial groups, class sections, schools and curricular activities. The core idea was to let all students gain from every teacher during their stay in the institute. This practice gave access and familiarity to each student with almost every faculty member as well as with all other students of the institute across different programs. The principle, which was followed covertly, was to allot every student to a different group of students/ teachers in different class-sections, tutorial groups, school groups, houses, elective papers and so on. Within a month's time, students started associating themselves to a new set of friends and teachers and thus started owning the institution. This made the student-teacher bond so strong that it felt like an extended family.

Another marvelous way of creating a bond between the students and teachers was though sharing of tea. Often, teachers used to offer tea while teaching a class/ tutorial. This practice soon became an integral part of the institute's culture and I remember having rich discussions over cups of tea with most of my teachers. The Teachers also frequently planned educational excursions- local and outstation. They could be seen playing and singing with students to celebrate different occasions. In order to strengthen that bond, many teachers used to organize pooled lunch and even invite students to their home. This was a unique culture that was appreciated and enjoyed by one and all in the institution. Most of the students had a belief that the ownership of the institution which they experienced being a student at CIE even for a few months could not be developed even during their graduation or post-graduation period wherein they had spent 2-3 years' time. No doubt students keep coming back to CIE, to seek guidance on various stages of their professional life. One can say, that J.Krishnamurti's perception of a teacher truly runs in the blood and nerves of CIE which is, *"Teacher is the guru, father, brother, friend and philosopher for a student*." Krishnamurti believed *in teaching, what is important is not the subject, but the relationship between student and the teacher. If there is right relationship between student and the teacher, then what teacher teaches has a much deeper, non-mechanical meaning…….right relationship means I care for you.*

Daily Morning Assembly

I now wish to make a special mention of a ritual that existed for many decades in CIE. A day in CIE used to start with conducting a Morning Assembly. The Morning Assembly used to start at 9am and end by 9:25am.

This was a forum for students to share the thought for the day, have a two minutes silence period to reflect on it followed by its description by a student and National Anthem at the end of the assembly. I remember many students used to admire participating in the morning assembly as it was their first experience of addressing morning assembly at a public forum. Assembly also allowed different class representatives, house leaders or panchayat members to make relevant announcements. We, as students received this morning assembly time as a platform of settling down in terms of physically, mentally and emotionally after a boisterous morning travel through the busy streets of Delhi.

Student Panchayat

Student Panchayat was a nomenclature given to the students' forum. It composed of one President, one Secretary, one Joint Secretary, one Sports Secretary and one Treasure as core team. All the Students of B.Ed and M.Ed were allocated into four houses: Aurobindo, Gandhi, Sarojini and Tagore. Each house used to elect one Captain and two Vice-captains as it's representatives to the Student Panchayat. Accordingly, Student Panchayat had a total of 5+12 student representatives who used to work under the guidance of a small group of 2-3 teachers known as Panchayat Advisors. Along with this team two more teachers performed the duties as the in-charge/ advisor for each house.

The Student Panchayat used to be a truly democratic forum where student representatives used to get elected. Entire election (core + houses) used to be conducted by a designated election office. Candidates prepared posters with old newspapers or used charts/ brown papers. In a week-long election campaign, candidates were given time-slots to make their election speeches and share their manifesto before the student body. Everything was so transparent, healthy and inclusive that different candidates could be seen preparing posters for each other, even for the opponent candidates. This whole exercise was a spot-on training for democratic processes and to nurture leadership among young enthusiastic students. I can narrate all this with such conviction, as I had myself been elected as Joint Secretary of the Students' Panchayat during the academic year 1989-90. As an elected representative, I enjoyed a variety of experiences, ranging from organizing panchayat activities in a double period slot on Fridays, participating in different stage events- one act play, group song, extempore speech, sports- chess, badminton, table tennis and many co-curricular activities such as the community cooking, called Langar and in the celebration of Eid.

Subject-Clubs/ Societies

UNESCO Club and Science Club were two prominent clubs in the institute which provided a forum to students for sharing their views and arguments on various social themes related to children, women, education and literature. These clubs were known for organizing debates, quiz, wall magazine, essay writing, slogan writing and poster making. All the students were supposed to be part of at least one club. Gradually, various subject clubs and societies also evolved and added to the rich culture of academic activities. One such subject society was Civics Society, where I was associated as teacher in-charge for about two decades. Civics Society followed a democratic culture of electing it's office bearers and remained as one of the most vibrant subject society with some regular annual activities such as organising UN quiz, street play, panel discussions on relevant social/educational themes, visit to Indian Parliament (in session), educational excursions etc. Physics Society, Socrates Society, History society are few other subject-specific societies which can be named

in this series. All these Subject Societies/Clubs added an auxiliary aroma to the rich culture of co-curricular activities of CIE.

Foundation Week Celebration

Every educational institution takes pride in celebrating its foundation/ annual day. As mentioned earlier, CIE was founded on 19th December, 1947, where the first education minister of independent India, Maulana Abdul Kalam Azad took considerable interest. Since its inception, CIE has been celebrating week-long activities to mark its foundation day every year. Foundation week celebration is no less than a festival in the life of the institution. Preparations for the foundation week start in the first week of December which is also the end of the School Internship program for the students. Students' community is briefed about the significance of foundation week celebrations and suggestions are invited from them to make it more vibrant. For about 10 days, all students and teachers can be seen enthusiastically preparing for this annual event. Different houses are given socio-cultural themes to make meaningful presentations. In this week, everybody can be seen singing, dancing and rehearsing for different inter-house events; such as- cleanliness and decoration of the institution, rangoli-making, corridors being washed, walls being cleaned, lawns being decorated by teachers-students together. This is a celebration of the dignity of working with hands, team spirit and rich institutional life. Week-long events were inclusive of annual day address by some social, cultural or educational dignitary; sports day celebration where students and Staff play a cricket match which has been an attraction for teaching as well as the non-teaching community of CIE, Bal-Mela for fun activities and self-prepared eatable food stalls which are specially prepared for the children of CIE Basic School. Similarly, many cultural activities were being performed on the stage of Anath Nath Basu Memorial Auditorium. These 5 days long foundation week celebrations can be named the heart and soul of the institution. Those days of togetherness have proven the substance of the popular saying *ONCE OF CIE…ALWAYS OF CIE*.

Educational Gathering

Central Institute of Education is well known for the academic nurturance of its students and scholars. For this purpose, CIE organizes a series of academic activities; educational gatherings which have always been an outstanding event of the institute. Two to three days long Educational Gathering used to be organized in the month of February every year. This was a real training for B.Ed. and M.Ed. students where they learnt to participate in any national or even international educational deliberations. A core team of 3-4 teachers and 2-3 student representatives from Student Panchayat, was formed to take lead in its organization. This small team, in consultation with other teachers, students and scholars, used to decide a theme for the educational gathering. This core team was supposed to provide a 15-20 page wide-ranging reading on the theme to all the students and teachers of the Institution, about a week before the event. A tutorial period was dedicated to initiate the reading, thinking and deliberating on the theme decided for the educational gathering. In a general assembly, organizing committee used to address the house about the theme with a spirit to ensure maximum participation while deliberating in small groups; which would be a mixture of 2-3 teachers, 3-4 M.Phil/ PhD Scholars and 12-15 B.Ed+M.Ed Students. These small groups were then sent to different designated places. Each Small group was supposed to appoint its rapporteurs and conveners from amongst its student/scholar members. These team leaders were responsible to conduct 2-3 days long educational gatherings which used to be planned in various sessions. Tea/ Biscuits and working lunch were served in between the academic

rendezvous, which I enjoyed being a student as well as a faculty member. This 2-3 days long activity got culminated with a well-organized valedictory session, generally a well-known academician from some other institution was invited as a guest. Rapporteurs of various groups presented a report on the deliberations in their respective group. In this way, the Educational Gathering was helpful for each one of the institute to reflect, write and present their views on critical educational concerns/issues.

Interface or Nostalgic Closure?

With the changing time, all institutions reflect and revisit their own ethos and practices. Sometimes these reflections and revisits bring positive change while at other times these may act as tides. In the year 1979, CIE passed-through a major structural change; *from an autonomous institution under MHRD, Government of India to a Department of Education under the University of Delhi*. It is important to mention about this change in nomenclature here as this was not just a change in the name, with it many things changed. By this time many pioneering stalwarts had already retired and this brought about a major shift in the organizational structure of the institute in many ways. To give a glimpse, a place with a fulltime dedicated Principal got redefined to designating a Head of the 'Department' which, by its nature is on a rotation-basis for a maximum period of three years or till his/her superannuation, whichever is earlier. This structural change initiated a new debate in the institution about the mandates and vision which is attached to a typical department under a university system. Some faculty members got the respite that after being declared as a department, we should be working like a typical PG department of the University of Delhi, which is to only teach and do research. These people had lesser interest in the conducting of any CCA, as according to them such activities are a 'waste of time and resources'. It was being said that pre-service teacher education should prepare teachers to only organize these co-curricular activities in school and thus they should be trained in organizational skills. Their own participation is not necessary. Gradually, with the passage of time, among many other practices, CCA was also started to see a decline in spirits and its nature has got affected.

The second blow on the cultural heritage of CIE can be attributed to change in teachers' perception towards their job. When the UGC declared the guidelines for University teachers' promotion under the API policy, debates on role and responsibilities of a university department started to merge. With more emphasis on publications, the teachers got directed towards writing exclusively, this mindset collectively made an adverse impact on CCA culture of CIE. The rich culture of activities, teacher-student rapport, morning assembly and institutional publications went through a major shift and now these can hardly be seen happening in CIE

The last blow happened in the year 2014 when NCTE released a gazette and professed that one year B.Ed./M. Ed. programs must be replaced by Two-year B.Ed./ M.Ed.- programs. This was another turning point in the life and culture of the institution. Once again, CIE passed through turmoil of divergent ideas and debates. Majority of the faculty members were keen to take this opportunity in redefining academic essence and vision for the department, whereas some other faculty members desired to switch over to the new gazette regulation as proposed by NCTE. Now, in this new extended two- year programs of B.Ed. and M.Ed., CCA and Student Panchayat finds 'NO space'. It also means that an institution which advocated democracy and students' space, has now virtually no forum for students' voices. In the name of NCTE curriculum guidelines, department chose not to enrich them with the existing good practices and make best use of one additional year in B.Ed. and M.Ed. programs. Till date, I am confused to realize the merit behind this shift from rich culture of CCA to not undertaking any CCA.

I, along with many other colleagues feel that CIE, as an institution, is losing its identity from being a premier institute of education pan-Asia. It has now got reduced to any other department of education under a university system. Recently, one of my senior colleagues expressed her concern over this no-institutional life situation and asked me "why do students/ scholars do not own this institution the way we used to own it during our student days?"

Though, CIE has always been privileged to embrace the best infrastructure along with best students/scholars and best faculty members in the country, it's high time for all in the institution to save its dwindling glory. To the best of my understanding, it needs to work on three important aspects: Co-curricular activities, School Internship for B.Ed./ M.Ed. and Teacher-Student rapport across various programs. I propose to conclude this write-up with following encouraging words by one of my teachers who assured me that *institutions do not perish easily.*

A Phenomenological Research on Smart-Shaming and Its Impact on the Productive Skills of High-Performing Learners: Basis for Anti-Smart-Shaming Campaign

Riza Lyn Dalwampo Salvanera

Abstract

Purpose. This study aimed to develop a program that would address the increasing cases of smart-shaming in Sta. Lucia National High School. It also sought to describe the smart-shaming experience of SLNHS high-performing learners, explore the contexts and situations which have influenced or affected high-performing learners' experience of the phenomenon, and discover the impact of smart-shaming to the productive skills of high-performing learners.

Design/Methodology/Approach. This study utilized a qualitative phenomenological research design to uncover the lived experiences of the participants in terms of the smart-shaming phenomenon. The informants of the study were 5 high-performing learners of Sta. Lucia National, 5 parents of the high-performing learners, and 3 English teachers of the academic year 2020-2021 who were chosen purposively. In-depth interviews with the said informants were conducted to gather the necessary data. Through Hycner's (1999) Explicitation Process, data were analyzed. It was ensued by the development of the anti-smart-shaming campaign.

Findings. It was found out that smart-shaming negatively affects high-performing learners' studies, self-esteem, and socialization. Emerging themes from high-performing learners' smart-shaming experiences are smart-shaming terms, and perceived effects of smart-shaming to high-performing learners. It was also revealed that various contexts and situations may influence or affect high-performing learners' experience of the smart-shaming phenomenon. These contexts and situations are themed as smart-shaming opportunities, types of smart-shamers, types of smart-shaming, changed views of high-performing learners, parent's awareness of their child's smart-shaming experiences, smart-shaming victims' coping mechanism, and smart shaming solutions. Findings also show that the smart-shaming phenomenon creates negative impact on high-performing learners' speaking skills while its impact to high-performing learners' writing skills varies from person to person.

Research Limitations/Implications. This study is limited to the informants' shared experiences, feelings, and perceptions. A parallel study with a different locale may obtain varied results.

Originality/Value. There are only few studies dealing with smart- shaming and at present, there is no existing study that relates the smart-shaming phenomenon to the productive skills of high-performing learners. With this said, this research could offer a different angle of the abovementioned phenomenon that could help contribute to thefindings of the existing researches.

Key Words: Smart-shaming, Productive Skills, High-Performing Learners

Introduction

During the earlier years, intellectuals or persons with highly developed intellect were highly respected and praised for their remarkable contributions in the society. Intelligence back then was celebrated for it is viewed as something powerful, something that could ease the way of life, and something that could affect change to

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the lives of many. Before, intellectuals who discovered useful inventions, laws, theories, and concepts were given due credits for they were highly regarded for their wisdom.

However, today's generation, termed as "Generation Z," happened to have a different perspective when it comes to intellectuals. This new generation is known as Gen Z, but have also been called I Gen, Founders, and Centennials. Dimock (2019) marked 1996 as the endpoint of the Millennial generation and 1997 as the beginning of Gen Z. Thus, the age range of this generation is from 8-23 in the year 2020 which means that students of today belong to this generation.

Recent research has shown dramatic shifts in youth behaviors, attitudes and lifestyles-both positive and concerning- for those who came of age in this era (Dimock, 2019). Based on the findings of Generational White Paper (2011), Gen Z has an informal, individual and very straight way of communicating. Gen Z also tends to be more impatient, instant minded, lacking the ambitions of previous generations, have acquired attention deficit disorder with a high dependency on the technology and a very less attention span, individualistic, self-directed, more demanding, acquisitive, materialistic and entitled generation so till now (Gaidhani, Sharma, & Arora, 2019).

According to Gaidhani, Sharma, and Arora (2019), Gen Z has brought new worldview and different expectations as customers, employees, and citizens. Youth of this generation are determined to be highly connected, living in an era of high-tech communication, technology driven lifestyles and prolific use of social media. In fact, the *Institute for Emerging Issues* (2012), defined Gen Z as the most ethnically diverse and technologically sophisticated generation (Gaidhani, Sharma, & Arora, 2019).

In relation to this, Amanda Slavin (2015) finds that Gen Z wants to be heard irrespective of their young age. Technology is a part of their identity and they are tech savvy but lack problem-solving skills and have not demonstrated the ability to look at a situation, put in context, analyze it and make a decision (Joseph Coombs, 2013 in Gaidhani, Sharma, & Arora, 2019).

Gen Z grew up in a technology-rich environment where they were highly-influenced by social media. They used to document their lives online which most of the time causes comparison among their peers. In social media, the said generation are also exposed to rampant cases of bullying and bashing. With these said, this generation tend to bring these negative influence of the virtual world into the real world .

Nowadays, most of the common Gen Z learners show disgust instead of admiration to the smart ones. The intellectuals tend to be humiliated when expressing their thoughts in school. They also tend to receive sarcastic and negative comments from their classmates once they performed better than the rest of the class. Based on the aforesaid treatment, Gen Z seem to be promoting a new trend that is mediocrity.

Mediocrity, as defined in Meriam Webster, is the state of being ordinary. Since majority of the class are usually average learners, they are more dominant than the smarter ones. This means that their opinion in class may heavily count or they can easily influence others. However, promoting mediocrity in class through smart-shaming is something that should be put to an end and to be given appropriate actions to prevent intellectuals from hiding in their shells.

Background of the Study

At present, there is a growing trend of smart-shaming in schools which is becoming a very alarming condition to learners. Sta. Romana (2015), in her article *"Smart-shaming and our Pinoy culture of Anti-intellectualism,"*

stated that there is a pervasive thread in the Filipino culture that seems to celebrate ignorance. She also emphasized that Filipinos tend to see high intelligence as a negative trait and in turn, playfully shame people when they're "too smart" for our common tastes.

Cusi (2019), in his study *"Isang Pagninilay sa Kultura ng Panghihiya sa mga Matatalino,*" illustrated a smart-shaming scenario in the classroom. This happens when an intellectual shares a rich thought in class but tend to be interrupted by terms like "*ang lalim mo naman,"* "*eh di ikaw na,*" and "*ang galing mo naman."* These phrases connote that the listeners refuse to listen further to the smart learner's ideas. These terms also intend to ridicule rather than to praise intellectuals. Instead of having a meaningful discussion in class, smart-shaming terms tend to suppress ideas (Cusi, 2019).

As an educator, the researcher witnessed some cases of smart-shaming in her English and Filipino classes at Sta. Lucia National High School in Dolores, Quezon. In the said locale, high-performing learners tend to be smart-shamed when they share their rich thoughts or opinions orally in class, when they use the English language fluently, or when a teacher praises the learners' answers or outputs. The researcher also observed that smart-shaming also happens when the teacher announces the highest pointer in a written activity. The smart-shaming terms such as *"edi wow," "ikaw na," "bida-bida"* and *"pabibo,"* are commonly uttered by smart-shamers even with the presence of the teacher in class which then results to the mortification of the smart-shaming victim. These instances discourage the learner to strive to be smarter and eventually hinder the victims to express themselves freely. This smart-shaming scenario does not only happen in the workplace of the researcher but also in other locales as evident in the existing studies of Rodriguez (2017), Abuan et.al. (2019), Cusi (2019) and in the wide range of articles circulating online such as that of Sta. Romana (2015), Baygan (2016), Chino (2018), and Pillos (2019) just to cite a few. The said context shows how alarming the smart-shaming phenomenon becomes in the educational setting.

The aforesaid observations of the researcher violate the student-friendly concept of the Department of Education since it does not make the learning environment conducive and non-threatening to learners. DepEd Order No. 40 s. 2012, known as DepEd Child Protection Policy, states that pursuant to the 1987 Constitution, the State shall defend the right of children to assistance, including proper care and nutrition, and special protection from all forms of neglect, abuse, cruelty, exploitation and other conditions prejudicial to their development (Article XV, Section 3, {2}). It is also cited in this order that DepEd, together with its partners and stakeholders, shall ensure that all schools are conducive to the education of children and the best interest of the child shall be the paramount consideration in all decisions and actions involving children. DepEd also reiterates a zero tolerance policy for any act of child abuse, exploitation, violence, discrimination, bullying, and other forms of abuse.

In a similar vein, Republic Act No. 10627 also known as Anti-Bullying Act of 2013 requires all elementary and secondary schools to adopt policies to prevent and address the acts of bullying in their institutions.

With these existing policies, learners must be protected in all aspects. But with the advent of smart-shaming, learners became targets of psychological violence. Psychological violence, as defined in D.O. No. 40 s. 2012, refers to acts or omissions causing or likely to cause mental or emotional suffering of the child, such as but not limited to intimidation, harrassment, stalking, damage to property, public ridicule or humiliation, deduction or threat of deduction from grade or merit as a form of punishment, and repeated verbal abuse.

This appalling situation triggered the researcher to study the impact of smart-shaming to the productive skills of high-performing learners since they are the ones commonly victimized by smart-shaming. The researcher finds it significant to conduct this phenomenological research for it would unveil the lived experiences of SLNHS high-performing learners that could provide a rich source of data to understand the smart-shaming phenomenon. Also, there are only few studies dealing with smart-shaming; thus, it is necessary to conduct this type of research to gain better understanding and to give more light to the said phenomenon. This study is considered as novel by the researcher since at present, there is no existing study that relates the smart-shaming phenomenon to the productive skills of high-performing learners. With this said, this research could offer a different angle of the above mentioned phenomenon that could help contribute to the findings of the existing researches. As an educator, the researcher considers herself as the right person to conduct the study since she had witnessed how the smart-shaming phenomenon influenced the performance of her learners. The researcher also has the enthusiasm to resolve the existing problems caused by the phenomenon.

Based on the aforementioned concepts, the researcher decided to conduct a phenomenological research on smart-shaming and its impact to the productive skills of high-performing learners. The results of this study are expected to become a basis to develop a program that would address the increasing cases of smart-shaming in schools.

Objectives of the Study

This study is aimed at discovering the impact of smart-shaming to the productive skills of high-performing learners of Sta. Lucia National High School in Dolores, Quezon for the academic year 2020-2021.

Specifically, the study sought to achieve the following objectives:

1. Describe the experience of SLNHS high-performing learners in terms of the smart-shaming phenomenon.
2. Explore the contexts and situations which have influenced or affected SLNHS high-performing learners' experience of the phenomenon.
3. Discover the impact of smart-shaming to the productive skills of high-performing learners.
4. Develop a program that would address the increasing cases of smart-shaming in schools.

Theoretical Framework

Smart-shaming is a form of verbal or electronic type of bullying which could affect learners' self-esteem in expressing their thoughts in school. Being a victim of this kind of bullying might hinder learners to make use or to improve their productive skills so as to avoid being ridiculed or humiliated in class. Thus, this study is anchored on Maslow's Hierarchy of Needs developed by Abraham Maslow and in the Theory of Second Language Acquisition of Stephen Krashen.

