ANALYSIS OF GRADES 7 AND 8 CHEMISTRY STUDENTS' TEXTBOOKS CONTENTS VIS-À-VIS EXPECTATIONS FOR STUDENTS' INVOLVEMENT

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ABSTRACT

The objective of this study was to analysis grades 7 and 8 chemistry students' textbooks contents **vis-á-vis** expectations for students' involvement**.** Mixed approach embedded design was used. An expectation for students' involvement analysis was employed as instruments for document analysis. Moreover, to triangulate and support the quantitative data, semi-structured face-to-face interview was used and analyzed via thematic analysis. The students' involvement analysis showed that: the average index value of Grade 7 and Grade 8 were 0.338 and 0.4325, respectively. This value indicated that the content of both textbooks are not encouraging students to be active. Furthermore, qualitative data analysis showed that the textbooks are not in such a way to make students active and self-reliance. Therefore, every aspect of the textbooks should be organized in a manner that equips students with higher order thinking level, and active engagement of learners in the learning process. *[African Journal of Chemical Education—AJCE 15(1), January 2025]*

INTRODUCTION

Textbooks play a very crucial role in supporting specific types of curricula and have a major influence on students' learning and the nature as well as type of learning activities used in the classroom [7]. The textbooks are organized in a purposeful way, and consequently their content and structure are very key for the promotion of a particular vision of a curriculum [21]. Textbooks serve as medium of instruction to increase the effectiveness and efficiency in the teaching and learning process. In choosing an interesting textbook to be use in classroom for the teaching and learning process, textbook analysis is very crucial and key [3]. Besides, if textbooks are not used appropriately, they may spoil the process of teaching and learning [16]. In contrast of this, some scholars argue that if the students' involvements are limited or very low in the textbooks, the teaching approach is textbooks-based teaching which is teacher-centered approach [1]. Nevertheless, a textbook is considered as interesting if it involves students highly, promoting self-directed learning, allowing students to learn by themselves at their own pace and contains activities for students to enhance the mastery or understanding of the topic of the lesson [3]. Textbooks are keys and important Curriculum materials and are central elements or the main means to achieve the objective of education. Because textbooks are primary teaching aids, materials, and sources from which students obtain knowledge [10], they help to promote student-centered learning and ensure quality of education [14].

In a country like Ethiopia, which is transforming from agriculture-led economy to industrialized economy, the quantities as well as the quality of well-equipped professional chemists are required. To achieve this, we need to prepare the textbook from the grass root level. Therefore, the objectives, texts, figures and diagrams, questions at the ends of the chapters, chapters' summaries and activities of the textbooks should show high students' involvements in each aspect of the

textbooks. The science education reform calls for pedagogical shift from a traditional, textbook-based instructional paradigm to active learning inquiry-based [1]. Teaching science at schools helps students to understand and acquire basic knowledge of scientific concepts. Science textbooks demand that the learner should integrate quite complicated or hard scientific concepts together with scientific language, visualization different materials and format and contents in the science textbooks [10]. Science as a field of study has made it possible to know about the universe [23]. Science education is the cornerstone of sustainable development. Specially, for Africa to get rid of poverty and ensure sustainable development, it is necessary that member countries invest on science and technology [15]. As a social human activity, science is an institution or practice constitutive of the modern world. Most philosophical reflections or indications about the aims and goals of science deal with the acquisition of knowledge and how that knowledge brings about understanding [13]. Generally, science education has always been associated with the use of textbooks and textbooks have important role to play in science education [25].

Chemistry is a branch of science, which deals with the properties, the composition, the structure and the transformation of matter [15]. It is a toll language or backbone for industries. Chemistry as a school subject has passed through various patterns concerning the science curriculum. Until early 1980s, chemistry was offered as part of the subject called Physical Science until the end of Grade 10. Later, it became a discrete subject starting from Grade 9. Currently, Chemistry is offered as a discrete school subject starting from Grade 7, and continued to be given as one subject starting from Grade 7 to 12 [15]. Moreover, by its subject nature, chemistry must focus on higher student's involvements.