According to Maslow (1943), esteem centers around seeking recognition from others and from oneself as a worthwhile person. Thus, one's sense of competence combined with reaction from others produces one's self-esteem. This need is satisfied when one experiences feelings of worth, strength, usefulness and confidence. Maslow (1943) suggests students must be shown that they are valued and respected in the classroom . Maslow (1943) also argued that students with a low self-esteem will not progress academically at an optimum rate until their self-esteem is strengthened.

Krashen's Affective Filter Hypothesis in his Theory of Second Language Acquisition states that a number of affective variables play a facilitative, but non-causal, role in second language acquisition. These variables include motivation, self-confidence, anxiety, and personality traits. Learners with high motivation, self-confidence, a good self-image, a low level of anxiety and extroversion are better equipped for success in second language acquisition. Low motivation, low self-esteem, anxiety, introversion and inhibition can raise the affective filter and form a "mental block" that prevents comprehensible input from being used for acquisition. In other words, when the filter is up, it impedes language acquisition (Schutz, 2019).

When learners experience smart-shaming, it drives them to have lack of confidence, motivation and may even develop anxiety. Though they may regard themselves as smart and capable of expressing and sharing rich ideas, they tend to suppress those for they might be affected by what others would think or say about their capabilities. Thus, it hinders learners to reach the top of the Hierarchy of Needs, self-actualization, which allows learners to recognize and make use of their full potentials. The smart-shaming phenomenon also impedes second language acquisition for it raises the affective filter of the learners.

With the outcome of this study, it is anticipated that high-performing learners' esteem needs would first be satisfied in order to reach the peak of the hierarchy and that the affective variables that may affect second language acquisition be taken into account.

Methodology

Locale of the Study

The study was conducted at Sta. Lucia National High School in Dolores, Quezon where several high-performing learners were victimized by smart-shaming. The increasing cases of smart-shaming in the aforesaid institution was also taken into consideration in deciding upon the locale of the study.

Research Design

This study utilized a phenomenological qualitative research design to uncover the lived experiences of the participants in terms of the smart-shaming phenomenon. According to Creswell (2004), phenomenological research seeks to discover how individuals construct meaning of the human experience.

Participants

The key informants of the study were 5 high-performing learners of Sta. Lucia National High School from Junior High School to Senior High School, 5 parents of the high-performing learners, and 3 English teachers for the academic year 2020-2021.

Research Instrument

This research utilized an interview protocol to the three groups of participants in this study such as the high-performing learners, parents and teachers to elicit a rich source of data on the smart-shaming phenomenon.

Analysis of Data

The collected data during interviews were analyzed in accordance to the procedures of Hycner's (1999) explicitation process comprising of five phases such as (1) bracketing and phenomenological reduction, (2) delineating units of meaning, (3) clustering of units of meaning to form themes, (4) summarizing each interview, validate it and modify where necessary, and (5) extracting general and unique themes. Data were presented in a narrative form containing the detailed information of the smart-shaming phenomenon as revealed by the high-performing learners, parents and teachers.

Summary of Findings, Conclusion, and Recommendations

This chapter presents the summary of findings derived from the phenomenological analysis conducted in this research. Moreover, this imparts the conclusions framed and the recommendations thereafter.

Summary

This study sought to discover the impact of smart-shaming to the productive skills of high-performing learners of Sta. Lucia National High School in Dolores, Quezon for the academic year 2020-2021 with an endview of developing a program to address the smart-shaming cases in schools. Specifically, this study attempted to describe the experience of SLNHS high-performing learners in terms of the smart-shaming phenomenon, explore the contexts and situations which have influenced or affected SLNHS high-performing learners' experience of the phenomenon, discover the impact of smart-shaming to the productive skills of high-performing learners, and develop a program that would address the increasing cases of smart-shaming in schools.

Using the phenomenological design, the results and analysis were done qualitatively by means of coding and decoding of the interview transcripts gathered from in-depth interviews. This study was conducted at Sta. Lucia National High School in Dolores, Quezon where high-performing learners were victimized by smart-shaming. A total of five (5) student informants, five (5) parent informants, and (3) teacher informants were purposively chosen to serve as the main sources of data in this research. An anti-smart-shaming program was developed based on the analysis of the results of the study.

Findings

Based on the foregoing research objectives, the following findings are revealed:

1. Smart-shaming negatively affects high-performing learners' studies, self-esteem, and socialization. Emerging themes from high-performing learners' smart-shaming experiences are smart-shaming terms, and perceived effects of smart-shaming to high-performing learners.

2. Various contexts and situations may influence or affect high-performing learners' experience of the smart-shaming phenomenon. These contexts and situations are themed as smart-shaming opportunities, types of smart-shamers, types of smart-shaming, changed views of high-performing learners, parent's awareness of their child's smart-shaming experiences, smart-shaming victims' coping mechanism, and smart shaming solutions.

3. The smart-shaming phenomenon creates negative impact on high-performing learners' speaking skills while its impact to high-performing learners' writing skills varies from person to person.

4. An anti-smart-shaming program has been developed based on the results of the study.

Conclusion

Based on the findings of the study, the following conclusions are drawn:

1. Smart-shaming hinders learning for it negatively affects the intellectual, emotional, and social aspects of high-performing learners.

2. Different contexts and situations relating to smart-shaming emotionally affect both smart-shaming victims and their parents.

3. Smart-shaming impedes second language acquisition since it raises the affective filter of the learners in speaking. However, its impact on writing varies from person to person as it may have no effect, little effect, or positive effect depending on the manner high-performing learners handle their smart-shaming experience.

4. The developed anti-smart-shaming program may be evaluated by school administrators and the child protection committee for its effectiveness in addressing the negative effects caused by the smart-shaming phenomenon.

Recommendations

Based on the conclusions, the following recommendations are hereby offered:

1. School heads and members of the child protection committee may take appropriate actions to mitigate the smart-shaming cases in schools so as to ensure that the learning milieu is safe and conducive to learners.

2. Teachers may be aware of and responsive to the learners' smart-shaming experiences to protect victims from smart-shamers.

3. Teachers might also promote the continuous development of learners' productive skills despite of their smart-shaming experiences by providing positive feedback and by employing innovative teaching strategies that would encourage and engage victims.

4. Parents may regularly monitor their child's experiences in school so as to take immediate actions when necessary.

5. The developed anti-smart-shaming program may be implemented by schools to address the negative effects brought about by the smart-shaming phenomenon in the learning environment.

6. Parallel and/or follow up studies may be conducted to evaluate the effectiveness of the developed anti-smart-shaming program.

7. Future researchers may replicate this study using other locales and with increased number of informants.

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Performance and Effectiveness of Catholic Schools in Tagum

Dennis B. Anduyan

Abstract

Schools and education authorities became increasingly aware of the need to be effective due to the pressures for accountability brought by national and local government levels and school stakeholders in relation to the demands of the new educational system. This study determined the performance of the schools and effectiveness of the administrators with the human resource development in the selected Catholic schools in Tagum, Davao del Norte. Findings of the study served as inputs for the improved administrative manual and school improvement plan. The study utilized mixed methods among the 250 participants. The instrument focused on the indicators based on the Fund for Assistance to Private Education. Vision and mission, curriculum and instruction, faculty development, student development, physical plant and facilities, financial and business administration, and school and community involvement were considered advanced and were sustained for a longer period of time. The administrators' level of implementation in the human resource management and development functions was considered adequate. The implementation in terms of benefits, remuneration and evaluation were also evident. Employment policy, work regulations, discipline, leave of absence, and grievance and complaints were substantially observed. There is a significant relationship between the performance of schools and administrators' effective implementation of human resource management and development functions. There was shared understanding on roles, responsibilities, and expectations by the stakeholders.

Key Words: Performance of Schools, Human Resource Management, Development Functions, Catholic schools, Tagum City

I. Introduction

Schools and education authorities have become increasingly aware of the need to be effective. This is partly due to the pressures for accountability brought about by national and local government levels and school stakeholders in relation to the demands of the new educational system. At the same time a realization of the importance of the issue has grown as school heads and staffs have sought to increase effectiveness in the school setting as a part of the development of professionalism (Smith, 2010).

The success of every school depends on the way it is managed. The need for the efficient management of schools has placed much more emphasis on the nature and quality of the work of the head as the leader of a team of professional educators, and as the manager of the supply and effective use of resources whether they are-- human, financial or material (Williams, 2010).

Based on the foregoing, the Head, therefore needs to gain clear understanding of all the forces and factors which contribute towards the performance of the school. It is in this context that management acumen of school leaders is considered of paramount importance in creating a collaborative group of dynamic people in the workplace as well as to ensure the effectiveness of an educational institution (Bach cited in Celis, 2013).

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Effective management of a school depends largely on the efforts of a number of individuals and groups that are closely interlinked. In the case of the private educational institutions, particularly the diocesan schools in Davao del Norte, from the Department of Education to the Board of Trustees, to the school administrators and to other stakeholders, all play a part in the daily operation of the school.

and Although the school head is the pivotal link in this network and, ultimately, plays the most crucial role in ensuring school effectiveness, other stakeholders are expected to contribute to the growth and development of the school. And since this role is complex and demanding, involving management of financial, human and material resources in a dynamic situation and affected by many internal and external forces, the school manager should be able to employ leadership styles and use a management process reflected in the set of standards and guidelines that will convert hired individuals into strategic partners to ensure a collated and constructive enterprise productivity and development of a uniform organizational culture (Celis, 2013).

With these, the Researcher, a school administrator and human resource management practitioner, was prompted to conduct this study to determine the level of governance and effectiveness of selected diocesan schools in Davao del Norte as there are varying degrees of what is demonstrated in the locale.

Apparently, this will serve as empirical evidence so that new set of standards or rules may be employed for the school performance and effectiveness through various mechanisms as well as for the attainment of organizational goals and employee productivity.

This study determined the performance of the schools and effectiveness of the administrators with the human resource development in the Catholic Schools in Tagum City, Davao del Norte under the Diocese of Tagum for the School Year 2012– 2013. Findings of the study served as inputs for the improved administrative manual and school improvement plan.

1. What is the level of performance of the school with reference to:

    1.1. Vision and Mission;

    1.2. Curriculum and Instruction;

    1.3. Faculty Development;

    1.4. Student Development;

    1.5. Physical Plant & Facilities;

    1.6. Community Involvement; and,

    1.7. Financial/Business Administration ?

2. What is the level of effectiveness of the administrators in implementing the following:

    1.1. Employment Policy;

    1.2. Discipline;

    1.3. Work Regulations;

1.4. Leave of Absence;

1.5. Benefits;

1.6. Remuneration;

1.7. Evaluation; and

1.8. Grievances and Complaints?

2. Is there a significant relationship between school performance and effectiveness of school administrators?

3. What are the concerns of the stakeholders with reference to:

3.1. Vision and Mission;

3.2. Curriculum and Instruction;

3.3. Faculty Development;

3.4. Student Development;

3.5. Physical Plant & Facilities;

3.6. Community Involvement; and

3.7. Financial/Business Administration?

4. What are the challenges encountered by the personnel and administrators in implementing the following:

4.1. Employment Policy;

4.2. Discipline;

4.3. Work Regulations;

4.4. Leave of Absence;

4.5. Benefits;

4.6. Remuneration;

4.7. Evaluation; and

4.8. Grievances and Complaints?

5. What inputs for improved administrative manual and school improvement plan can be offered based on the findings of the study?

b) This study is anchored on the theories of James MacGregor Burns, Frederick Fiedler and Cynefin. These are the transformational leadership theory (Burns, 1918), contingency theory (Fiedler, 1960), and complexity theory. These theories, that this study is anchored on, are framework or foundation of the concepts being discussed and introduced in this paper.

c) Many researches have been made to define leaders' roles in organizations. In this regard, transformational leadership has been frequently studied in the leadership fields (Bass, Heck & Hallinger, cited in Balyer 2012).

According to Northouse (2001), in the simplest terms, transformational leadership is the ability to get people to want to change, improve, and be led. It involves assessing associates' motives, satisfying their needs, and valuing them. Besides, some researches claim that transformational leadership is the leader's ability to increase organizational members' commitment, capacity, and engagement in meeting goals (Chew & Chan, 2008).

The other theory is the contingency theory of Frederick Fiedler. The contingency theory is a theory of leadership that assumes the degree of success of any leader which is contingent on the situational demands as to whether the leader should have a task or employee focus and the amount of influence and control the leader has over the situation. This emphasizes the regard with which the leader and the group members hold one another determines, in part, the ability of the leader to influence the group and the conditions under which he or she can do so. A leader who is accepted by the group members is in a more favorable situation than one who is not (Fiedler cited in Billones, 2012).

The third one is the complexity theory. It is a theory of change, evolution and adaptation, often in the interests of survival, and often through a combination of cooperation and competition (Morrison cited in Billones, 2012). It breaks with straightforward cause-and-effect models.

Complexity theory has been used in the fields of strategic management and organizational studies. Application areas include understanding how organizations or firms adapt to their environments and how they cope with conditions of uncertainty. The theory treats organizations as collections of strategies and structures. The structure is complex; in that they are dynamic networks of interactions, and their relationships are not aggregations of the individual static entities. They are adaptive; in that the individual and collective behaviors mutate and self-organize corresponding to the change-initiating collection of events.

II. Methodology

The study utilized a descriptive-correlational design to determine the level of performance and effectiveness of each variable under study and its existing relationship. The study was conducted at the Catholic schools in Tagum City, Davao del Norte under the Diocese of Tagum with 191 total number of respondents for the quantitative research design and 90 for the qualitative research design. The paper used standardized research instruments designed by the Philippine Accrediting Associations of Schools, Colleges and Universities (PAASCU) to evaluate school performance and Modified ESC/EVS and PAASCU Institutional Self – Survey Form for the interview guide questions.

This study employed adapted research instruments which were based on the Fund for Assistance to Private Education (FAPE) indicators of school effectiveness (School Self – evaluation proforma, school improvement plan), Philippine Accrediting Associations of Schools, Colleges and Universities (PAASCU) Evaluation Instrument for Accrediting Integrated Schools, 1st Edition, 2006, and ESC/EVS and PAASCU Institutional Self – Survey Form. There were 3 instruments which were mainly utilized to measure the variables under study.

The first instrument focused on the list of indicators on the level of performance of Catholic Schools based on the Fund for Assistance to Private Education (FAPE) - (School Self – evaluation proforma, school improvement plan). It consisted of 7 indicators which include-- vision and mission, curriculum and instruction, faculty development, student development, physical plant and facilities, financial and business administration and school and community involvement. Each indicator provided information concerning the school's performance. A five point - Likert scale was used.

Range of Means	Description	Interpretation
4.21 – 5.00	Exemplary	Indicator is comprehensively and skillfully observed and is highly acclaimed
3.41 – 4.20	Advanced	Indicator is substantially observed and sustained for a longer period of time
2.61 – 3.40	Adequate	Indicator is adequately observed and common school practice
1.81 – 2.60	Basic	Indicator is basically observed but still requires assistance and/or improvement
1.00 – 1.80	Not Demonstrated	Indicator is not observed in the school

The second instrument dealt with the effective implementation of the school's employment policy, discipline, work regulations, leave of absence, benefits, remuneration, evaluation; and grievances and complaints. The instrument provided a list of indicators based on the Philippine Accrediting Associations of Schools, Colleges and Universities (PAASCU) Evaluation Instrument for Accrediting Integrated Schools, 1st Edition, 2006. It utilized a five point – Likert scale.

Range of Means	Description	Interpretation
4.21 – 5.00	Exemplary	Indicator is comprehensively and skillfully observed and is highly acclaimed
3.41 – 4.20	Advanced	Indicator is substantially observed and sustained for a longer period of time
2.61 – 3.40	Adequate	Indicator is adequately observed and common school practice
1.81 – 2.60	Basic	Indicator is basically observed but still requires assistance and/or improvement
1.00 – 1.80	Not Demonstrated	Indicator is not observed in the school

The third instrument was interview guide questionnaires used in the collection of the qualitative data based on the ESC/EVS and PAASCU Institutional Self – Survey Form to determine the concerns of the stakeholders with references to the indicators of school performance. Also, the survey form gathered the challenges encountered by the personnel and administrators in implementing human resource related functions.

III Results and Discussions

Performance of the Catholic Schools

Table- 1 shows the level of performance of the schools with the indicators - vision and mission, curriculum and instruction, faculty development, student development, physical plant and facilities, financial and business administration, and school and community involvement.

Table 1 **The Level of Performance of the Schools, N = 191**

Indicator	Mean	Interpretation
Vision and Mission	3.52	Advanced
Curriculum & Instruction	3.57	Advanced
Faculty Development	3.67	Advanced
Student Development	3.96	Advanced
Physical Plant & Facilities	3.80	Advanced
Financial & Business Admin.	3.61	Advanced
School & Comm. Involvement	3.80	Advanced
Grand Mean	3.704	Advanced

4.21 – 5.00 Exemplary; 3.41 – 4.20 Advanced; 2.61 – 3.40 Adequate; 1.81 – 2.60 Basic; 1.00 – 1.80 Not Demonstrated

The indicators have mean scores of 3.52, 3.57, 3.67, 3.96, 3.80, 3.61 and 3.80 respectively, which are considered advanced - means that they were substantially observed and sustained for a longer period of time.

However, the vision and mission under Table- 5 is considered to be the lowest indicator. This area was below par observed in the diocesan schools because some stakeholders especially the parents and other external stakeholders are not familiar with the school's vision, mission, goals and objectives. Specifically, as resulted in item number one (1) under this indicator, diocesan schools have this basic observation on maintaining a shared vision, mission and goals for student development and learning through school community consultation.

According to Wiley and Sons (2005), one of the Board's and Administrator's responsibilities is to define and communicate organization's vision and mission to not-to-profit entities but to its key stakeholders, which are the employees, students and parents, the community and the larger general public. A clearly articulated and communicated vision and mission explain the essence of the organization and serve as guide to its work.

Student development under Table- 4 is the most observed activity in the schools.

The relationships that characterize effectiveness of school are evident to students and the development programs extended to them. Student development indicator obtained the highest mean since the Diocesan schools are in their full effort to provide students with support around the social, emotional, intellectual, physical, and spiritual dimensions of life. These are evident in the higher ratings in some items under this indicator which underscore the enforcement of school rules that are clear, fair and well – understood and

promote the belief that the best discipline is derived from within rather than external control. Diocesan schools established, observed and practiced strong pastoral care support system that emphasized teacher – student relationship, and ensuring that students play an active role in school life by providing leadership opportunities, meaningful positions of responsibility and encouragement and support to participate in school decision making.

Student development indicator was substantially observed in Catholic schools since the board and school administrators governed each school with guarantee that it will improve student progress and achievement outcomes. This can be done by providing strategic leadership to schools (Sewell, 2010).

Overall, a grand mean of 3.704 shows that all indicators are substantially observed and sustained for a longer period of time.

The foregoing indicators were substantially observed and practiced by the Catholic schools based on the Fund for Assistance to Private Education (FAPE), school self – evaluation proforma, school improvement plan. This implies that school performance and processes primarily focus on the satisfactory delivery of institutional services to both internal and external stakeholders. The board of trustees along with school administrators has been exerting their efforts to give direction and to guide all school activities and programs that cover all aspects of school performance, a financial budget that is aligned with the strategic plans, process for professional growth and development of the principal, faculty and staff and an effective process for working with parents and school communities.

Administrator's Effectiveness in the Implementation of Human Resource Management and Development Functions

Table- 2 shows the level of effectiveness of the administrators' implementation in human resource management and development functions with reference to employment policy**,** discipline, work regulations, leave of absence, benefits, remuneration, evaluation, and grievances and complaints.

Table 2 **Level of Administrator's Effectiveness in the Implementation of Human Resource Management and Development Functions, N = 191**

Indicator	Mean	Interpretation
Employment Policy	4.10	Advanced
Discipline	3.51	Advanced
Work Regulations	3.43	Advanced
Leave of Absence	3.95	Advanced
Benefits	2.91	Adequate
Remuneration	2.95	Adequate
Evaluation	2.91	Adequate
Grievances and Complaints	3.48	Advanced
Grand Mean	3.23	Adequate

4.21 – 5.00 Exemplary; 3.41 – 4.20 Advanced; 2.61 – 3.40 Adequate; 1.81 – 2.60 Basic; 1.00 – 1.80 Not Demonstrated

The benefits, remuneration and evaluation have mean score of 2.91, 2.95 and 2.91, respectively. These indicators are commonly observed and are commonly practiced in the school. In other words, they are the least observed indicators.

The abovementioned indicators were moderately observed and implemented by the schools but were acknowledged by the employees in mediocrity. One of the factors that might have influenced is the teacher's dissatisfaction on the benefits and appraisal that they are receiving. Based on the survey, it was highlighted that provision on salaries and benefits do not satisfactorily assure a living compatible with the teaching profession. In addition, the schedule of salaries offered by most diocesan Catholic schools was deemed inappropriate to the socio – economic conditions of the employees. Also, there was no established free health maintenance organization for tenured employees facilitated by a private health care entity.

Muller (2009) argued that benefits and compensation as well as schedule of salaries are approaches that are systematic to ensure that employees are provided with monetary value in exchange of the work performed. In the case of diocesan Catholic schools in Tagum, the purposes for which compensation serves did not achieve job satisfaction while benefits were inadequately given to employees as additional compensation for wages and salaries.

The other factor that is believed to be contributory to the less effectiveness of the school administrators is the implementation of assessment and evaluation of teachers. The findings of this study provide an insight into how school principal might improve teacher evaluation to foster better conditions for both teacher and student learning.

Teacher evaluation in Catholic schools is poorly implemented as evident in the low ratings on the following items: the use of a comprehensive merit system for the objective evaluation of employee performance, the employment of evaluation tools regarding the achievement of organizational objectives, and taking evaluation, tenure and professional growth into consideration for promotion.

It should be borne in mind that the measurement of an employee's performance allows for rational administrative decisions at the individual employee level. It also provides for the generation of raw data for the evaluation of the effectiveness of system components and processes such as recruiting policies, training programs, selection rules, promotional strategies, and reward allocations.

Employment policy, work regulations, discipline, leave of absence, and grievance and complaints have mean score of 4.10, 3.51, 3.43, 3.95 and 3.48, respectively. These indicators had been substantially observed and sustained for a longer period of time.

These indicators were substantially evident in the diocesan Catholic schools since school administrators and personnel alike did their part in ensuring a sound employer – employee relations by complying and conforming to the school policies despite the absence of an established performance and management appraisal system from which equitable and fair benefits and remuneration are supposed to be derived.

However, both administrators and employees tried their best to arrive at an agreement that somehow sustained adequate working conditions. These include satisfactory implementation of policies regarding employment condition of probationary and tenured, leaves of absences as mandated by law and procedures relating to labor management relations. Diocesan schools also observed the normal hours of work mandated by the

Labor Code of the Philippines. Moreover, school heads allowed personnel to participate in decision making on matters that affected them and created working conditions of teaching and non – teaching personnel that contributed to their satisfactory performance.

As discussed by Joshi (cited in Kayani, 2008), to improve the quality of human input and to bring about the desired productive behavior in the work force, school leaders should improve the following personal and organizational characteristics of any corporate personality including work attitudes and aptitude, knowledge and skill and opportunities.

Over all, the performance of the Human Resource Management and Development has a grand mean of 3.23, which is considered adequate and is commonly observed and practiced in the school.

This is to say that most of the areas covered for effective implementation of human resource development were adequately practiced by the Catholic schools.

This implies that the management acumen and leadership skills of the principals positively contributed to the satisfactory implementation of the above – mentioned indicators.

Odina (2013) affirmed the findings of this study by citing that school administrators as human resource managers should develop policies and communicate them to all employees. It provides all the forms and documents required for policy implementation. They are also responsible for reviewing, adding, deleting or revising policies to ensure that they remain current with legislation or organizational needs.

Relationship between the Level of School Performance and Effectiveness of School Administrators

Table- 3 shows the relationship between the level of school performance and the administrators' effectiveness on the implementation of the human resource management and development functions. It has p-value of .000, which rejects the null hypothesis. An r-value of .502 shows moderate relationship. Thus, increasing the level of school performance moderately increases the effective implementation of the human resource management and development functions.

Table 3 **Relationship between the Level of School Performance and Effectiveness of School Administrators, N = 191**

Variable	R	p – value	Decision	Interpretation
Level of School Performance and Effectiveness of School Adminstrators	.502	.000	Reject H_O	Significant

Significant at $p < .05$

Effective implementation of human resource development regulates the ownership and control of organizations (Berle and Mean, cited in Konzelamnn et.al, 2007). It sets the legal terms and conditions for the allocation of property rights among stakeholders, structuring their relationships and influencing their incentives, and hence, willingness to work together. Cooperation between the school leaders and the human resource is important because of its role in making effective diffusion of responsibility for production and service quality, process improvement and innovation. It also serves to secure the commitment of stakeholders

to the objectives of the organization, and to make available the full benefits of their skills, knowledge and experience. Ideally, this is a central purpose of human resource management and its role in enhancing organizational performance. The performance of the school takes therefore impacts the effectiveness of human resource management practices (Konzelmann et.al, 2007). The statement of Konzelmann could be a supporting data on the results of this study which also suggests that there is association between the school performance and how administrators implement the human resource management and development of the Catholic schools.

Hence, an effective and efficient administrator sets standards of excellence and accountability for its own performance, through an effective implementation of the human resource management and development functions. This means making the best possible use of its members' capabilities and the time they devote in fulfilling their role and responsibilities.

Table 4 **Concerns of Stakeholders on School Performance and Challenges Encountered by the School Administrators in the Catholic Schools, N = 90**

Perceptions Expressed by Stakeholders of the Catholic Schools Summary Results from Interview and Focus Group Discussion	
Concerns on the Performance of Catholic Schools	**Challenges Encountered by School Administrators in the Implementation of Human Resource Management and Development Services**
• Some stakeholders are not familiar with the school VMGO • Staff members are not regularly sent to off–campus trainings and seminars • Buildings and classroom need improvement • Most schools do not employ an automated system for financial and fiscal management	• Poor appraisal system since there is no provision for merit system that inspires and drives employees to seek and pursue professional advancement • Some schools do not go about the process of personnel evaluation • Insufficiency on employees information for incentives and promotion because there is no provision for that, based on educational attainment, trainings and seminars. Schools do not clearly reflect appointments, job description and other functions of the employees • Difficulty in providing free health care programs for the employees • Employees dissatisfaction since schools do not have schedules of pay, no salary scheme and benefits and add ons for job satisfaction and motivation

Concerns of Stakeholders on the Performance of Catholic Schools

Based on the statement of the problem item number four (4), the concerns of the stakeholders among the Catholic schools centered on the managerial skills or the principal's leadership styles at organization management which included vision and mission, curriculum and instruction, faculty development, student development, physical plant and facilities, school/community involvement, and financial/business administration.

Based on the interviews and discussions conducted with the internal and external stakeholders of the Catholic schools in Tagum, Davao del Norte, concerns were raised mainly on the following:

Vision and Mission. As stated in Table- 8, some stakeholders are not familiar with the school's vision, mission and goals. This was affirmed by some external stakeholders who were categorized as alumni and parents.

Faculty Development. Another concern raised by the stakeholders is the training needs of the faculty and staff which were believed to have been unsatisfactorily provided and thus resulted in a low turn - out of employee productivity and clientele satisfaction. These may be implications on schools having inadequate provisions for the personal, economic and professional development of the faculty and staff members due to lack of resources.

Physical Plant and Facilities. According to Das, Kalra, Leathes and Wakeham (2011) where the quality of school's physical condition is improved, learning outcomes are also improved. However, some Diocesan schools raised concerns on the performance of the school in terms of the kind of facilities that they are having.

Challenges Encountered by School Administrators in the Implementation of Human Resource Management and Development Functions

School administrators encountered challenges in relation to the implementation of the human resource management and development functions with reference to employment policy, discipline, work regulations, leave of absence, benefits, remuneration, evaluation; and grievances and complaints. The preceding scenario challenges the strategic leadership of school administrators to influence positive results despite the scarce and unavailable resources. According to Bratton (2005), contingency management theory has to do with a set of managerial decisions and actions that determines the long-run performance of a corporation even if it is placed in a disadvantaged situation.

Remuneration and Benefits. Challenges encountered by school administrators in relation to remuneration and benefits were highlighted in most diocesan schools since the offering of salaries and benefits did not suffice a living compatible with the teaching profession. This was observed not just by the teachers but as well the parents of some diocesan schools.

Evaluation. It is asserted that human resource needs to be measured in order to determine performance effectiveness and efficiency. In this context, most schools failed to exercise such assessment practice since there were no comprehensive merit systems and standardized evaluation tools for the objective evaluation of employee for bases for promotion.

Conclusion

Based on the findings of the study, the overall level of performance of the schools showed that all indicators were substantially observed and sustained for a longer period of time. Vision and mission, curriculum and instruction, faculty development, student development, physical plant and facilities, financial and business administration, and school and community involvement were considered advanced, which meant that they were substantially observed and sustained for a longer period of time.

Specifically, the highest mean was noted as internal and external stakeholders collaboratively work for the improvement of student services and the development of student achievement.

The overall rating on administrators' level of implementation in the human resource management and development functions was considered adequate which was commonly observed and practiced in the school.

The administrators' level of implementation in terms of benefits, remuneration and evaluation were also evident yet acknowledged by the employees in mediocrity. Those indicators were least observed in the school since most employees had issues and concerns in the implementation of the following benefits --

Employment policy, work regulations, discipline, leave of absence, and grievance and complaints were substantially observed and sustained for a longer period of time in the school.

Furthermore, a Pearson Product Moment Correlation (Pearson r) was conducted to evaluate the relationship between the level of performance of schools and administrators' level of effective implementation of human resource management and development functions. There was a moderate correlation between the two variables. Hence, the null hypothesis was rejected. This means that if the level of performance increased, there would be a moderate increase of level in the implementation in human resource management and development functions.

Moreover, a Thematic Content Analysis was conducted to collectively determine the concerns of the stakeholders on the performance of the Catholic schools and the challenges encountered by the administrators on the implementation of the human resource management and development functions. Catholic schools provided both the teachers and school staff human services focusing on employment policy, discipline, work regulations, leave of absence, and grievances and complaints, but found to be mediocre in the rendering of the services such as benefits, remuneration and performance evaluation. Likewise, it was observed that there were shared understandings about appropriate roles, responsibilities and expectations by a number of stakeholders but some processes had to be in place to resolve misunderstandings, conflicts, or other human relations issues.

it is concluded that the level of performance of schools and administrators' level of effective implementation in human resource management and development functions are directly interrelated since the individual success and collective progress of the said academic institutions as governed by school administrators were dependent on the utilization of human resources. It is surmised that the needs and aspirations of the members of school community would make sensible impact on the achievement of the objectives and organizational goals. The challenges encountered by the school administrators in the diocesan schools centered on the strategic managerial skills of the school principal and the administrators' implementation of human resource management and development functions in relation to the successful realization of institutional objectives empowerment of human resources.

Recommendations

Based on the findings and conclusion of the study, it is recommended that the administration and the board of trustees of the select Catholic schools in Tagum should consider the inputs on the improvements of the Administrative Manual especially in the areas of human resource management and development services such as remuneration, evaluation and benefits as well as the proposed improvement plan particularly in the areas of school performance such as philosophy and vision-mission, physical facilities and faculty development.

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Assessment of Current Status of Physics Laboratory Practical Activities and Factors Affecting Their Implementations: In Colleges of Teacher Education in Western Oromia, Ethiopia

Gemechu Gudeta Leta

Abstract

The study assessed: adequacy level of laboratory facilities, utilization of resources, current status of implementations of laboratory practical activities; and investigates main causal factors affecting the implementation of physics laboratory practical activities in Western Oromia (Nekemte, Shambuu, Metu and Dembidollo) College of Teacher Education. The study employed descriptive survey study design and was guided by four basic research questions. Purposive and probability sampling techniques were utilized to select sample representatives. Data collecting tools: questionnaire, interview, observations, and content analyses were employed. Both quantitative and qualitative analysis methods were utilized, i.e. frequency and percentage content analysis. Accordingly, the study found out that-- current status of implementation of laboratory practical activities were unsatisfactory, facilities were not adequate, far below the expectations to perform effective practical activities. Overwhelmingly, the status of physics laboratory practical activities in colleges of teacher education in Western Oromia are not on their stipulated state. The study suggested that stake holders, colleges and concerned bodies need to assist in ensuring adequate facilities and to alleviate factors hindering implementations of physics laboratory practical activities in colleges of teacher education and ensure that their predetermined standards are maintained.

Key Words: Assessment, College, Implementation, Physics Laboratory, Practical Activities, Resource Availability, Status.

1. Introduction

Physics is one of the basic disciplines of science that forms a pillar on to which other natural and applied sciences, medicine and engineering make their foundation. It is basically experimental science that needs active learning that could encourage creativity. Creativity requires students be engaged to develop intrinsic desire to achieve a choice to self-concept, self-esteem, sense of high self-efficacy and confidence to cope with situations/challenges/ that lead to success. To learn physics, students have to practice physics learning tasks, problem solving situations, project works and experiments.

Science laboratory is a place where research and testing are carried out and experiment is a scientific test carried out in order to discover whether the theory is correct or what the results of a particular course of action would be (Encarta online dictionary 2009). Similarly, laboratory is a facility that provides controlled conditions in which scientific or technological research, experiments, and measurement may be performed; and experiment is a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact (https://en.m.wikipedia.org/wiki on line). Physics (Science) is an enterprise that constructs

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and organizes a set of knowledge in the form of testable explanation. Gbamanja (1991), defined Science as knowledge acquired through a systematic organization of events and objects in the natural phenomena; it is a systematic process of acquiring knowledge and understanding about the natural phenomena. The chief aim of physics is to discover the laws which governs certain phenomenon or to verify a given law which has been derived from a theory, indicting that physics is a practical science that requires adequate practical class (laboratory) to test for truth about a given phenomena in the physical world. According to McDonnell *et al*. (2007) *Ibid*, practical classes are designed to complement materials dealt with in the lectures and give students' practical experiences which will be invaluable in their future career as scientist.

Emphasizing the importance of physics laboratory practical activity Ausbel (1963) noted that: the emphasis on teaching and learning physics/Science/ is on ensuring that teachers not only teach the process of physics/ science/ but also enable sensory learning to learn scientific concepts. By this, the "hands on", 'hearts on' and 'minds on' of learners must be on scientific activities such that learners will be able to learn actively and thereby participate in knowledge construction. Black (1993) asserted that sciences (physics inclusive) are practical subjects hence best learnt through experiments, observations, analysis, and generalization of conclusion. Therefore, laboratory has a direct effect on students' attitude and academic performance. This in turn indicates that hands on, hearts on and minds on of learning brings perfection and proficiencies. Thus, practical activities lead learners to perfection. Hager, (1974) indicated that practice makes one perfect.

Additionally, Simeon Olayinka Olajide (2017) indicated that the teaching of science without laboratory resources is to mask the value of science and make the subject alien to the students, a preventive implication from pursuing it in secondary schools and allied courses in higher institutions. The suggestion clearly portrays that adequacy of laboratory facility has an important implication in supporting practical laboratory activities; and that without resources it becomes a meaningless journey in dark without light. Thus, the importance of laboratory activities in the teaching and learning of physics can't be overemphasized.

Teachers must try to encourage students to discover knowledge by themselves in physics learning process, so that they could develop knowledge, problem solving skill, creative thinking, scientific thinking and ways of thinking that could ensure success in physics. Emphasizing teachers' role, Kaisa Jakarta, (2014) suggested that it is our job, as science teachers, to help the students see the connections between the theory we teach them and the phenomena they see in the experiments. To reach this goal it is important, first to recognize the problems students have in making links between the practical and the theoretical and deduce the reasons behind them. Once this is done, changes can be made in the way we instruct students in practical work. Ausbel (1963) suggested that the emphasis on teaching and learning physics/science/ is on ensuring that teachers not only teach the process of physics/science/ but also enable sensory learning to learn scientific concepts. Thus, teachers need to be highly committed in supporting students on implementation of laboratory practical activities.

Similarly, Hager (1974) indicated that it is generally believed that constant practice leads to proficiency in what the learner learns during class room instruction, hence the dictum 'practice makes one perfect'. It is on these platforms that the society and the nation benefit from science and technology which is achieved with quality education within the institutions and education centers. Hossen and Shad, (2007) advocated student centered approach to promote interest, analytical research, critical thinking and enjoyment among students. Hence, laboratory activities are more effective in improving level of students' creativity through practical

activities. Accordingly, constant students' active participation in laboratory practical work is more powerful in promoting creative thinking trough thorough laboratory practices.

The quality of laboratory, depends on the adequacy of laboratory facilities, teachers' effectiveness in the use of laboratory facilities with the aim of facilitating and providing meaningful learning experiences to the learners, committed, qualified and well trained laboratory technicians and dedicated leaders--assessing challenges and resources in science laboratory. Different research findings indicated that learning of science is enhanced, and the understanding level is improved when the students are engaged in science laboratory for practical experiments (Hofstein and Lunetta, 2004). Additionally, N. Mbabuu, F.N. *et.al* (2011) concluded and suggested on the adequacy of facilities and teachers' role. Availability of equipped laboratories has a positive influence on students' attitude towards physics. Physics laboratories should be adequately equipped. Upon equipping of the laboratories, physics teachers should strive to teach physics 'by doing' rather than theoretically. This will improve the students' hands-on abilities and experiences besides triggering an inquisitive and analytical mind. Taiwo Oludare Ogunmade, (2005) elaborated that factors such as the absence of trained laboratory technicians, suitability of equipment, commitments of teachers and education sector administrations distribution, etc., influence the quality of practical activities. Conclusively, these are the factors identified in affecting implementations of lab practical activities.

The laboratories have been given a central and distinct role in physics, as there are many benefits in learning from laboratory activities. Well equipped laboratories are one of the essential characteristic features in physics/science at all levels. It would be rare to find any science course in any institution without substantial components of laboratory practical activities. Hoftein & Mamlok-Naaman (2007) suggested that science/ physics is an experimental discipline; laboratory is an essential part in enhancing students' scientific skills. As physics is basically an experimental science it needs active learning that would encourage creativity and would enhance students' scientific skills.

It is no more news that the general status of physics laboratory practical activities and students' performance in the study area has not been impressive in the past few years. Therefore, it is crucial and timely to investigate into the factors that could affect effective implementation of physics laboratory practical activities in Colleges of Teacher Education. It is on the basis of this note that this study aims at Assessment of Current Status of Physics Laboratory Practical Activities and Factors Affecting their Implementations: In Colleges of Teacher Education in Western Oromia; Ethiopia and to suggest possible solutions. To this end the Researcher is intending to raise the following basic research questions:

- To what extent laboratory facilities/resourses/ are adequate/sufficient/ in performing physics laboratory practical activities?
- What is the current status of implementation of physics laboratory practical activities?
- How often teachers are committed to assisting students' involvement in physics laboratory practical activities?
- What are the causal factors affecting implementation of physics laboratory practical activities?

The main purpose of this study is to assess physics laboratory facilities, the current status of physics laboratory practical activities, and to investigate factors that could affect effective implementations of physics laboratory

practical activities. Similarly, it aims at suggesting possible solution/s. More specifically the aim of this study is to -

- Assess the availability/adequacy/ level of physics laboratory resources/facilities to perform physics laboratory practical activities.
- To evaluate the current status of laboratory practical activities.
- Investigate level of teachers' commitment to support students in performing laboratory practical activities.
- Identify factors that affect implementations of physics laboratory practical activities in Colleges of Teacher Education in Western Oromia.

The study is significant to indicate causal factors hindering laboratory practical activities, to suggest possible solutions, to encourage students' involvement and instructor's commitment in supporting students work. Also, it will be useful to provide relevant information for researchers who are interested to make further research related to the problem in the future.

2. Methodology

2.1. Research design

This study was designed to assess the current status of physics laboratory practical activities and factors affecting their implementation in Colleges of Teacher Education in Western Oromia. The study employed a descriptive survey research design which involves gathering data that describe events and then organize; analyzing data that allows generalizing the finding of data collected from the selected sample from the population without any influence. According to Glass & Hopking, (1984) cited in (AECT, 2001)—' Descriptive design involves gathering data that describe events and then organizes, tabulates, depicts and describes the data collection. Additionally, Borg &Gall, (1989) suggested that descriptive studies are aimed at finding of "what is" so observation and survey methods are frequently used to collect descriptive data. Also Best, K. and Kahn B., (1999) suggested that descriptive research is primarily concerned with 'what is' the present although it also considers past events and influences as they relate to the current conditions. Therefore, descriptive- survey research design has been employed on the bases of above suggestions. Descriptive research involves describing and interpreting events, conditions, or situation of the present. More specifically, descriptive research is going to affect that are evident or trends that are developing. Descriptive research can use qualitative or quantitative method to describe current events, conditions or situations.

The survey study method was employed in which primary data was collected from DVDS, teachers, and integrated natural science stream students in the College using tools like questionnaires, interview and observation.

Descriptive research design was taken to be appropriate method to describe and assess the implementation of physics laboratory practical activities in the selected Colleges. Both quantitative and qualitative analysis methods were utilized to address the purposes of the study, i.e., utilizing frequency and percentage and content analysis. Furthermore, the method enables the Researcher to examine the present situation of laboratory practical activities, identify some of the major problems and to find possible solution/s for the existing problems.

2.2. Sample and Sampling Technique

The population comprises one hundred one (n=101) integrated natural science stream students the case of physics department regular students, nine (n=9) physics teachers regular program, four (n= 4) College dean and three (n=3) college academic vice dean; selected through purposive sampling and probability sampling technique. From Colleges in western Oromia (Shamboo, Nekemte, Metu, and Dembdolloo Colleges of Teacher Education); were purposively selected to take part in the study, because they were considered as samples that were likely to produce the most valuable data and to get unambiguous generalization. Out of these College students, 79 (78.22 %) male and 22(21.78 % female students from Nekemte and Metu college of teacher education integrated natural science stream were selected purposively to take part in the study for their availability and suitability for observation ; individual students were selected through probability sampling. Physics teachers (n=9), College Dean (n=4) and College Academic Vice Deans (n=3) in the entire sample from Colleges were purposively used because of their discipline and availability.

2.3. Research Instrument

The intended data for this research were obtained through questionnaire, interview, direct observation, and document analyses. Questionnaires' validities were affirmed after pilot test was conducted and research expertise constructive feedback was received that they were valid to measure the intended assess. Questionnaires with rating scales item were included in data collection for all respondents. The items were rated as strongly agree, agree, partially agree, disagree, and strongly disagree. The Researcher preferred close ended questions because it was easier to handle and simpler for respondents to answer and fill within short time. Open ended questions were included because they are suitable to get wide range of information/data from respondents.