According to the revised syllabus of MOE, (2013), teaching chemistry is important that a student acquires factual knowledge. Since chemistry is an experimental science, experimental and

investigative skills should be also acquired in a sufficient way that makes students much more familiar with advanced chemistry laboratories in their future endeavor. Therefore, this study has focused on the analysis of textbooks' contents.

Different techniques can be employing to analyze textbooks. Selecting an appropriate technique of analyzing textbooks is dependent up on at our contexts or situations. Therefore, the researcher was selected the expectations for students involvements in six aspects of the textbooks in order to analyze the current Ethiopian curriculum grade 7 and 8 chemistry students' textbooks content which were written by English language and published in 2013 G.C by MOE.

In order to assure whether textbooks meet the necessary requirements or whether they engage students for learning, the expectations for students' involvement analysis of the textbooks were analyzed in six different aspects which were adopted from the literatures [3; 8; 9; 14; 24;26]. Such aspects textbooks are:

- ✓ The rating of learning objectives and calculated index value (I_O)
- ✓ The rating of text narratives and calculate index value (I_T)
- ✓ The rating of figure and diagrams and calculate index value ($I_{F\&D}$)
- ✓ The rating of questions at the ends of each chapter or units and calculate index value (I_Q)
- ✓ The rating of chapters summaries and calculate index value (I_S)
- ✓ The rating of activities and calculate index value (I_A) in each grade 7 and 8 chemistry Students' textbooks.

The researchers had a look towards the textbook arrangements and organization from his 4 years of primary school teaching and learning experience. The opportunity that triggers the researcher towards evaluating these books using standardized modalities has encountered when he

was learning about the teaching of specific subjects during his graduating course work-study in 2018-second semester. Therefore, the main motive of the researcher is to conduct this research was to minimize the problems that students encountered in school teaching as well as in self-learning. Thereof, the researcher planned to analyze and suggest on points about the textbooks to be improved based on the results of the analysis in different aspects of the textbooks in order to maximize the students' involvements in the contents of textbooks.

From the researcher's point of view, education is a key for development and optimized curricula while the curricula are keys for education. The attention given to the development and organization of textbooks determines the mental development of the students in particular and the community at large. The developed countries pay a great attention to their curricula in line with their sustainable development goal [4]. The differences in between well-developed countries and underdeveloped countries are not climate, weather condition, or natural resources; it is the difference in the educational system. Literatures revealed that the weakness of most African countries curricula is more of a mere theory, outdated and teacher-centered [22].

Ethiopia changes curricula and textbooks mostly as the government changes. Currently, the Ethiopian government has determined and introduced what is now as a "70:30 professional mix"- 70% for science and technology - 30% for Social Sciences and Humanities streams at higher education. This shows that the government has given much consideration for science education [18]. However, the scientific curriculum related studies on the textbooks analysis are very few. This is a specialized and unique study in its field; no similar study were conducted in this context, this means that there is no any published data about the current Ethiopian Grade 7 & 8 chemistry students' textbook by using students involvements analysis. Hence, analyzing these textbooks in a scientific manner and providing appropriate feedback to stakeholders is the current homework for scholars in

the field. Therefore, the researcher has analyzed and identifying the index or involvements of students in the textbooks with in different aspects were analyzed and the index values of each aspect of the textbooks were calculated.

The Research Question of this work was - What is the extent of students' involvements index in each aspect of the current Ethiopian curriculum Grades 7 and 8 Chemistry students' textbooks? While the general objective of this study was to analyze the contents of current Ethiopian curriculum Grades 7 and 8 chemistry students' textbooks contents against the expectations for students' involvements.

The significance of this study can provide useful information and identify the gaps and gives invaluable recommendations and suggestions to stakeholders, decision makers, curriculum and syllabus designers, teachers and students as well for the future use; an initial step for other researchers to depend on to analyze others textbooks in different classes and subjects. And it Help to improve the contents of each Grades seventh and eighth chemistry students' textbooks, which is in line with the educational reformation and stemmed from the fact that according to the students' involvements were analyzed in different aspects of the Grade seventh and eighth chemistry students' textbooks.

Operational Definitions of Terms

Grade 7 and 8 chemistry students' textbook: are one of the many kinds of instructional materials used in teaching and learning process. It contains learning objectives, experiments, activities, texts, figures and diagrams, questions at the ends of each chapter, chapter summaries etc.