❋ Questionnaire for Teachers and College Deans and Academic Vice Deans (DVDS)

This questionnaire contains 20 questions for teachers and 18 questions for DVDS which were open ended and close ended. The questions were related to general information about laboratory facilities, resource availability, supplementary materials, in-service trainings and workshops received, lab technicians, commitment of instructors, sources of financial support, status of lab practical activities and factors affecting their implementations and suggestions for improving the current status. Additionally, questions related to laboratory time schedule, the levels of students' involvement were included in questionnaire for teachers.

❋ Questionnaire for students

This questionnaire contains 17 questions which are open ended and close ended. The questions were related to -- availability of separate laboratory room, level of laboratory facilities, utilization of resources, availability materials; provision of practical time schedule, instructor's commitment, status of practical activities and factors affecting implementations of practical activities.

Similarly interview related to the current status of laboratory practical activities, factors affecting their implementations, supplementary materials, permanent time schedule for lab, sources of financial support, for possible suggestion were used to confirm and collect more information on their reactions in questionnaire

2.4. Method of data analysis and interpretation

The data collected were analyzed utilizing both quantitative and qualitative analysis method to address the purposes of the study, i.e. utilizing frequency, percentage and content analysis. In this research qualitative data analysis method includes describing in details specific situations, phenomena using questionnaire, interview, and observation. It focused mainly on the gathering of verbal data rather than measurements. The data collected through open ended questions from respondents were analyzed quantitatively. To know the answer to the research questions quantitatively, the collected data were analyzed by properly classifying, tabulating, and calculating statistical values used as frequency and percentile analysis for arriving at conclusion.

3. Presentation and Interpretationof Data

3.1. Availability and Utilization of physics lab resources

Table 1 Physics Laboratory Resource Availability and Their Utilization Observation Checklist

No	Laboratory resources	available	available obsolete	available, not functional	available, not used	not often utilized
1	Voltmeter	9 AC		7AC		5AC
2	Voltmeter	2DC		2DC		
3	Ammeter	10	4			6
4	Electroscope	9		3	6	
5	Galvanometer	9				9
6	Ven de graph generator	4			4	
7	Magnets dft.	22		7	15	
8	Vernier caliper	10		2		8
9	Thermometer	37		2	35	35
10	Calorimeter	4				4
11	Lenses dft.	30		5		25
12	Dft. Mirrors	23	7	16		
13	Pulleys	16			10	
14	Tuning fork	10			10	
15	Resonance box	2		2		

Observation and inventory check-list result depicted that some available equipments in the lab were: rarely used, not often utilized and/or not utilized satisfactorily (Table- 1)

As confirmed through thorough observation and verbal interview responses, no visible experiments were performed related to laboratory practical activities. There were some materials listed on inventory checklist which help to perform simple experiments and demonstrations, but these materials were infrequently used or not used at all even for demonstrations. Likewise, most of the teachers do not make use of the few available materials in physics laboratories of colleges incorporated in the study. Even though there were some materials in most of the Colleges, these materials were either damaged, obsolete, and not accordingly organized on the basis of branches of physics, which was evidence to conclude that organization and utilization of resources was poor .

3.2. Teachers' tendency on utilization of physics laboratory resources

The result of teachers' tendency to the use available laboratory resources in performing laboratory practical activities showed that 66.67% of teachers reported as they use occasionally; while 33.33% teachers indicated that they use most of the time. The finding depicted that those teachers didn't use on hand resources effectively and efficiently in physics lab practical activities, indicating that level of utilization of available resources were not impressive (Figure1).

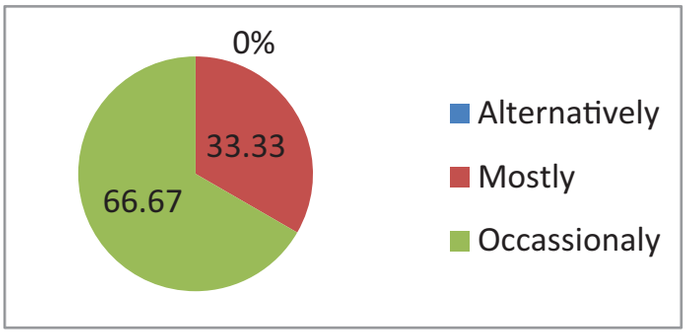

Figure1. Assessment of utilization of resources by teachers

3.3. Laboratory Facilities, Resources Availability and Supplementary Materials

Table 2 **Respondents View on Physics Laboratory Facilities and Supplementary Materials**

Ite. No	Description	Alternatives	DVDS. N=7 f(%)	Teachers N=9 f(%)	Students N=101 f(%)
1.	Is there separate room for physics laboratory practical activities?	Yes	-	-	-
		No	7(100)	9(100)	-
2.	Laboratory materials are almost damaged/obsolete once, for use	Yes	5(71.43)	6(66.67)	85(84.16)
		No	2(28.57)	3(33.33)	16(15.84)
		Ns	-	-	-
3.	Are there supplementary materials that give support in performing laboratory practical activities?	Yes	2(28.57)	2(22.22)	9(8.91)
		No	-	1(11.11)	36(35.64)
		Ns	5(71.43)	6(66.67)	56(55.45)

***NB**:* NS-Not satisfactory, RW – relatively well, DVDS –Dean and Vice dean of colleges.

Result in Table- 2 showed 100% DVDS and 100% teachers reported that there was no separate room for physics laboratory according to branches of physics. Likewise, 71.43 % DVDS, 66.67 % teachers and 84.16 % students stated that Laboratory resources were almost damaged/obsolete ones, for use in performing lab activities, while rest of the respondents reacted in contrary. Through this research work, it was found that 57.14% DVDS, 66.67 % teachers and 55.45 % of students reported that supplementary materials were insufficient/scant (Table- 2). The finding is in conformity with a study done by (Solomon Guta and Kadir Osma, 2015) on physics subject, which indicated that inadequate spaces for lab or lab facilities, outmoded and insufficient equipment and supply within laboratory, were the main problems that were encountered in the teaching and learning of science.

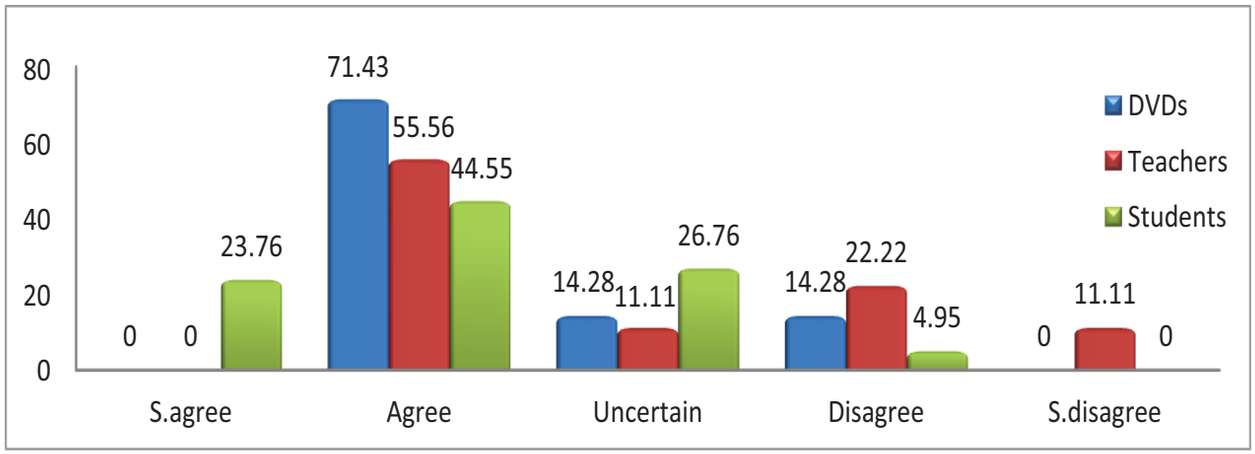

Figure 2. Respondents' views on lab facilities/resources are not adequate to perform lab practical work.

The reactions of respondents on Lab facilities/resources which were not adequate, indicated as about 71.43 % DVDS, 55.56 % teachers and 44.55 % of students agree that laboratory facilities/resources were not adequate, while 23.76 % of students strongly agreed with this idea while 14.28 % DVDS, 11.11 % of teachers and (26.73 %) students were uncertain. On the contrary, 14.28% DVDS, 22.22% teachers and 4.95% students disagreed while 11.11% teachers strongly disagreed to-- that facilities and resources are available and adequate to perform practical activities. This research work clearly portrays that laboratory facilities and resources were far below the predetermined standard (Figure 2).

Verbally, DVDS of the Colleges reported that there were not enough budget grant for labs, and no manual for experimental work. From this finding the Researcher inferred that there were no adequate facilities and non uniform resource distribution, manual and guide line to monitor laboratory practical activities among Colleges of Teacher Education in Western Oromia; inadequate facility has hindering effect on performing practical activities. Similarly, a study done by Solomon Guta and Kadir Osma (2015) on physics subject indicated that inadequate space for lab or lab facilities outmoded, insufficient equipment and supply within laboratory, were the main problems that were being encountered in the teaching and learning of science.

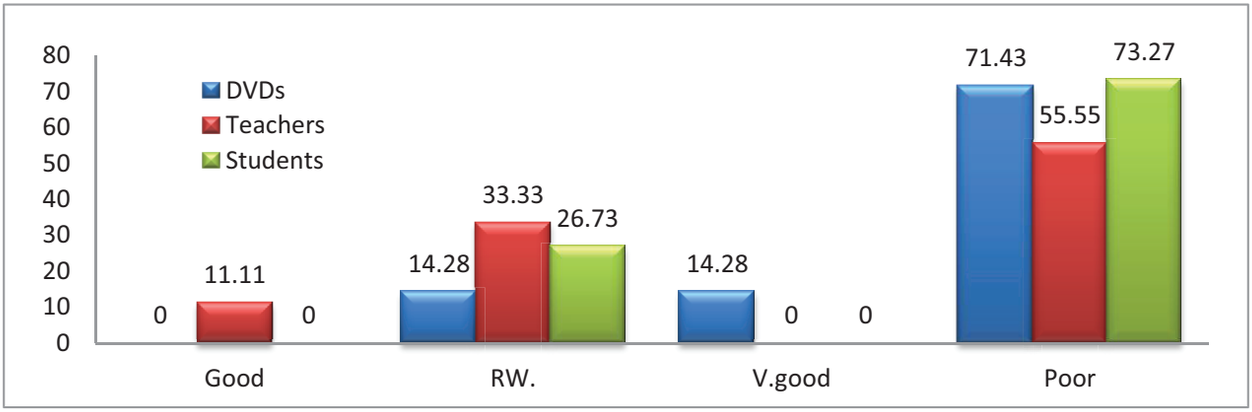

Figure 3. Assessment of current status of lab facilities

Additionally, respondents' reaction on the status of lab facilities revealed that 71.43 % DVDS, 55.56% teachers and 73.27% students reported the current status of physics laboratory facility was poor, while 14.28 % DVDS reported it as very poor, whereas 14.28 % DVDs ,33.33 % teachers and 26.73 % of students responded it to be relatively well. In general, the result indicated that the status of physics laboratory facilities were poor (Figure 3). There was persuasive evidence to conclude that lab facilities and resources in most of Colleges under the study were inadequate and far below the stipulated standards.

3.4. Status of Laboratory Practical Activities

Table 3 **Respondents View on the Current Status of Laboratory Practical Activities**

Item No	Description	Alternatives	DVDS. f (%)	Teachers f(%)	Students f (%)
1.	Is there separate manual for physics laboratory practical activities?	Yes	-	-	5(4.62)
		No	-	9(100)	71(70.29)
		Ns	-	-	25(24.75)
2.	Is there permanent laboratory work time table like other courses?	Yes	-	3(33.33)	10(9.25)
		No	-	6(66.67)	98(90.74)
3.	There is regular time schedule like other courses for laboratory activities.	a	-	-	-
		b	-	1(11.11)	11(10.18)
		c	-	-	25(24.75)
		d	-	8(88.89)	36(35.64)
		e	-	-	37(36.63)

Strongly agree, b. Agree, c. partially agree, d. Disagree, e. strongly disagree and NS-not satisfactory.

The result portrays that 100% teacher and 70.29% student respondents indicated; that there was no separate laboratory manual, number of practical activities performed was so small, credist given to students'

performance were 15% -20% marks of major course which was generally different from College to College (Table- 3).

Verbally, most of the teachers and students responded that there was no specific laboratory manual which they followed for conducting experiments and the rest followed a laboratory manual prepared (written on black board) by College laboratory technicians/teacher. This finding is in conformity with finding of Fayera (2014) that to practice lab experiments, there are no well-prepared laboratory manuals.

Furthermore, 90.74% students and 66.67% of teacher responded that there was no permanent lab work time slot just like that of regular scheduled courses' time-table. Similarly, result of the finding revealed that 88.89% of teachers and 35.64% students reported that there was no regular time schedule like that of other courses, 36.63% strongly disagreed that there is regular time- schedule and 24.75% student respondents were not certain about this. Contrarily 11.11% teachers and 10.18% were uncertain (Table- 3).

Verbally, all respondents reported that there was no permanent time- table just like that of regular courses, but either on the opposite shift or as the lab technician arranged according to his/her preference for three or maximum four experiments per semester of the year. Most of the Colleges perform the experiments by way of demonstration. This was attributed to the large number of students per class, while it could also be due to the time required for the experiments. At institution level, an experiment session is scheduled for three hours or more; it is therefore understandable that if the experiments are not provided in the normal teaching timetable it would be unthinkable to expect the teachers to find the three or more hours for effective performance of the experiment/s to allow students to perform such experiments physically.

Lack of instructional materials, like laboratory guidance or manual and short period allocated for practical work was the problem identified for implementations of practical work; and has negative impact on performance of physics laboratory activities. This finding was in harmony with the findings of Makgato's (2007) work which also indicated that lack of practical experiments in sample school contributed to the poor performance of learners in physics subject in schools that did not conduct experiments, and highlighted the lack of resources like laboratory manual in schools.

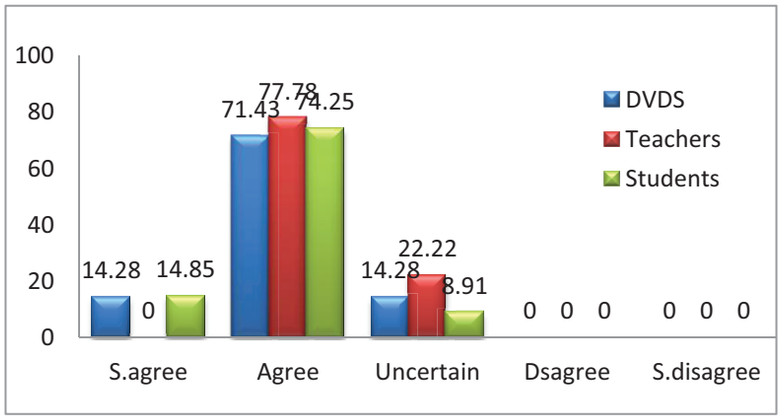

Figure 4. Respondents' judgment on poor status of practical activities

Additionally, 14.28 % DVDs and 14.85 % students strongly agreed, 71.43% DVDs,77.78 % teachers and 74.25 % students agreed, while 14.28 % DVDs 22.22 % teachers and 8.91 % students were uncertain on status of poor lab, which confirmed that the status of physics lab practical activities were not impressive (Figure 4) .

Furthermore, interview and observation results indicted that only Metu College of Teacher Education had trained laboratory technician. In contrary, in other Colleges 100% teacher and DVDS agreed with that there was no trained laboratory technician for physics laboratory in their College. Instead, they recruit diploma graduates with the same field of study without any orientation or other additional training concerning physics laboratory.

The finding is in conformity with the survey research made in Ilu Ababora as one of hindering factors to practical laboratory experiments, which makes negative impact on students' academic achievement in science education in the absence of laboratory technician for Biology, Physics and Chemistry in the school, who can carefully practice in the laboratory (Fayera, 2014).

Specifically, Dembidollo College of Teacher Education did not have lab technician, the subject teachers take the responsibility. Similarly, this finding is in conformity with the research findings of Abebe. *etal,* (2019) that, secondary schools of Bale zone south of Ethiopia, that most of the teachers (89 %) are not implementing, due to the hindering factors called lack of laboratory technician.

3.5. Teachers' Commitment and Students' Involvement

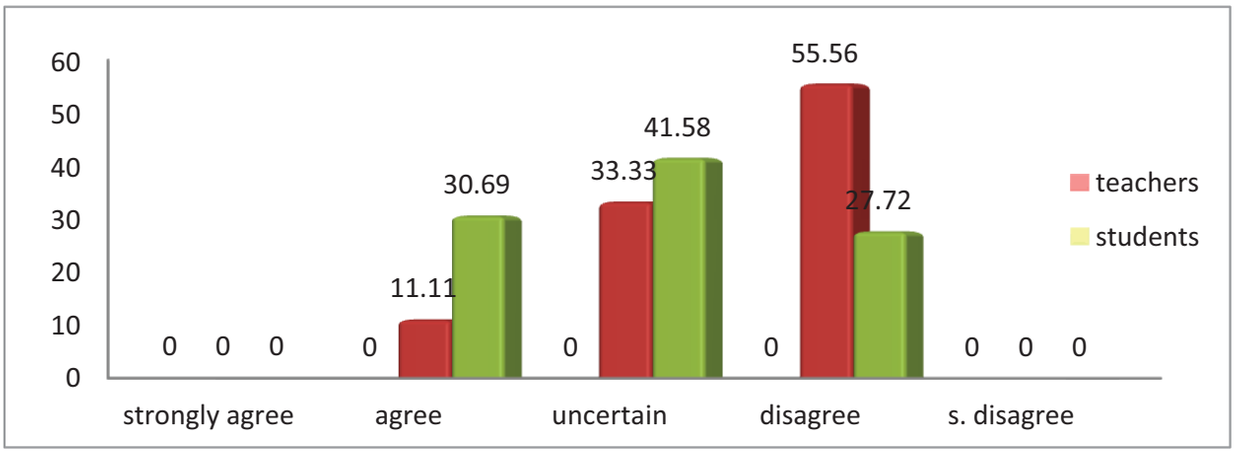

Figure 5. Respondents' outlook on students' involvement on practical activities were low

Respondents' reaction on 'students' involvement was low', clearly portrays 55.56% teachers, 27.72% student respondents reported that they disagreed on students' involvement on the existing physics laboratory practical activity is low and 33.33 % teachers and 41.58% student respondents were partially agreed, while 11.11% teachers and 30.69% of students agreed that students' involvement is low. However, students' involvement on the implementations of existing practical activities was insufficient, most of the students said that they have high interest to perform lab practical activities even though they were not supported.

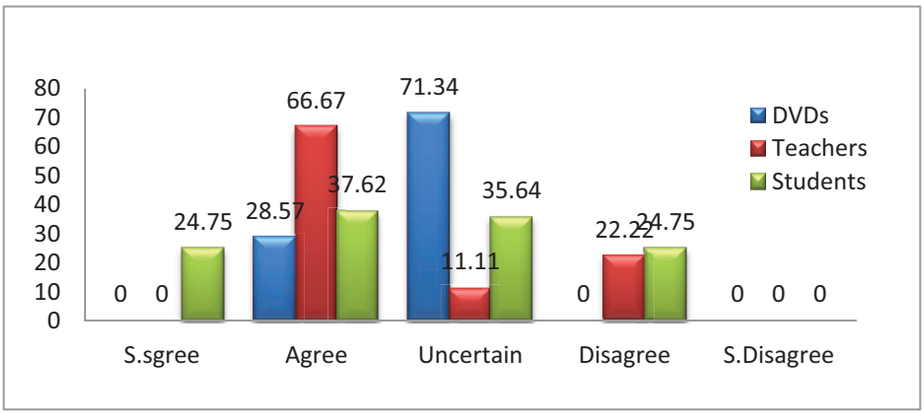

Figure 6. Respondents' view on teachers' commitment in supporting students were low

Similarly, 28.57 % DVDS, 66.67 % teachers and 37.62 % of student respondents agreed with the idea that teachers' commitment on supporting students, assist, explain give feedback on practical activities were low, while 24.75% students strongly agreed. Whereas 71.34% DVDS, 11.11 % teachers and 35.64 % student respondents partially agreed (are not certain) . In contrast, 22.22% teachers and 24.75% students disagreed (Figure 6). Therefore, the result again revealed that teachers' commitment in supporting students on lab practical activities were unsatisfactory or/and lacking. Similarly, study done by Ashebir Gogle, (2016) confirmed that the major factors that affect teachers' performance in practical activities were lack of appropriate laboratory time/schedule, absence of reward, lack of necessary equipments and materials, teachers' lack of training and commitment.

Response on Teachers' Commitment in supporting Students

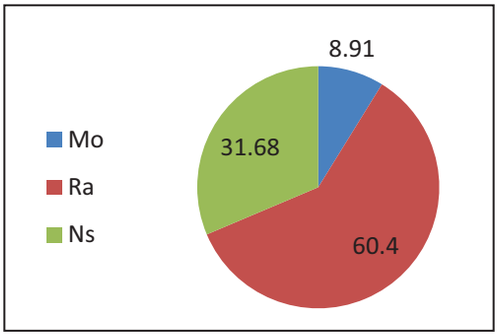

Figure7. Students' opinion of teachers' commitment in supporting students

Additionally, the result revealed that 60.40 % student confirmed teachers rarely support them whereas, 31.68 % students reported teachers' commitment were insufficient only 8.91% of them agreed that teachers support them most of the time, showing that teachers' support was not impressive (Figure 7).

As the finding directed, teachers' commitment in supporting students on practical activities was not satisfactory; and this approach could not encourage students' need of creativity. Therefore, teachers should guide and support their students' academic development through implementing, demonstrating, doing projects and practical activities in physics practical classes.

3.6. Factors Affecting Physics Laboratory Practical Activities.

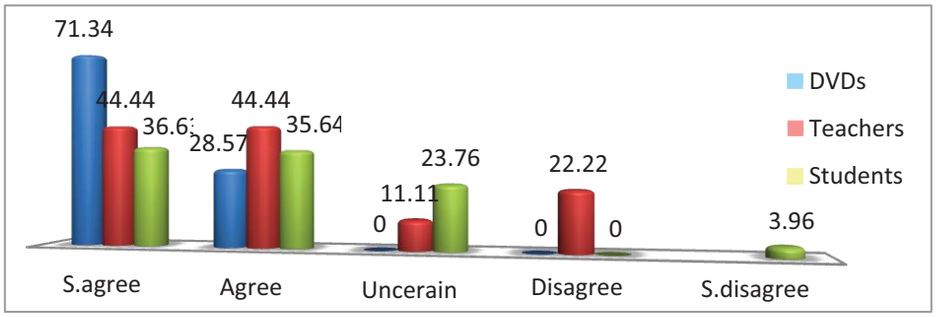

Figure 8. Respondents' views on poor facility has direct hindering effect on practical activities

The study revealed that 71.34% of DVDS, 44.44% of teachers 36.6 % students strongly agreed, 28.57% DVDS, 44.44% teachers 35.64 % of students agreed, whereas 11.11 % teachers and 23.76% students be uncertain while only 22.22% teachers disagreed and 3.96 strongly disagreed on that poor facilities in College has direct hampering/hindering effect on the implementations of laboratory practical activities (Figure 8)

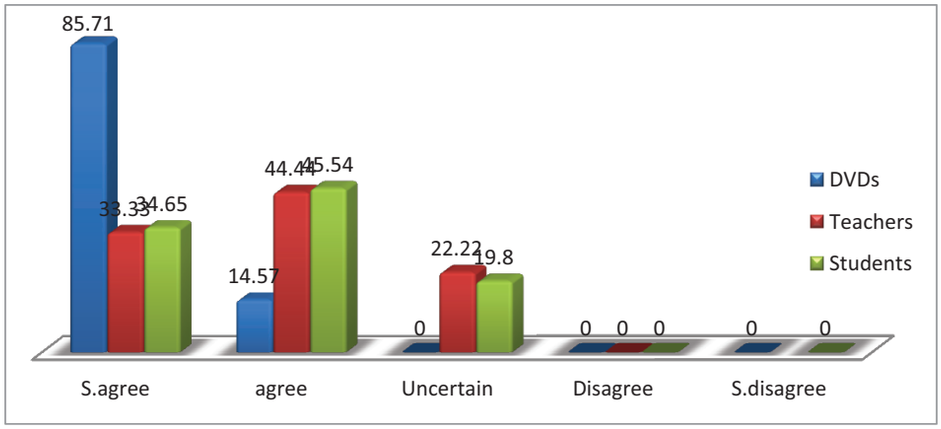

Figure 9. Respondents' opinion on lack of resource has direct hampering effect on lab practical activities

Result on bar- chart revealed that 85.71% of DVDS, 33.33% teachers 34.65% strongly agreed and 14.57 % DVDS, 44.44 % of teachers 45.54 % of student agreed whereas 22.22 % teacher and 19.80 % students were uncertain on that lack of resources in College have direct hampering effect on the implementations of laboratory practical activities (Figure 9)

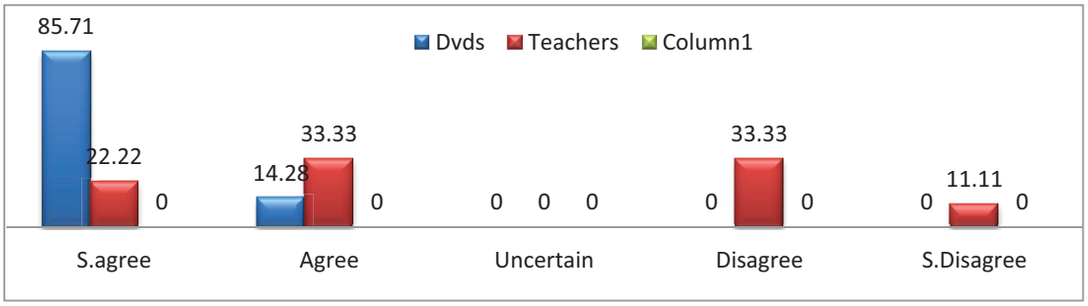

Figure 10. Response on Lack of trained technician has hampering effect on lab activities.

Similarly, the bar chart depicted that 85.71% of DVDS and 22.22% teacher respondents strongly agreed to the lack of trained lab technicians which has hampering effect on lab practical activities. 14.28% DVDS, 33.33% teachers agreed, in contrary 33.33% of teachers disagreed while 11.11 % of teachers strongly disagreed with the idea (Figure 10). In general, the study revealed that lack of trained lab technicians has a direct hampering effect on implementation of laboratory practical activities. The finding is in conformity with findings of Abebe and et al (2019), that in secondary schools of Bale zone, southeast of Ethiopia, most of the teachers are not implementing due to the hindering factor called lack of laboratory technician.

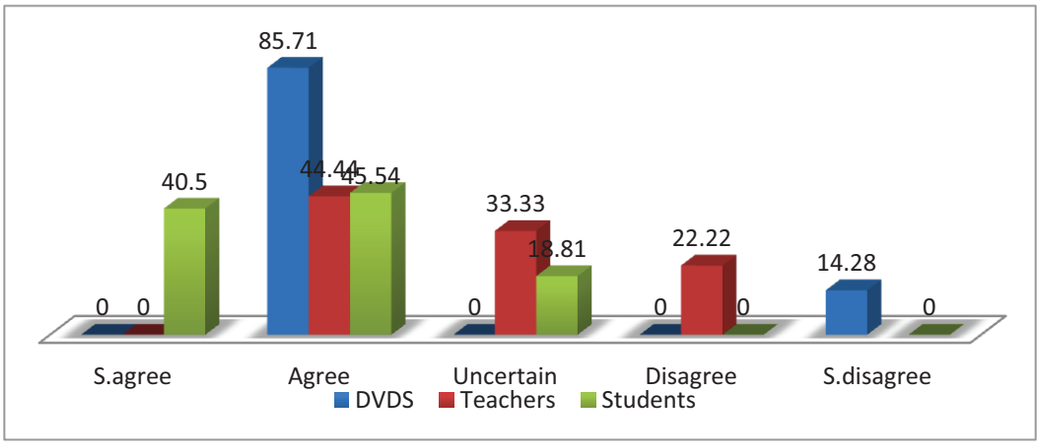

Figure 11. Respondents' judgment on teachers' poor commitment has hampering effect on lab activities

On the other hand, reaction regarding- teachers' poor commitment has hampering effect on lab practical activities, revealed that 40.50% of students strongly agreed 85.71% DVDS, 44.44% teachers and 45.54% students responded- agreed to the effect; 33.33% teachers and 18.81 % students were uncertain while 22.22% of teachers disagreed and 14.28% of DVDS strongly disagreed (Figure 11).

The result purely indicated that teachers' poor commitment has a direct hampering effect on the implementation of laboratory practical activities. The finding is in conformity, in most cases with Asherbir Gogile, (2016) findings that the major factors that affect laboratory activities in secondary schools in Wolaita were absence of reward, lack of appropriate laboratory time schedule, lack of adequate equipment and materials, lack of teachers' commitment and teachers' lack of training. This implies that without teachers' support and commitment teaching experimental science (like physics) is just like a journey in dark without light and that it will affect students engagement in knowledge construction. Similarly, this finding is in line with Taiwo Oludare Ogunmade,(2005) elaboration that factors such as the absence of trained laboratory technicians, suitability of equipment, commitments of teachers and education sector administrations distribution, etc., influence the quality of practical activities.

Interview of teachers, DVDS and observation results, additionally confirmed that:

- There were scarcity of resources, obsolete/damaged lab equipments, poor laboratory facilities indicating inadequacy, even in some Colleges there were no water line, there was no separate laboratory experiment manual (guideline in modules), separate laboratory room accordingly with the branches of physics and no supplementary material.

- No sufficient budget/financial grant from any part of the concerned bodies in order to fulfill resources, equipments, facilities and for maintenance of damaged materials.
- No course credit is given to laboratory practical activities. Instead, marks of 15%-20% from the main courses are given to experiments and there is no regular lab-time schedule.
- The number of students at an average in each group were (8-13); in some cases, two groups will be mixed and take their own data for the existing three or four experiments which is not recommended, was credible evidence that indicated implementations of practical activities were poor, since all students are not actively engaged in performing the practical activities.
- There were no additional short-term training or wokshops related to physics laboratory given or incorporated in each College work plan. The finding is in conformity with the survey research made in Ilu Ababora as one of hindering factors to practical laboratory experiments, which makes negative impact on students' academic achievement in science education - was the absence of laboratory technician for Biology, Physics and Chemistry in the school, who can carefully practice in the laboratory (Fayera, 2014)

4. Summary, Conclusion and Recommendations

4.1. Summary

The findings indicated that (71.43% DVDS, 66.67% teacher and 84.16% student) there were scarce resources and dearth of facilities, "if any", they are either obsolete or damaged, materials were not satisfactory, even no water in lab rooms of most of the colleges. All respondents reacted (100%) that there was no separate room according to branches of physics in all colleges in the study area. This was invariably evident that instructional resources are lacking, to perform practical activities effectively. Generally, the finding portrays physics laboratories resources are lacking and facilities are not adequate (as about 71.43% DVDS, 55.56% teachers and 44.55% of students showed), far below the expectations to perform effective practical activities. Utilization of the available resources by teachers has not been impressive.

Contrarily, the findings depicted (as100% teacher and 70.29% student respondents reported) that there were no physics laboratory manuals or guideline in modules, none of participating colleges has been allotted a separate slot for laboratory activities in their time table,similar to regular courses. Budget grant is lacking or not sufficient which was either actual or in their plan for purpose of laboratory activities. In most of these Colleges there were no trained lab technicians and (no physics lab technician particularly in Dembidollo College), there were no training, workshops, seminars etc. organised for teachers and for lab technicians. The research result portrays (77.78% of teachers 74.25 % of students and 57.14% DVDS) that the status of practical activities are far below their stipulated standards. Additionally, the study depicted that teachers' commitment in supporting students on laboratory practical activities were not satisfactory.

The study revealed inadequate facilities, scarce resources, unplanned lab activities, lack of teachers' commitment, lack of budgeted grants, lack of trained technicians and not arranging trainings, workshops and seminars for teachers and lab technicians etc. were deep-seated and foremost factors identified that hinder effective implementations of physics laboratory practical activities, and has direct hampering effect on the performance of laboratory practical activities.

4.2. Conclusion

On the basis of the findings, it can be concluded that:

- **Facilities and resources:** Physics laboratory facilities are inadequate and far below from the expectations, inadequacy of laboratory resources and facilities have direct hindering effect, no financial support to fulfill resources to alleviate inadequacies of facilities; indicating that there is significant relation between laboratory facilities and practical activities.
- **Status of lab practical activities:** Likewise, factors such as -lack of trained lab technicians, time schedule, separated manual, credited lab, independent room for lab etc., poor utilization or organization of resources are additional hindering factors on implementations of physics laboratory practical activities, which lead the status of implementations of laboratory practical activities in colleges incorporated in this study to be poor and unsatisfactory. Therefore, evidently the status of physics laboratory practical activities in colleges incorporated in this study was not satisfactory, rather far below stipulated standard.
- **Teachers' commitment:** the finding indicated that teachers' commitment is less than the necessary scarification required from them to pay in supporting students/young generation; giving feedback, guiding on lab practices was lacking; lack of continuous trainings, work- shops and seminars etc, for teachers and technicians were some of the constraints that hamper implementation of laboratory practical activities in physics laboratories of colleges in the study area.
- **Fundamental factors that were directly affected lab practical activities:** Contemporary, the findings indicated that inadequate facilities, scarce resources, lack of sufficient budget or fund, lack of trained lab technicians, teachers' underprivileged commitments were primary factors affected effective performance of lab practical activities. The findings purely portrays that there is significant direct relationship between laboratory facilities, resources, teachers' commitment, lab technicians and laboratory practical activities performance.

4.3. Recommendations

On the basis of the research findings the following recommendations were drown out:

- Oromia Education Bureau, Colleges, stake holders and concerned NGOs need to assist in ensuring adequate facilities, in alleviating factors hindering implementations of physics laboratory practical activities and ensuring that their predetermined standards are maintained,
- Curriculum organizing bodies need to give necessary credit hour for lab experiment.
- Colleges should look beyond funds from the proprietors and universities through sponsorship and partnership with non-governmental organizations, and international donors for assistance in terms of facilities and equipment,
- Colleges and teachers need to find ways in order to organize laboratories in their stipulated standard, arranging separate (time schedule, lab manuals and room) and fixing budget in their actual plan in collaboration with responsible bodies.
- Laboratory technicians in colleges should be trained in physics lab practices in order to enhance laboratory professionalism and effective execution of laboratory demands.

- Teachers' commitment is indispensable in supporting students on lab work as it is professionally obligatory duty, in order to promote inventiveness in students.
- Teachers should attend workshops and seminars to update themselves on current issues in physics, likewise In -service Training for lab technicians should be organized periodically in order to update them on current trends on lab practice.
- Acknowledgment: My heartfelt thanks go to physics teachers, natural science stream students, Dean and Vice Deans of Colleges in the study areas, for their assistance in providing information and facilitating the research activities at its various stages. I am most indebted to my son Ibsa Gemechu/ student/, at Medda Welabu University for editing support.

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Variates on the Extent of Enhanced Basic Education Information System-Learners Information System (EBEIS-LIS) Implementation Among Elementary Teachers

Denver J. Balaclaot

Abstract

This study correlated teachers'/LIS in-charge profile parameters as variates of their perceived extent of implementation of the Enhanced Basic Education Information System-Learners Information System (EBEIS-LIS) in the San Julian district, province of Eastern Samar during the school year 2020-2021. The data concerning teachers' profile and their perceived extent of EBEIS-LIS implementation were collected via a validated researcher-made survey instrument and was analyzed using frequency count, percentage, median, Spearman rho, and point-biserial correlation at 0.05 level of significance. Findings revealed that most of the respondents are married female teachers who have earned units leading to a Master's degree and have attended district-based training. Moreover, they perceived a high extent of EBEIS-LIS implementation in terms of manpower requirement, methods of employment, and materials for implementation which are all significantly variated with their teaching experience ($p<.05$). Hence, the researcher recommends the conduct of an extensive training program appropriate to teachers' teaching experience especially in handling their respective school's information system.

Key Words: Enhanced Basic Education Information System-Learners Information System, Perceived Extent of Implementation, Teaching Experience

Background of the Study

Information technologies and other aspects of digital culture have changed the ways people live, work, play, and learn in the 21st century. An article published by ECPI University (2020), articulated the importance of such technology, especially in the fast delivery of the necessary information, aiding in better organizational decisions and courses of action. According to Demir (2006), information technologies such as information systems serve as the bloodline in the continuous advancement of information exchange among many countries worldwide. The top reasons for using information systems are to improve work effectiveness by processing information, managerial effectiveness by meeting information needs, and competitive superiority by directing strategies (Yuen, Law, & Wong, 2003). In the context of education, some academic institutions utilized information systems to "digitalize their services like admission, evaluation, examination, provisional mark memo, submission of assignments, and even attendance of students and teachers" (Sahebrao & Bajranglal, 2019, p. 23). In general, the use of information systems provides a robust mechanism among schools to rethink and redesign their educational systems and processes, given the fast processing of data which will lead to quality education.

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Unfortunately, despite these extensive efforts to support teachers by integrating information and communication technologies (ICT) into their classroom practice, several researchers have reported the enormous challenges teachers face in using IT-based tools (Pozas & Letzel, 2021). In addition, Sangrà and González-Sanmamed (2010) unveiled that most educators are less confident in utilizing ICT tools to promote the development of more complex educational processes in the documentation, evaluation, and organization of data. Similarly, Robertson (2003) reported that "successful schools represented only a very small fraction with available electronic facilities and that most teachers are left largely on their own as they struggle to integrate technology into their curricula" (p.323). The findings of Robertson (2003) highlighted the role of teachers and administrators in gaining adequate guidance and relevant opportunities for exploration and full implementation of ICT tools in the school. Hence, obtaining the skills and competence in gathering, processing, transmitting, and storing of information are essential competencies of teachers for the quality of tasks performed in the organization.

The annual learners' registration and encoding of learners' information have been two of the most common problems in the school management system, which are rooted in the schools' paper-based processes (Anjani, 2019). Other factors identified by Hanior, Achor, and Gire (2019) include fire outbreaks, flooding, pests and rodents, and improper storage, among others. All these are related to poor job discharge of the assigned personnel. In the Philippines' public basic education setting, the registering and updating of students' records is mostly assigned to teaching personnel, who may be a subject teacher or a class adviser, due to the minimal number of non-teaching staff, especially among barangay or small-size schools. These problems directed the Department of Education to develop an electronic information system that manages schools' data, including learners' personal information up to schools' infrastructure and resources, widely known as the Enhanced Basic Education Information System or EBEIS (Department of Education, 2015). One of its most utilized facilities is the Learners' Information System (LIS) where teachers can encode learners' details and update their annual statuses. Unfortunately, Llego (2018) mentioned that the most misused facility is noted for erroneous data entries among teachers/LIS in-charge.

Notably, the Asian Development Bank (2020), in their review of the country's monitoring and evaluation system, revealed that "human resources and technical capacity are not aligned with reporting requirements and that DepEd's institutional capacity is inadequate for the development and maintenance of various information systems" (p. 5). Identified as a fifth-class municipality in the province of Eastern Samar, the San Julian district is one of the school districts in the schools division of Eastern Samar with teachers experiencing problems in maneuvering the Department of Education Learners Information System (LIS) aside from the fact that most teachers cannot submit a report on time (Organista, 2018). The Rsearcher, being an LIS in-charge of their school, noted several problems, including multiple LRNs of students, accidental enrolment of a student not included in the teacher's master list, failed enrolment due to data issues, erroneous data entry, and the compounding issue of online versus actual data discrepancies, which delay information sharing, data extraction, reporting and submission, and electronic delivery to higher end-user offices. In the context of Monitoring and Evaluation (M&E) sharing, the DepEd district of San Julian is beseeched with delays in the turnout of reports and deliverables, including M&E-related data reported regularly. These could be attributed to some extent to the implementation parameters as outlined in the LIS guidelines.

The absence of empirical data on the underlying factors in the implementation of DepEd's Enhanced Basic Education System facilities, specifically on the LIS among teachers/LIS in-charge, prompted the Researcher to conduct this correlational research and look into the socio-professional variates that may influence the EBEIS-LIS implementation in the San Julian district of the schools division of Eastern Samar during the school year 2020-2021. The findings of this research will serve as a basis for developing a training program or project proposal that is aimed at improving the mechanisms of the present information system.

Framework of the Study

This study finds the following theoretical underpinning relevant in understanding the researcher's assumptions.

Ajzen's (1991, as cited by Nueva, 2019) theory of planned behavior suggests, a number of predictors of an individual's attitude towards technology. Existing related studies reveal that age, years of stay in school, and grade level assignment were found to have a significant association with these predictors. For instance, Cavas et al. (2009) conducted a study about the attitude of science teachers towards Information and Communication Technologies (ICT) in education, which showed that younger teachers who have considerable experience of using technology have a better appreciation of its integration into education than their counterparts.

Madon (2000) proposed a stable relationship between the Internet and developing a person's socio-economic development, suggesting that the Internet has a primarily positive impact on four main factors: economic growth, as measured by productivity; social well-being, including health, education, and poverty alleviation; political well-being, as measured by democracy; and physical well-being, as measured by sustainable development. Madon emphasizes the importance of intermediary institutions, such as government actions, that help the Internet's impact on socio-economic development.

The Partnership for 21st Century Skills' (2005) framework includes Learning and Innovation Skills, Information, Media and Technology Skills, and Life and Career Skills. In order to cultivate 21st Century Skills, according to Windschitl (2009) in his study on teacher readiness, there should be active learning opportunities, practice, and evidence of student quality learning. This includes both modern and innovative assessment methods for the twenty-first century. Hence, the inclusion of professional development parameters in the present study.

The Developed Program Theory of Funnell and Rogers (2011) explains how an intervention such as a project, a program, a policy, or a strategy is understood to contribute to a chain of results that produce the intended or actual impacts. It can include positive impacts which are beneficial and negative impacts which are detrimental. It can also show the other factors which contribute to producing impacts, such as context and other projects and programs. Furthermore, the said theory can be used to provide a conceptual framework for monitoring, evaluation, or an integrated monitoring and evaluation framework. It can be a very useful way of bringing together existing evidence about a program, and clarifying where there is agreement and disagreement about how the program is understood to work, and where there are gaps in the evidence. It can be used for a single evaluation, planning cluster evaluations of different projects funded under a single program, or to bring together evidence from multiple evaluations and research (Funnell & Rogers, 2011).

Implementation of the MIS in the different public schools in the country, including how it is monitored and evaluated, is governed by several key indicators viewed to be indicative of how these variates influence the

success of the implementation process at the school level. These variables are: manpower requirements, method of implementation, and materials for implementation. The Department of Education (2015) suggested that the success of EBEIS-LIS implementation at the school level is believed to be influenced by manpower, methods and processes, and material factors each scaled by a ten-point indicative criterion.

Hence, these theories addressed the gaps in the speed and accuracy of the recording of the learners' information. Therefore, there must be a careful evaluation of the extent by which these innovations are being implemented, monitored and evaluated in the various schools by the Department of Education.

Methodology

The researcher employed a descriptive-correlational research design in assessing the respondents' profiles as variates of their perceived extent of the Enhanced Basic Education Information System-Learner Information System (EBEIS-LIS) in the district of San Julian, Schools Division of Eastern Samar during the school years 2020-2021. Part 1 of the study focused on determining the respondents' profile in terms of age, sex, civil status, highest educational attainment, number of years in teaching, and the highest level of training on EBEIS-LIS. Likewise, the Researcher examined the respondents' perceived extent of EBEIS-LIS implementation in terms of manpower requirements, method of implementation, and materials for implementation. *Afterward, correlation analysis was conducted to determine the significance of the relationship between the respondents' perceived extent of* EBEIS-LIS *implementation and each of their profile variates in terms of* age, sex, civil status, highest educational attainment, number of years in teaching, and the highest level of training.

The respondents of this study are the elementary grade teachers/EBEIS-LIS in-charge in the 13 public elementary schools in the district of San Julian, Schools Division of Eastern Samar. This involved all the 87 pre-identified elementary grade teachers, EBEIS-LIS in-charge of a school in the said district, a regular-permanent employee and would agree to be part of the study. Majority of the respondents came from San Julian Central Elementary School (n = 11, 12.64%), followed by teachers from San Isidro Elementary School (n = 9, 10.34%). While only one teacher is assigned to manage the EBEIS-LIS account of Layog Elementary School. Due to the minimal number of identified participants, the Researcher found it necessary to utilize total enumeration or universal sampling, tapping the prospect-respondents who are public elementary school teachers in the said locale and will meet the inclusion criteria set by the Researcher.

The study utilized a researcher-made survey questionnaire to capture the relevant information to answer the specific research objectives. Part I of the questionnaire was a checklist-type survey with items consisting of the respondents' profile in terms of their age, sex, civil status, highest educational attainment, number of years in teaching, and highest level of training. *In this part of the questionnaire, the respondents were asked to fill in the needed information on the line spaces provided in each item and place a checkmark (/) on the appropriate line spaces of their answers. Part II of the questionnaire was a Likert-scale-based assessment reflective of the respondents' perceived extent of* EBEIS-LIS *implementation. This part was divided into three parts: manpower requirements, method of implementation, and materials for implementation. Each part consisted of 10 statement indicators, with the following five-point scale to quantify the responses of the teacher-respondents: 5 for Very Highly Implemented (VHI), 4 for Highly Implemented (HI), 3 for Moderately Implemented (MI), 2 for Fairly Implemented (FI), and 1 for Not Implemented (NI).*

Since the questionnaire is self-structured, it was validated in terms of its content and reliability through expert analysis and the Internal Consistency Method using Cronbach Coefficient Alpha. A copy of the questionnaire was submitted to the Research Adviser as well as to the Research Advisory Committee for expert analysis as to its content. After their comments and suggestions were incorporated, the questionnaire was finalized and pilot tested among 15 teachers in the District of Sulat, Schools Division of Samar. It has the same characteristics as a municipality and is a neighboring locality of San Julian. An overall Cronbach alpha value of 0.87 showed that the material is acceptable to be used in this undertaking.

The data gathering proceeded after all letters requesting approval to conduct the study were given by concerned authorities. At the outset, a letter requesting permission to conduct the present research was secured from the Schools Division Superintendent of the Schools Division of Eastern Samar. Upon the approval by the said authority, separate letters requesting approval to conduct the study were submitted to the Public Schools District Supervisor of the District of San Julian, and the school principals of the 13 elementary schools in said District. When the conduct of the study was approved in these schools, the survey was conducted involving the elementary grade teachers in the District of San Julian.

Finally, the Researcher proceeded with the tabulation, computation, analyses and interpretation of data. This study followed the appropriate research ethics guidelines. Consent forms were given and collected from the involved participants, and a permit from government sectors directly concerned in this investigation, was obtained. The respondents were assured that the data would be kept confidential and shall not be used for any legal action against them.

The data was tabulated, organized, analyzed and interpreted with the use of descriptive as well as inferential statistical tools, including frequency count, percentage, median, Pearson's Product-Moment Coefficient of Correlation (Pearson's r), and Cramer's V test at 0.05 level of significance.

Result And Discussion

Profile of the respondents

The first objective focuses on determining the profile of the respondents in terms of age, sex, civil status, educational attainment, teaching experience, and training level related to EBEIS-LIS, using frequency count and percentage. The results are presented here [inTable -2 below].

In terms of age, 33 respondents are young adults whose age range is between 31 and 40 years old. This is followed by middle-age adults (n = 25, 28.70%), and fairly young respondents (n = 14, 16.10%). While only 2.3% or two (2) teachers are in their late years and are qualified for the early retirement program among government employees. A contrasting age trend was documented by Merillo and Domingo (2019) and Kiboro's (2012) evaluation of teachers' ICT integration in the classroom setting, respectively, noting that most teachers who are well-adept in the use of technology are in the age range of 21 to 30. This implies that the assigned LIS coordinators in the San Julian district are highly populated by young adults who are expected to be mature enough in dealing with matters concerning the school's data management. Likewise, it shows the high regard given to these teachers with respect to their skills and the practice of nepotism in the educational setting. Furthermore, teachers who have amassed competence and confidence among their colleagues are entrusted with such huge responsibility of encoding learners' information, approving requests for transfer in and out, and other tasks related to DepEd's information system.

In terms of sex, 77 respondents are female teachers, while only 10 are male teachers who are handling their respective school's EBEIS-LIS accounts. Similarly, Bello (2009) found that the majority of Elementary teachers are female, while Moses, Admiraal, and Berry (2016) reported more female than male student–teachers to be highly androgynous. Though no significant difference was found, Alufohai and Ibhafidon (2015) revealed that female teachers' learners performed better than male counterparts. This implies that the majority of teachers who are specially assigned to work on the school EBEIS-LIS accounts, are female.

In terms of civil status, 66 respondents are married, followed by 19 teachers who are single, and 2.3% are widowed. Zabala and Lachica (2018) unveiled that the majority of elementary teachers are married. Similarly, Alufohai and Ibhafidon (2015) found that most learners learned better among married teachers who can significantly differentiate their English Language performances. In contrast, findings from Abarro (2018) study revealed a number of single teachers who are greater in number and performed better in their profession than the married ones.

In terms of educational attainment, 63 respondents or 72.4% of the total samples hold units leading to Master's degree, followed by 16 teachers who are bachelor's degree holders. Notably, 6.3% of the total respondents are Master's degree holder, while only two (2) respondents are currently earning units leading to a doctorate degree. Zabala and Lachica (2018) reported that most elementary school teachers are master's units' earners. Similarly, Kadtong et al. (2017) shared the same finding from a national survey. These results imply that the respondents tried to pursue professional development programs such as that being offered by graduate schools to be promoted to higher position or rank in teaching. Also, the results on graduate education imply the relevance given by teachers to their academic intentions.

In terms of teaching experience, 49 respondents are veteran teachers, having earned more than ten (10) years of teaching experience. This is followed by 20 semi-veteran respondents, while only 18 respondents are neophytes. Similarly, Oyewole (2011) found that less than 50% are teachers with more than ten years in the teaching profession. The result is aligned with the findings of a national survey conducted by Kadtong et al. (2017), revealing that most teachers have earned 11 to 15 years in service. The result implies that teachers who have earned much teaching experience termed veteran teachers are assigned highly technical tasks such as maneuvering the schools' learner information system. Likewise, collegiality is considered one factor in assigning teachers with such responsibility as it will require good riddance among their co-faculty members and expertise in handling highly advanced soft and hard tools.

Regarding training level related to the implementation of the Enhanced Basic Education Information System-Learner Information System (EBEIS-LIS), 30 respondents or 34.5% have attended training at the school level, followed by 28 respondents or 32.2% who were sent to the district level of EBEIS-LIS-focused training. Surprisingly, only two (2) respondents have undergone regional-based capacity building. The result shows the high regard given to teachers' professional development starting from the grassroots, leading to higher productivity in the future. These results are aligned with the work of Khan, Khan and Khan (2011), in their research paper, which suggests that "in today's competitive business world the most important factor is capacity building and professional development, concluding that for both employees and the organizations, efficiency and the effectiveness is increased only by training" (p.38). This is in contrast to the findings of Kulshrestha and Pandey (2013), revealing that the teachers in the upper primary elementary levels have little academic and professional training.

Table 2 Profile of the respondents

Profile indicators	Frequency	Percent
Age		
Fairly young (21-30)	14	16.1
Young adult (31-40)	33	37.9
Middle age (41-50)	25	28.7
Early late years (51-60)	13	14.9
Late years (61 and above)	2	2.3
Sex		
Male	10	11.5
Female	77	88.5
Civil status		
Single	19	21.8
Married	66	75.9
Widowed	2	2.3
Educational attainment		
Bachelor's degree holder	16	18.4
With units leading to master's degree	63	72.4
Master's degree holder	6	6.3
With units leading to doctorate degree	2	2.3
Doctorate degree holder	0	0
Teaching experience		
Neophyte (1 – 5)	18	20.7
Semi-veteran (6 – 10)	20	23
Veteran (More than 10 years)	49	56.3
Attended training related to EBEIS-LIS		
School	30	34.5
District	28	32.2
Division	26	29.9
Regional	3	3.4

Respondents' perceived extent of EBEIS-LIS implementation in terms of manpower requirements

The second objective focuses on determining the perceived extent of EBEIS-LIS implementation of its three parameters, namely (1) manpower requirement, (2) methods of implementation, and (3) materials for implementation using median, a measure of central tendency. The results are presented as follows.

The ten (10) indicators of manpower requirement are aggregately perceived to be "highly implemented" in terms of the manpower requirements in maneuvering the Department of Education's Enhanced Basic Education Information System (AM = 4). Specifically the "Learner's Information System in terms of self-paced learning on LIS and EBEIS" (n = 48), "graduate degree programs where education management information systems are discussed" (n = 46), and the "provision of user-friendly guides and simulation activities on ICT tools" (n = 44) are its top indicators, while "trainings/seminars and workshops on ICT for teachers" got the least number of responses among the ten highly implemented indicators (n = 34).

The results are in accordance with the statement of Nwankwo (2020), stating "the fast-changing environment of education brought about by rapid technological advancement has created a wide gap between what the school provides and what society demands" (p.400), and Balcita and Palaoag (2020) "the need to adapt to the latest trends in IT will help improve the quality of education and handling various activities of the school" (p.455). Moreover, the results are coherent to Cuartero and Role's (2015) findings' unveiling that the schools are highly effective in implementing schools' management information systems.

This implies that the conduct of self-paced trainings, attendance to graduate programs, and the availability of user-friendly guides improve manpower capacity of the schools' EBEIS-LIS in-charge, especially in the use of ICT tools embedded in the information system provided by the Department of Education.

Table 3.1 Respondents' perceived extent of EBEIS-LIS implementation in terms of manpower requirements

Indicators of manpower requirements	5	4	3	2	1	Median	Interpretation
ICT-related short-term courses for teachers	37	34	14	1	1	4	Highly Implemented
Trainings/seminars and workshops on ICT for teachers	40	33	11	3	0	4	Highly Implemented
School-Based Learning Action Cells (SLAC) sessions for teachers on LIS, EBEIS and ICT-related topics	34	39	9	5	0	4	Highly Implemented
Hands-on workshops on LIS and EBEIS management for teachers	33	41	10	2	1	4	Highly Implemented
LIS, EBEIS user-friendly guides, manuals and media-based tutorials.	27	44	14	0	2	4	Highly Implemented

(*Continued*)

Table 3.1	Respondents' perceived extent of EBEIS-LIS implementation in terms of manpower requirements—cont'd						
Simulation activities on ICT tools handling from TESDA and other similar technical agencies	20	44	21	0	2	4	Highly Implemented
School one-on-one coaching and mentoring on how LIS and EBEIS must be used and maintained by teachers	33	34	17	2	1	4	Highly Implemented
Requisite National Certification from accredited agencies on NC Computer Software use and other similar TESDA-related courses	17	41	25	2	2	4	Highly Implemented
Graduate degree programs where education management information systems are discussed	17	46	20	3	1	4	Highly Implemented
Self-paced learning on LIS and EBEIS	17	48	20	1	1	4	Highly Implemented
Aggregate Median (AM)						**4**	**Highly Implemented**

Respondents' perceived extent of EBEIS-LIS implementation in terms of methods of implementation

The second parameter regarding the respondents' perceived extent of EBEIS-LIS implementation refers to methods of implementation to which the result is shown in Table -3.2 below.

All the ten (10) indicators on the methods of EBEIS-LIS implementation are perceived to be "highly implemented" (AM = 4). Looking closely, the top indicators under this evaluation include "hierarchical implementation where the guidelines through regimented chain of command" (n = 48), "piecemeal implementation where the guidelines of the EBEIS-LIS are implemented" (n = 47), and "written documentation of the implementing rules and regulations" (n = 45). While "provision of technical assistance by trained personnel to teachers to ensure online updating of EBEIS-LIS" got the lowest number of responses (n = 39).

The results adhere to the findings of Hendriks (2012), indicating that the availability of comprehensible guidelines may make the implementation of an information system more successful. Moreover, it supports Coglianese and Lazer's (2003) conclusion that "management-based regulation requires a far more complex intertwining of the public and private sectors which constitutes good management" (p.692). Likewise, Yuen, Law, and Yong (2003) mentioned that the use of information systems could boost schools' efficiency by making data processing easier; efficient in meeting information needs; and boosting competitiveness by improving holistic strategy, while Drake et al. (2001) regarded evidence-based practices of an organization as a result of well-established guidelines and procedures.

This implies that the availability of clear implementing rules and regulations regarding how to maneuver the learner information system and the manual troubleshooting of issues provides effective indicators of EBEIS-LIS implementation in the San Julian district.

Table 3.2 Respondents' perceived extent of EBEIS-LIS implementation in terms of methods of implementation

Indicators of methods of implementation	5	4	3	2	1	Median	Interpretation
Top-Down Approach where the directive comes from the DepEd Central Office down to the local schools	26	43	13	4	1	4	Highly Implemented
Phase implementation where several phases happen during the whole duration of the program.	21	44	17	4	1	4	Highly Implemented
Piecemeal implementation where the guidelines of the EBEIS-LIS are implemented	20	47	18	1	1	4	Highly Implemented
Implementation after education and information campaign are made among the recipients.	28	41	16	1	1	4	Highly Implemented
Written documentation of the implementing rules and regulations	18	45	19	4	1	4	Highly Implemented
Hierarchical implementation where the guidelines through regimented chain of command	16	48	20	2	1	4	Highly Implemented
Monitoring on efficient and timely submission of deliverables	30	41	15	1	0	4	Highly Implemented
Provision of Technical Assistance by trained personnel to teachers to ensure online updating of EBEIS-LIS	33	39	13	2	0	4	Highly Implemented
Media networking where social media are tapped for potential troubleshooting of problems	23	44	18	1	1	4	Highly Implemented
Holistic implementation of monitoring and evaluation procedures	28	42	15	1	1	4	Highly Implemented
Aggregate Median (AM)						**4**	**Highly Implemented**

Respondents' perceived extent of EBEIS-LIS implementation in terms of materials for implementation

The third parameter regarding the respondents' perceived extent of EBEIS-LIS implementation revolves around materials for implementation to which the result is shown in Table- 3.3 below.

All the ten (10) indicators on materials for EBEIS-LIS implementation are perceived to be "highly implemented" (AM = 4). After examining the actual data as shown in the table, the top indicators under this evaluation include "observation checklist on how teachers fare in using EBEIS-LIS and reports submission turnouts" (n = 42), "venues, conference areas, and other locations where technical working group of school EBEIS-LIS coordinators can convene about updates" (n = 41), and "software copying of EBEIS-LIS for individual teachers with laptop and home computers" (n = 40). While "DepEd Memoranda and other office orders for information dissemination" got the lowest number of responses (n = 36) under this aggregate category.

The results support the contentions of Okyere-Kwakye (2013) that "work environment of teachers is one of the key propensities for quality teaching" (p.130). Likewise, Bibi and Khan (2019) opined that the physical infrastructure needs to be taken as a serious issue because it precisely affects the teachers as well as students. A different result was reported by Yusuf, Maina, and Dare (2013), revealing that "most teachers were not competent in the use of these facilities as the management of these facilities requires training and re-training" (p.21).

This implies that the venues for conferences, software and computer facilities, and DepEd orders ready for dissemination are highly needed materials for the full implementation of EBEIS-LIS among public elementary schools of the San Julian district. Finally, the government should provide more ICT facilities to augment technological capacity in every elementary school.

Table 3.3 **Respondents' perceived extent of EBEIS-LIS implementation in terms of materials for implementation**

Indicators of materials for implementation	5	4	3	2	1	Median	Interpretation
Trainings/seminar modules, manuals, pamphlets and other printouts	36	37	11	3	0	4	Highly Implemented
EBEIS- LIS toolkits, including kits on how to operate computers, laptops, netbooks, and other installable digital tools	33	38	13	2	1	4	Highly Implemented
Radio, television, print and other media with instructional materials	28	39	15	4	1	4	Highly Implemented
Social media sites such as Facebook, YouTube and others with tutorial or do-it-yourself (DIY)	29	38	18	1	1	4	Highly Implemented
Bulletin boards for paper announcements	28	37	17	4	1	4	Highly Implemented
Venues, conference areas, and other locations where Technical Working Group of School EBEIS-LIS coordinators can convene about updates	26	41	18	1	1	4	Highly Implemented

(*Continued*)

Table 3.3	Respondents' perceived extent of EBEIS-LIS implementation in terms of materials for implementation—cont'd						
DepEd Memoranda and other office orders for information dissemination	35	36	14	1	1	4	Highly Implemented
Practice guides for teachers to have hands-on experience	34	37	14	1	1	4	Highly Implemented
Software copying of LIS and EBEIS for individual teachers with laptop and home computers	30	40	15	1	1	4	Highly Implemented
Observation checklist on how teachers fare in using EBEIS-LIS and reports submission turnouts.	26	42	17	1	1	4	Highly Implemented
Aggregate Median						**4**	**Highly Implemented**

Test of respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of manpower requirements

The third objective focuses on testing the respondents' profile as significant variates of *their perceived extent of EBEIS-LIS implementation* in terms of the three parameters, namely (1) manpower requirement, (2) methods of implementation, and (3) materials for implementation via Spearman rho and Point-biserial correlation tests.

Among the six (6) profile variates, sex (r_{pb} = -.32), civil status (r_{pb} = .42), and teaching experience (rho = -.23) have shown moderate/weak correlation. Civil status has shown a direct correlation, while sex and teaching experience have shown inverse correlations as indicated by their negative results. However, only civil status (p = .03) and teaching experience (p = .03) bear computed p-values that are lower than the 0.05 level of significance. Hence, there is ample evidence to reject the null hypotheses and declare that civil status and teaching experience significantly vary on the respondents' *perceived extent of EBEIS-LIS implementation in terms of manpower requirement. The results share the same findings of* Halford et al. (2001), who predicted differential effects of a behavioral relationship education program on high-risk and low-risk couples. In contrast, the results from the multivariate analysis of variance on the influence of marital status on teachers' self-efficacy conducted by Odanga, Aloka & Raburu (2015) revealed that marital status had no statistically significant influence on teachers' self-efficacy. Also, Edet, Bullem, and Okeme (2015) found educational attainment as a significant factor associated with teachers' utilization of development information, which opposes the findings in this study.

The results imply that variations in civil status and teaching experience affect their perceived extent of manpower requirement in the implementation of the EBEIS-LIS. Hence, the DepEd should consider providing manpower requirements such as the tools and ample human resources to schools, especially among those with less teaching experience and new in the field of information system management.

Table 4.1 Test of respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of manpower requirements

Profile indicators	Manpower requirements		Decision
	Result	Interpretation	
Age	rho = .00	Negligible	Fail to Reject
	p = .86	Not significant	
Sex	r_{pb} = -.32	Moderate	Fail to reject H_0
	p = .31	Not significant	
Civil status	r_{pb} = .42	Moderate	Reject H_0
	p = .03	Significant	
Educational attainment	rho = -.02	Negligible	Fail to reject H_0
	p = .91	Not significant	
Teaching experience	rho = -.23	Weak	Reject H_0
	p = .03	Significant	
Training level on EBEIS-LIS	rho = .11	Negligible	Fail to reject H_0
	p = .27	Not significant	

α = .05

Test of *respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of methods of implementation*

As shown in Table- 4.2, only sex (r_{pb} = -.33), civil status (r_{pb} = .43), and teaching experience (rho = -.24) among the six (6) profile variates have shown moderate/weak correlation to the respondents' perceived methods of implementing EBEIS-LIS. Civil status had shown a direct correlation, while sex and teaching experience have shown inverse correlations as indicated by their negative results. However, only civil status (*p* = .03) and teaching experience (*p* = .03) bear computed p-values that are lower than the 0.05 level of significance. Hence, there is ample evidence to reject the null hypotheses and declare that civil status and teaching experience as significant variates on the respondents' *perceived extent of EBEIS-LIS implementation in terms of methods of implementation. The result is similar to the findings of Kloppenborg, Tesch and Chinta (2010) about experience and competence as significant predictors in the success of programs' implementation.*

The result implies the need to provide clear instructions and troubleshooting guide to teachers with less experience and even those who are not much familiar with the facilities of the DepEd's EBEIS-LIS. Proper information dissemination should also be provided for them to be guided properly.

Table 4.2 Test of respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of methods of implementation

Profile indicators	Methods of implementation		Decision
	Result	Interpretation	
Age	rho = .00	Negligible	Fail to Reject
	p = .83	Not significant	
Sex	r_{pb} = -.33	Moderate	Fail to reject H_0
	p = .29	Not significant	
Civil status	r_{pb} = .43	Moderate	Fail to reject H_0
	p = .03	Not significant	
Educational attainment	rho = -.03	Negligible	Fail to reject H_0
	p = .86	Not significant	
Teaching experience	rho = -.24	Weak	Reject H_0
	p = .03	Significant	
Training level on EBEIS-LIS	rho = .12	Negligible	Fail to reject H_0
	p = .25	Not significant	

α = .05

Test of respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of materials for implementation

Among the six (6) profile variates, sex (rpb = -.32), civil status (rpb = .42), and teaching experience (rho = -.24) have shown moderate/weak correlations. Civil status has shown a direct correlation, while sex and teaching experience have shown inverse correlations as indicated by their negative results. However, only civil status (p = .03) and teaching experience (p = .03) bear computed p-values that are lower than the 0.05 level of significance. It is declared that civil status and teaching experience as significant variates on the respondents' *perceived extent of EBEIS-LIS implementation in terms of materials for implementation. The result shares the same view of Okello-Obura and Kigongon-Bukenya (2008), who emphasized the need for proper* financial budgeting for important educational tools such as the use of Learner Management System (LIS) to survive the closure in the global reorganization. In relation to the actual findings, Shrestha (2008) said that the "proper guidance and lack of professional person along with the inadequate collection in the material as well as insufficient networking computers have been the main drawbacks on students exploring the resources" (p.5).

The result implies the need to provide ample materials such as laptops and provisions for working internet connectivity to ensure good management and safekeeping of learners' information in the provided online database.

Table 4.3 Test of respondents' profile as significant variates of their perceived extent of EBEIS-LIS implementation in terms of materials for implementation

Profile indicators	Materials for implementation		Decision
	Result	Interpretation	
Age	rho = .00	Negligible	Fail to Reject
	p = .83	Not significant	
Sex	r_{pb} = -.32	Moderate	Fail to reject H_0
	p = .31	Not significant	
Civil status	r_{pb} = .42	Moderate	Fail to reject H_0
	p = .03	Not significant	
Educational attainment	rho = -.01	Negligible	Fail to reject H_0
	p = .95	Not significant	
Teaching experience	rho = -.24	Weak	Reject H_0
	p = .03	Significant	
Training level on EBEIS-LIS	rho = .11	Negligible	Fail to reject H_0
	p = .27	Not significant	

α = .05

Overall, the findings revolved around teaching experience as a significant profile variate affecting the effective implementation of the Department of Education's present information system. Thus, it implies the need to provide proper capacity building to them so they can maneuver the system properly and submit reports on time.

Conclusion and Recommendations

Based on the findings of the study, the following conclusions are offered. Most of the respondents are young adult, married female teachers who have earned units leading to a Master's degree and veterans in the field of teaching. They have attended district-based training in implementing the Department of Education's Enhanced Basic Education Information System. The respondents perceived high extent of Enhanced Basic Education Information System – Learner Information System implementation in terms of manpower requirement, methods of implementation, and materials for implementation. This shows effective data management and submission of needed reports online among the respondents. Finally, teaching experience significantly variated the respondents' perceived extent of the enhanced basic education system – Learner Information System implementation. The results magnified an inverse characteristic of their variation, showing the need to mass train novice and beginning teachers on the proper use of the information system.

From the conclusions, the following are recommended:-- to propose an extensive training program appropriate to teachers' teaching experience especially in handling their respective school's information system, to

conduct an in-depth exploration via a comparative or regression framework, the impact of the profile variates to their perceived extent of EBEIS-LIS implementation, and that future researchers shall focus their studies on other factors that could affect the perceived extent of EBEIS-LIS implementation.

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Reflective Pedagogy for Engaging Prospective Mathematics Teachers

Haneet Gandhi

The Central Institute of Education (C.I.E), University of Delhi, India[1] was perhaps the first institute to recognise the need of educating teachers before they enter the profession of teaching. Ever since its inception, CIE pioneers in taking a lead in all education related areas which are critical, essential and meet the futurist vision. This ideology gets reflected in all curricular and co-curricular aspects of CIE. One such vision can be seen in the way CIE envisioned discipline-specific pedagogy in the two-year B.Ed.. Programme.

In the 2015, when a transition was made to the two-year Bachelor's programme of Education (B.Ed - two year), CIE took a visionary decision to have two stream-based pedagogy courses rather than having a subject-based pedagogy course. To elaborate, it means, every student enrolled in the Two-year B. Ed. programme at CIE, studies two pedagogy courses which orients her/him to the broader perspectives of the disciplines. In one of the pedagogy courses, students[2] study the nuances related to the nature and philosophy of a stream and in the other, details of teaching a subject at the school level is dealt with. Switching to stream-based pedagogy courses has given a wider outlook to perceiving school education.

Teaching these stream-based pedagogy courses to prospective teachers is further a unique and worthwhile aspect which needs to be talked about. In the case of prospective teachers there is an element of revisiting the disciplinary knowledge they are already familiar with. When we teach children in school our objective is to teach unfamiliar, new content in interesting ways, whereas when it comes to teaching prospective teachers two aspects need to be kept in mind- one, related to reorienting the pre-service teachers to the school content they have already studied; and second, to teach them the pedagogies they can adopt for transacting that content in an effective and interesting manner to school children. In a B.Ed. programme, we try to amalgamate these two aspects in a very short period of time. Within a period of two years, the prospective teachers are required to revisit their subject related content and to also learn discipline-specific pedagogical strategies.

Covering all these is a challenging task for any teacher educator. In this paper, I am going to discuss some of the teaching practices that most of the pedagogy teacher educators have adopted to combat this challenge. In this article, the focus will be on sharing the teaching strategies which are adopted particularly with the B.Ed. Mathematics Pedagogy Courses at CIE. The paper will elaborate on the practices that have been proved to be effective in a) re-orienting the prospective mathematics B.Ed students to the mathematical content they are already familiar with, and b) helping them understand the tenants of teaching school mathematical content to children.

1. Central Institute of Education is now known as Department of Education
2. In this paper, 'students' means pre-service or prospective teachers (or student-teachers) who are enrolled in the Pedagogy of Mathematics course of B.Ed. The term 'children' is used for pupils studying in schools.

Professor Haneet Gandhi, Department of Education (C.I.E), University of Delhi

The Context

Students who join a teacher education programme are already Bachelors or Masters in a discipline; which means, we may easily presume that the B.Ed. students are comfortable in handling their discipline-specific content knowledge. However, over the years, I have realised, particularly in the case of mathematics, that often these students lack in their mathematical content knowledge. Many times, we see students coming to B.Ed. with a shaky knowledge of mathematics. Over the years, they have been conditioned to seeing only the procedural aspect of mathematics. They associate doing mathematics to memorising formulae and finding answers only. Being a Teacher Educator of Mathematics, I find it a challenge to break this myth. They need to be shown merit in building conceptual knowledge over procedural knowhow. With every batch, I foresee a huge challenge of re-inducting my students to the already known content but with a different perspective. I hold my classes with an objective of igniting their thoughts and pushing them to self-analyse their past learning experiences. Gandhi (2016) opines that teachers (both in-service and pre-service) need to be given avenues for delving in tasks in a mathematical way. Within their training programmes, they must be engaged in acts of conjecturing, communicating, reasoning, debating, and making connections. The experiences must be organised in a meta-knowledgable way which is analogous to the pedagogical content knowledge required at school level (Chick & Beswick, 2013).

Some Practices of Teaching Prospective Mathematics Teachers

In this section, I will share some of the teaching strategies which I use in my B.Ed. Pedagogy of Mathematics course. In the two-year B.Ed. curriculum, there are two papers on Pedagogy of Mathematics. In one, the students study generic ideas related to what mathematical thinking is, how must children be taught, how children learn, aspects related to mathematics curriculum and assessment. In the second paper, they study the pedagogical content knowledge of various concepts. Most of the ideas shared below are related to re-orienting students to the school content knowledge, studied as part of the second paper of Pedagogy of Mathematics.

Research-based discussions

Education is a matter of building perspectives. There is nothing completely right nor anything totally wrong. It is, therefore, important to present multiple perspectives to the students so that they may see the arguments with a rational mind. The students must be presented with varied debates and deliberations to help them build an objective outlook. This is possible by sharing a wide variety of differentiated research-based ideas.

I plan my classes much in advance to select one or two research-based readings on a topic which would help me build the discourse in a meaningful manner. Care is taken to pick articles that present contrasting views on a topic. For example, teaching of fractions has always been a much celebrated area of research in the community of mathematics educators. Varied perspectives on how fractions should be taught have been shared by different researchers. It is a good idea to choose two research articles with contrasting recommendations on building the idea of fractions in the class.

The readings are given to the students much in advance, say at least two weeks prior to the discussion period. In the class time, the students come prepared with their arguments. They present the ideas expressed in the

research articles, share their own views and experiences in the context of the readings. The discourse gets strengthened with justifications and convincing statements. Often, students are seen quoting their learnings and relating to their past experiences. At times, they also reflect and candidly express if they were taught fractions in such creative ways. Towards the end of the discussions, they are asked to select a preferred way of teaching fractions to be supported with valid justifications.

At times, it is also a good idea to pick the tasks/questions from the research articles directly and administer them on the students. Such exercises help in knowing student's ideas, their beliefs, notions, and misconceptions related to that particular topic.

Using History of Mathematics

Within the training period of B.Ed students, it is important to make them open listeners, receptive to other's views and ideas. This is possible when the students themselves delve in the situations of getting mathematised. There is a need "to create situations for teachers to 'experience Mathematics' which, in turn, will strengthen their mathematical knowledge. It is these choices of experiences that make the subject memorable, one that is cherished lifelong" Gandhi (2016).

One of the ways of making students empathetic is to give them open-ended, research-based learning experiences. In our classes, we undertake a lot of examples from the history of mathematics. We talk about evolutions of concepts. Here's an illustration of how we handle the conceptual development of Hindu-Arabic system. To understand the Hindu-Arabic system, we begin by studying the numeration systems of various civilisations such as the Roman System, Egyptian System and Mayan System. The students are asked to identify the strengths and weakness of these numeration systems. Questions based on why a numeration system perished?, what conceptual ideas made a numeration system mathematical rigorous?, what makes the Hindu-Arabic system most popular and such are discussed.

Classes based on historical evolution of concepts are particularly very interesting and fruitful. In these classes the students get opportunities to reason, make arguments and conjectures, and platforms to convince their fellow classmates. All these acts are closely related to thinking mathematically. As such, one also get to see earlier ideas getting deconstructed with establishment of new profound understanding of some of the most elementary concepts.

Re-learning by conceptual challenging

Mathematics is subjected to a very chronic (mis) belief. It is believed that mathematics is all about memorisation of algorithms and finding answers to problems. The procedural outlook dominates the conceptual knowhow. With my B.Ed students, I try hard to break this myth. It is my earnest wish to bring them close to the conceptual underpinnings rather than following monotonous procedures mindlessly.

I know the students are familiar with the school mathematical content. They know what geometry, algebra, number system, trigonometry, probability etc are. They are abreast in solving questions in the content areas. They now need to learn effective pedagogies of these content areas. Therefore, to probe deeper into the foundational ideas of the content it is good to revisit the basic definitions. One example which I can state here is related to differentiating between fractions and ratio. Since the representation of fraction and

ratio are similar, students often lack in stating the conceptual difference between the two concepts. Posing questions which trigger a feeling of challenge among the students sets a very lively atmosphere in the classes. Cognitive challenges make students question their own understandings. They realise what they assumed they knew was actually unknown to them. Making a known unknown motivates them to explore, relearn and reflect on.

Another anecdote related to initiating cognitive challenge occurs when we do geometry. The prospective mathematics teachers are well versed with Euclidean Geometry. They have studied it in school as well as in their college courses. So, to redo Euclidean Geometry will be an extremely trivial thing to them. To keep up their interests, there is a need to evolve the pedagogy. While doing geometry I do not not talk of Euclidean Geometry because I know they will give me textbook based definitions. Instead, I pick Non-Euclidean Geometry and probe students to make analogies between the two geometries. We pick the fundamental assumptions of Non-Euclidean Geometry and make connections to discern what works and what doesn't work in both the geometries. By indulging in this exercise, the students not only get familiarised to Non-Euclidean Geometry, they also get avenues to hone their previous understanding and misconceptions related to Euclidean Geometry.

Such exercises make students empathetic towards their children's learning. They realise how learning a new concept is a hard endeavour that requires deeper digging.

Assignments

Giving assignments is also a very interesting task. The assignments are never decided by the teacher educator. The idea of an assignment emerges through a collective dialogue. During the discussion of a topic, we often feel a need to delve in it further. It is at this junction that we think of doing assignments. The need of assignments emerge from the topics under discussion. It is always contextualised. One can say, designing assignments in our classes happens in a very democratic way.

We not only decide the nature of the assignment but also the phases and timeline of completing it. The entire assignment is divided into phrases and every progress of students is monitored at each phase. The first phase is generally about getting to know students plan of approaching the assignment. In the subsequent phases they report their progress. This phased-out manner works like formative assessment. The students work on their trajectory of learning and en-route get guided by their friends. They incorporate the feedback to revise and resubmit the assignments.

Reflective Journal of the Teacher Educator

I also maintain a reflective journal. Every week I make a note of what I did in my class. These reflections help me plan the forthcoming classes. Each class is build on the strengths and learnings of the previous classes. I can, thus, say that every class is built on the learnings of earlier classes. The pedagogy evolves to adapt to the need of topic/content under discussion. For illustration, discussions in geometry classes will be very different from those that happen in the classes where we discuss philosophy of mathematics. Most times, the content-based teaching is usually done in a reflective mode, and for topics which are new to the students, such as philosophy of mathematics, it is fair to go in a lecture mode.

Conclusion

Teaching B.Ed. students involves dealing with adults who think differently and maturely. The challenge at this stage is of re-introducing the familiar concepts in an interesting way. If the act of re- familiarisation is not handled sensitively, it would make B.Ed classes dull and boring. It is about awakening one's thoughts in a reflective mode.

In most of our Pedagogy classes the students are bound to find elements of re-thinking, re-looking, re-knowing and re-conceptualising. The students are led to think critically to facilitate their own learning in a meaningful way. They reflect on their earlier ideas and build newer perceptions based on their past experiences. With B.Ed students, one of the effective teaching practices is to create routes that invite reflections on their past learnings and understandings.

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Barriers to Education in COVID-19 Pandemic: From the Lens of Government Schools' Students

Kanika

Abstract

COVID-19 pandemic led to the closure of schools due to lockdown in India. Under these circumstances, students were provided education online. This paper presents the barriers faced by the senior secondary students in online education in this pandemic. Telephonic interviews of three government school students were taken to explore their learning experiences of online education. Then, based on emerging themes from the interviews, a questionnaire was designed and administered to know their learning experiences of online education vis-à-vis digital devices, network connectivity, data availability, study environment, class attendance, live and recorded online classes, online assignments and study material. The sample size was 118 students out of which 84 were from humanities and 34 from the commerce stream. It became apparent from data analysis that lack of a personal device, poor network and no internet data affected their education. In the absence of a personal study room, their families cooperated in providing them a nice study environment. In learning, they missed out on spontaneous interaction with the teacher and classmates. Interaction time between teachers and students also dropped down. Low face to face interaction was a shortcoming too. They faced technical problems. The paper concludes with suggestions for the provision of a personal device, sufficient internet data availability and better network as the basic need to improve online education. Teaching-learning activities can be more interactive. Assignments can be more innovative and original. Amidst all this, the value of school-based education remains intact as it provides an educational environment that is much wider than mere teaching-learning transactions in online education.

Introduction

Extensive use of technology in education is mentioned as one of the fundamental principles in the National Education Policy 2020. Technology is suggested to be used for translation, teaching-learning different languages, popularize language learning, inclusion of differently-abled students, orientation of parents for home-based education, dissemination of learning material, study at their own pace, better learning experiences, better participation and learning outcomes, adult learning, educational processes, enhancement of learning, assessment, planning and administration, building education platforms and so on. This technology became the prominent mode of education during the COVID-19 pandemic. As the situation unfolded, the activities brought forward challenges faced in online education.

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Research Objectives

1. To explore the barriers faced by senior secondary government school students in online education especially English as a second language.
2. To analyse their experience of online education.

Delimitation

This study is delimited to students of a government school.

Research Approach

This is a mixed methodology study in nature. This type of study is useful when both qualitative and quantitative data and analysis methods are required for conclusion.

Tools

Firstly, in-depth interviews of three senior secondary government school students were taken. The respondents were asked a few closed ended and some open-ended questions to explore their experiences of online education vis-à-vis digital devices, network connectivity, data availability, study environment, class attendance, live and recorded online classes, online assignments and study material. Then, based on emerging themes from the interviews data, a questionnaire was designed and administered. 118 senior secondary students responded to it.

Sampling Technique and Sample Size

The sampling done for interview and questionnaire was purposive. Only three female students who are pursuing senior secondary education were interviewed to share their experiences who agreed to do so. They belong to the age group of sixteen to seventeen. Two of them belong to the humanities stream and one of them is from the commerce stream. The questionnaire was responded to by 118 students out of which 84 were from humanities and 34 from the commerce stream. All of them study English as a second language.

Data Collection Procedure

Telephonic interviews of these students were taken after school hours to collect data. Google Form was used to administer the questionnaire.

Translated Interviews of Three Senior Secondary Students

Student 1

She had a family smartphone. It was shared for study purpose with her brother who was also in XII class like her. Both of them attended classes on the same phone. If she had a personal phone, she would be able to attend all the classes and do all the assignments. Both of them had online classes at the same time. So, she was not able to attend all the classes. She missed a lot of classes due to this sole reason. Otherwise, her

overall experience of all classes was good. Internet connectivity was also good. One day, she was not able to attend her physical education class because her mobile data pack was over for which they paid Rs. 200/- per month. Since the class was on a YouTube channel, she was able to watch the recorded video later on but if she missed a live class such as on Google Meet, she was not able to do so. In later case, she got to know the topic taught in that class through her friends and then she read the concerned chapter from the textbook. She did not attend any tuition classes except for the subjects-accountancy and economics. She did self-study and got general guidance from her parents. She guided her younger brother, who studied in class X, in his studies. Between self-study and studying under the guidance of the teacher, she did notice some differences such as lack of immediate discussion of a problem or topic. She studied in a family room but the environment was peaceful enough to study.

She was able to comprehend the content of the classes on the YouTube channel. She did assignments given in classes over there. Since they discussed how to do those assignments, she was able to do those without any problem. She was able to read the presentation such as content in slides in the live classes on Google Meet. Sometimes, when she faced sound problem in these classes, she communicated orally or in writing in the chat box to her teacher. She was able to read the text-based recorded videos on Google Meet and found the sound clear enough to hear properly. A difference that she found between YouTube and Google Meet classes was that there was no option to clear their doubts in the former as compared to the latter option. The main difference between face-to-face classes in school and on Google Meet was the time limit of 40 minutes per period. They were not able to do much discussion due to the time limit. She found more time to discuss her problems in school time. Since students were not asked to turn on their videos during the live classes for their safety and to save collective data, this lack of face to face interaction felt awkward. Being able to see their teachers and classmates in the classroom and being around them turned the classes interesting. She was able to understand the study material since she had read all the chapters in English coursebooks before they were undertaken in the online classes. She read it right after her exams and just when the lockdown started. She had noted down points from it. She did not face any problem in doing chapter reading-based assignments since she had already read those chapters. She faced some problems in grammar. She attributed it to missing out on her classes. But there was no problem in reading, writing and listening assignments because she had attended those classes. She had joined Google Classroom. She had read eBook Flamingo and found it decent. Since the chapters were in English, she read the chapter in translation in Hindi. Lack of availability of personal phone or family phone during classes was the reason for missing classes. Classes in school are a better option because during online classes, all the communication was done on phone and not everyone was having a personal phone. So, all were not able to attend all of their classes. But some students had a personal phone and still did not attend classes or got themselves busy in some other tasks instead of paying attention to the topic studied in the online class. This was a misuse of resources.

Student 2

She found a lot of issues in online classes. Sometimes, she was not able to able to attend them due to class timings. Her four sisters also had classes around the same time. So, the time schedule was an issue. Sometimes, she had poor network. But she attended classes as much as possible. She found online classes quite good. She was able to understand the content. But classes in school had better face to face in person

interaction such as she felt during learning notice writing. One could not know that well on Google Meet about activities of others if camera is off. She was not able to concentrate that well in online classes because her sisters attended their classes at the same time in the same room which was distracting for her. Her three sisters who were in class 7th, 9th, 11th and she was in class 12th. They read the textbook to overcome this problem. They had a room which was shared by all the sisters for study purpose. They attended classes on two shared smartphones. When their father left for work, they fell short of a device. They had a Wi-Fi connection but poor network was an issue due to which they were sometimes disconnected from the classes. As a result, they had to join the same class twice. Sometimes, due to network issues, she had to move to the balcony to attend classes even during the summer season. Sometimes, the network was not available for hours or the entire day. Even when the hotspot of some other network-based device was used, the speed slowed down affecting their class attendance. If she missed her class, she would watch other videos on YouTube channels and then discussed it like a story during bedtime which would help her retain the content of a chapter. She attended all the classes on the YouTube channel. She found English classes such as one on advertisement on Education Directorate's YouTube channel more interesting in comparison to other subjects because they were more interactive. The teachers over there taught very well. She submitted some assignments and could not submit some due to time or other issues. She attempted those on Sundays after going herself through the content. They were also a few questions in one of the reading-based assignment which she was not able to understand due to the lack of clarity in the diagram.

She had problem reading onscreen during the presentations on Google Meet but she had kept her textbook ready and read from it during the class. Sometimes, there were sound issues such as voice echo. At other times, the shared screen was not visible. She missed the classes in school because in face to face in person interaction, they could clarify doubts instantly right there but in online classes, they noted down their doubts and clarified them towards the end. As a result, some points were missed. Though online classes were supportive, face to face in person interaction was better. Once, a teacher asked them to switch on cameras for a while or asked questions during the classes to check on students' attentiveness when the camera was off. Very few students answered the questions and some even left the meeting when their name was taken. This action was not appreciated by the teacher. She was able to understand the assignments but could not understand a few questions. The demonstration of controlled writing activities helped her in understanding how to write advertisements. While doing writing assignments, if the network went away all of a sudden, they had to restart it. Online writing assignments were time taking. Copy-paste could not be done more than once. Small screen affected their reading. If the study material screen was shared during the presentation, they read it from their hardcopy but for other material, they had to zoom in. She read from the textbook instead of an eBook. They had a problem in uploading assignments in Google classroom. First, they took screenshots and then made a file to upload it. They had a lot of material in the phone which was difficult to manage while uploading assignments. They also had issues due to the quantity of material shared by different subject teachers of all sisters and limited phone storage. So, they deleted it alongside from their shared device. Also, they had to charge battery of their phone throughout the night to be able to use it during the day. To improve these classes, they can be given a time in which all are available to address their questions just like in offline classes where attention is paid to individual students. They can be provided a laptop or desktop to read easily from a distance and to type their answers comfortably in real time such as in Google Forms instead of copy-pasting them.

Student 3

She had a smartphone at home which belongs to her father but she was not having a personal one. She did not have a laptop or desktop. The phone was used for study purpose both by her and her brother who studied in 8th standard. They were able to attend their respective classes since she had her classes from morning till noon whereas her brother had his classes from the afternoon. So, she faced no problem in attending her classes. But since the school had reopened, her brother had his classes in the morning. So, she faced problem in attending online classes on non-school days because of the same timings. Her father had given his phone to them and used their mother's phone when he went out for work. They used mobile data for internet connectivity for which they bought a three-month plan. They had not faced any situation when they had to miss class due to no data. If at all, she has missed any class it was due to other reasons such as her mother being unwell. Whenever she missed her class, she asked her friends about what was taught in the class who described it briefly. She was not able to understand that topic. So, she planned to discuss it with the concerned teacher when she had a face-to-face interaction with them in the school. She was able to attend her online classes even when she was in some other state. She did not face any other problem in attending classes. Where she studied in the common room, her father had instructed his family to not disturb them when they were studying there.

She had attended and had liked all live YouTube classes. She did all the assignments. She also attended the live classes on Google Meet. When she was not able to read the content of the presentation onscreen, she would zoom in to see clearly. She faced sound problem in a few classes such as voice breaking. She did not face any technical problem in watching the video. She found everything well in online classes and found it better than face to face classes in the school. She did not feel any problem in not being able to see the face of friends in online classes. She talked to them over phone and met them in her place. She found it wise enough to not attend school since the students might touch one-another. She was able to understand the study material. But found it a bit difficult to understand the listening activity. Other reading and writing assignments were comprehensible. She reads from the textbook and had also used eBooks which she found decent. She found it difficult to submit work in Google Classroom.

Findings

Based on emerging themes from interviews' data, a questionnaire was designed and administered to which 118 students responded. The findings are as follows: -

- 89.8% used smartphone and 5.08 % used tablet/laptop/desktop for online education. 5.08% had no device.
- 77.9% did not have their device available all the time for study.
- The reason for the device not available all the time was family (54.2%) and siblings (35.5%).
- When they missed out on online English class, it was because device was not available (44.06%), no data (23.7%), no network (24.5%), being unwell (9.3%), family problems (16.1%), attending tuition class (7.6%), live class (3.3%), siblings' class (36.4%).
- When they missed out on live English classes, they studied the matter by themselves (53.3%), with siblings (12.7%), in tuition classes (16.9%), on YouTube (45.7%) and 5.08% did not study.

- The technical problems faced by the students in online education were voice breaking in live class (56.7%), reading on a small screen (32.2%), unreadable text in presentation (8.4%), low storage space (43.2%), fast battery drainage (23.7%) and no physical keyboard (3.3%).
- The problems faced in online English classes were low interaction (32.2%), low individual attention (25.4%), no face to face interaction (53.3%), less time (24.5%) and low feedback (11.8%).
- They studied in online education in their family room (75.4%), personal room (6.7%), balcony (8.4%) and terrace (8.4%). The study environment there was peaceful (10.1%), okay (63.5%) and noisy (23.2%).
- 72% learnt somewhat, 20.3% learnt very well and 7.6% did not learn the topics taught in live English classes on Google Meet.
- 69.49% learnt somewhat, 22% learnt very well and 8.4% did not learn the topics taught in English classes on YouTube.
- 71.1% understood somewhat, 22% understood very well, 5% did not understand, 1.6% did not read the study material.
- 72% understood somewhat, 20.3% understood very well, 4.2% did not understand, 3.3% did not do the online assignments.
- 40.6% found Google Classroom somewhat useful, 43.2% found it very useful, 6.7% did not find it useful, 9.3% did not use it.
- 43.2% found 'Flamingo' and 'Vista' eBooks somewhat useful, 44.9% found them very useful, 9.3% did not find them useful, 2.5% did not use them.
- They should have a personal device (54.2%), free data (50.8%), better network (51.6%), more interaction (36.4%), individual attention (34.7%), more time (42.3%), peaceful study space (55%) to improve online education.

Conclusion

The need for elimination of digital divide through the availability of affordable computing devices and data is required in online education. In addition to digital infrastructure, appropriate pedagogy, training and development, content creation, assessment and apps or software for online education is also a requirement. Still, face to face in person education is essential.

Reference

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Two Inspire Manak Winning Awards

Recommended by **Ms. Santosh Vyas**
The Principal of Sadhu Vaswani International School For Girls, New Delhi, Session 2020-21

Shristi Shukal and Vanshika Dogra of Sadhu Vaswani International School for Girls worked on INSPIRE-MANAK award winning projects individually in the year 2020-21 under the leadership of the Head of the School - **Ms. Santosh Vyas**.

The reputed INSPIRE-MANAK award being executed by the Department of Science and Technology (DST) with National Innovation Foundation – India (NIF) aims to motivate and promote the best ideas and innovations designed and developed by students of classes VI to X nationwide.

Shristi Shukal of IXA, thought about the problem of old age people who may trip and fall in the dark. She tried to solve this problem and came up with the idea of "Automated Lights at home". She won a cash prize of INR 10,000 under the INSPIRE –MANAK award scheme for her project.

Vanshika Dogra of XB, suggested an "Eco-Friendly Sanitizer for Personal Belongings" in the areas where there is a large footfall like airport, market place and railway station. She too won a cash prize of INR 10,000 under the INSPIRE –MANAK award scheme for her project.

Automated Lights At Home

Shristi Shukal
IX –A, Sadhu Vaswani International School For Girls, New Delhi, Session 2020-21

Objective

To detect human motion in the house during night time and turn on the lights automatically.

Introduction

Infrared waves are not visible to the human eye. In the electromagnetic spectrum, infrared radiation can be found between the visible and microwave regions. The Passive Infrared (PIR) sensor is used to detect the presence of human. **PIR sensor** detects a human being moving around within approximately 10m from the sensor. But this detects the human only if they are in motion. The Grid-EYE sensor detects the human, using the infrared radiation radiated by the human body. Every human radiates the infrared energy of specific wavelength range. Since infrared energy is present and can be detected regardless of the amount of light in the environment, a PIR motion sensor will work just fine in the dark.

Materials required:

- 1 Arduino Uno,
- A **PIR sensor**,
- Jumper wires and
- LED bulb.

Procedure:

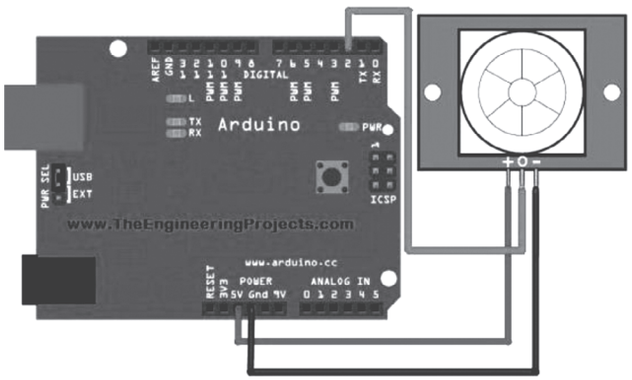
A PIR sensor has only 3 pins – one is Vcc which is a +5 volts input, a ground pin and finally the digital output pin. The steps of the procedure followed are:

1. Connect +5V from Arduino to Vcc of PIR sensor module.
2. Connect a GND from Arduino to ground of PIR sensor.
3. Connect the output pin (marked as 'out') to any digital pin of Arduino.
4. The positive pin of LED to digital pin 13 of Arduino and negative to ground of Arduino.
5. Connect Arduino to laptop using USB cable.
6. Use the code downloaded to make the PIR sensor work.

Construction

The wiring is done in the following way:

PIR Interfacing with Arduino
Wiring Diagram



The Code used

The code which we need to upload to the Arduino so that it

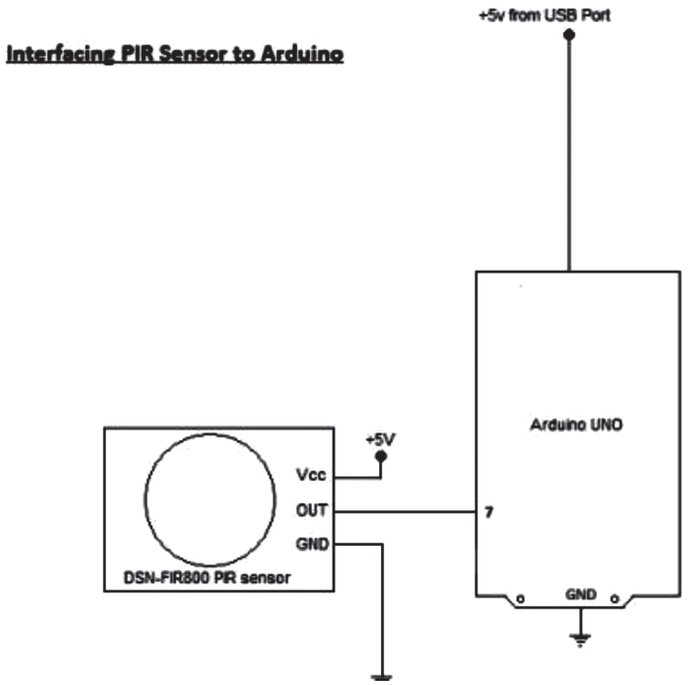
```
int sensor=7; //The output of PIR sensor connected to pin 7
int sensor_value; //variable to hold read sensor value
void setup()
  {
  pinMode(sensor,INPUT); // configuring pin 7 as Input
  Serial.begin(9600); // To show output value of sensor in serial monitor
  }
void loop()
  {
  sensor_value=digitalRead(sensor); // Reading sensor value from pin 7
  Serial.println(sensor_value); // Printing output to ser
  }
```

Data collection

The LED glows for 15 seconds after it detects motion. This time can be increased or decreased.

Usage of charts/diagrams

The circuit diagram is given below:



Utility of the project

PIR sensors can be used for opening and closing of doors in shopping malls, hotels and theatres.

Cost effectiveness

The total cost of this project which includes the cost of Arduino, USB cable , jumper wires and PIR sensors is Rs 650.

Conclusion/ result

The LED will glow when it detects IR rays from the human body.

Further research/ development of the project/model

This project was designed keep the senior citizens in mind. They sometimes stumble after entering a dark room. These automated lights will save the elderly people from the trouble of looking for switches in the dark. With further additions and inputs which can be done to this basic model discussed above, such lights can be made accessible at low costs.

●●●●●

Eco-Friendly Sanitizer for Personal Belongings

Vanshika Dogra
X-B, Sadhu Vaswani International School For Girls, New Delhi , Session 2020-21

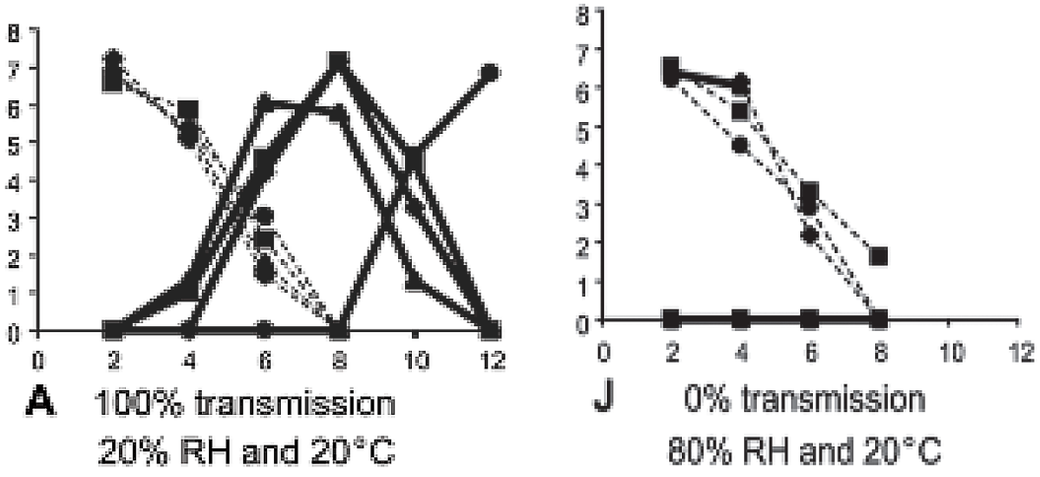
Aim/ Objective

Eco-friendly sanitizing for personal belongings like purses, handbags, etc. to kill viruses in high footfall areas like airports, railway stations and market places.

Introduction

A virus is a submicroscopic infectious agent that replicates only inside the living cells of an organism. Viruses can infect all types of life forms, from animals and plants to microorganisms, including bacteria and archaea.

To safeguard ourselves from viruses we can use vaccines and antiviral drugs. However, when vaccines are not available for new kinds of virus, sanitation and disinfection is most effective. In places like airports, railway stations, offices and other departments, the rate of transmission of virus increases as each and every person in the crowd cannot be kept under supervision. Thus, installing sanitizing units at the entrances of these places can help to avoid the virus infecting people. The modification in the existing conveyor belt will help in achieving the desired objective.



From research it has been found that virus viability was rapidly lost at higher temperatures and higher relative humidity (e.g., 38°C, and relative humidity of >95%). So, viruses can be killed by raising temperature and humidity above this limit. Thus, making steam an ideal constituent in sanitizing, as it increases both of above without harming the environment.

Materials Required

- Conveyor belt with the canopy similar to x-ray system in airport.
- Container of sanitizing chemical and steam generator.

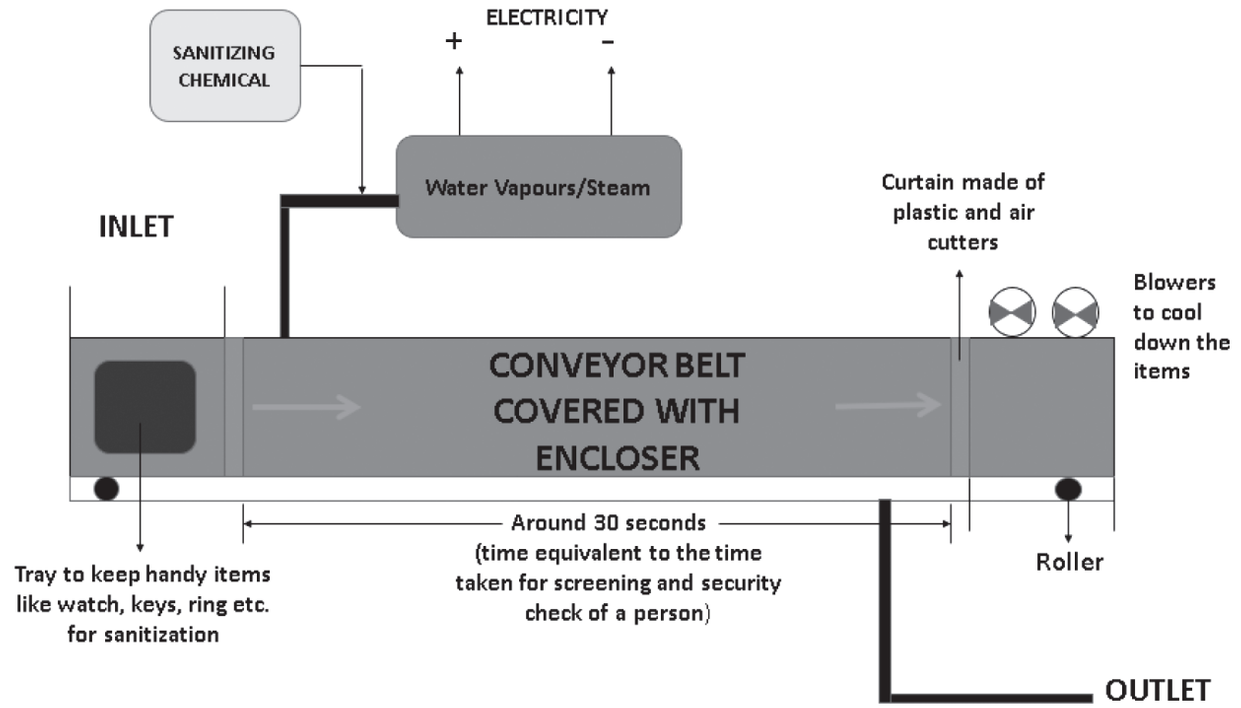
- Blowers at the end of the conveyor belt.
- High speed air cutters and plastic curtains on both sides of the chamber as are being used in air conditioning systems.
- Connecting piping system and disposal dispenser.
- Chemical and steam regulators. Safety paraphernalia (temperature gauge, pressure gauge etc.)

Procedure:

- Person will put all his/her handy belongings, watches, glasses, keys, ring etc. over the conveyor belt in the tray, before going for a security check.
- Conveyor belt will take this tray inside the steam chamber which is isolated from outside by air cutter and plastic curtains on both sides, as used in air conditioning.
- Speed of the belt and its length will be set in such a way that it will take minimum 30 seconds, which is equivalent to the time duration of a person's screening and security check and time required to kill the virus, in a controlled environment before it comes out of the steam chamber.
- Air blower will be installed at the other side of the system to cool off the belongings.
- Steam coming out of this system can be easily stored after converting into water through condenser in cans and subsequently disposed of or otherwise it can be discharged into the atmosphere through a pipe system as virus has already been killed. So therefore, steam coming out of the arrangement is not dangerous.

Construction

The material gathered have to be arranged in this manner:



Utility of the Project

Following benefits can be acquired with the adoption of this arrangement:

- It can cater for a large number of people.
- It can be easily made by modifying the existing systems and know-how.
- As steam is the main constituent, therefore no psychological stigma.
- No human interference is required and is user friendly.
- No hazardous chemical is used. Only water and sanitizing chemicals are being used. These are very easy and safe to handle. Further these are environment friendly.
- No special training is as such required for its operation.

Cost Effectiveness

Operating cost is very low. It just requires a few modifications in the existing system, therefore it will be easy to maintain. Also, the materials required are easily available and inexpensive.

Conclusion/Result

Eco friendly Sanitizer for Personal Belonging can be used in the places handling large crowds to avoid public transmission of a disease. This arrangement will help prevent viruses from not affecting people due to their contact with the handy belongings of an infected person.

This model will not only prove effective against the COVID-19 virus however for most viruses also. This change in our existing system of screening will help to maintain hygiene. If practiced in the right spirit and manner then it would save lots of lives lost due to ignorance and negligence of not following social distancing and disinfection.

Further Research/ Development of the Project/ Model:

This model can be replicated for:

- By online shopping platforms like Amazon, Flipkart, etc. for delivery of goods at their go downs.
- Food items can also be sanitized on a very large scale without compromising its nutrition and freshness.
- A smaller model can cater for common household needs for day-to-day lives.
- A modified version can be used for sanitizing railway coaches, buses, etc.

●●●●●

WHAT DO THE ORIGINAL THINKERS SAY ON EDUCATION

"Education is a process of living through, a continuous reconstruction of experiences."

—John Dewey (USA)

"Education means enabling the mind to find out that ultimate truth which emancipates us from the bondage of dust and gives us wealth not of things but of inner light, not of power but of love. It is a process of enlightenment. It is divine wealth. It helps in realization of truth."

—Rabindra Nath Tagore (India)

"Education should aim at all round development of the child. It is in this way, the child will develop into a good citizen. The objective of education is the realization of a faithful, pure, inviolable and hence holy life."

—Friedrich Frobel (Germany)

"The great aim of education is not knowledge, but action."

—Herbert Spencer (England)

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