Students' involvement: It is the way in which the educational material in the chemistry textbooks helps the students to understand, encourage knowledge discovery, and think about the information

offered to him/her, different aspect of the textbooks, away from the narrative method which restricts student thought. Moreover, as a procedure the students interaction opportunities, encourages knowledge investigation and thought in student textbooks contents that are measured by a set of equations.

Each aspect: each aspect refers to learning objectives, text narratives figure and diagrams, questions at the ends of each chapter, chapters summaries and activities.

Delimitations and Limitation of the Study

The scope of this research is concerned only the analysis of the current Ethiopian curriculum Grades 7 and 8 chemistry students' textbooks written by English language and published in 2013 by Federal Democratic Republic of Ethiopia Ministry of Education. Moreover, the criteria focus only on expectation of textbooks for student's involvement in each six aspects.

To make the research more compressive, it would have been better to see the other criteria's simultaneously but due to time scarcity and the bulkiness of data to manage in a single study and resources constraint, the research was focus on only students' involvements analysis this was could be taken as a limitations. The other important limitation is that the study uses only English language reference articles and journals.

The Analysis of Textbooks

Textbooks are one of the teaching learning materials and are very important sources that supply framework to help students in organizing their learning both inside and outside the classroom. As for teachers, textbooks are used to guide teachers in instructional design and delivering their contents in the classroom while provision of textbooks is a priority [26]. Having such great role, the

inadequate and inconsistent scientific knowledge presented and inappropriate preparation in chemistry textbooks can negatively affect students' learning and sympathetic.

Different techniques can be employing to analyze textbooks while selecting an appropriate technique of analyzing textbooks is depends on at our contexts of the way to analyze. The most common techniques are:

- ✓ Bloom's taxonomy [12; 17].
- ✓ Students involvement analysis of the text narratives, figures and diagram, questions, chapter summary and activities [3; 26; 8].
- ✓ The analysis of conceptual development of the textbooks [26]
- ✓ Analysis of the inquiry level of the textbooks [26]
- ✓ Analysis of the degree of Science Technology Society (STS) orientations of the textbooks [26]

However, the researcher selected one criterion to analyze the contents of current Ethiopian curriculum Grade 7 and 8 chemistry students' textbooks. Therefore, the reviewed literatures were students' involvement analysis in the contents of textbooks

The students' involvement is the active engagement of students in different contents or aspects of textbooks. The students' involvement analysis of the textbooks were analyzed in six different aspects or contents by calculating the index value of each aspects of the textbooks using the guide line or Romy's method which were adopted from the literatures [3; 8; 14; 24; 26]. Such aspects are learning objectives, figures and diagrams, questions at the ends of each chapter, unit summary, and activities.

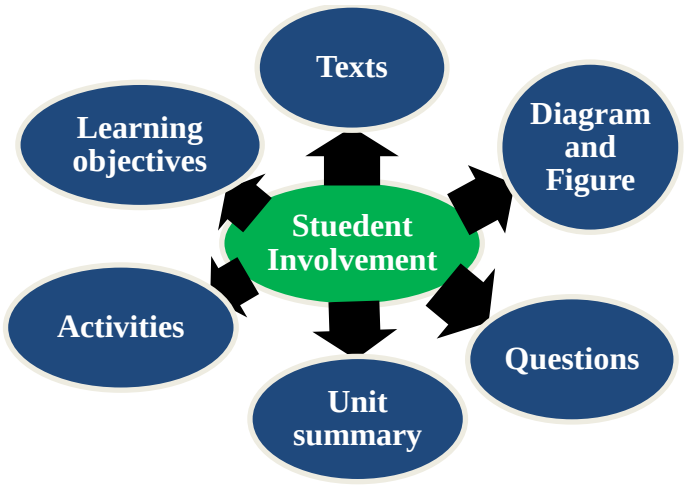

Figure 1: The component of student involvement analysis of textbooks

Table 1**: Guideline for interpretation of students' involvement analysis data**

Index value	Interpretation of the index value
0	No students' involvement
< 0.4	The value is below average. The category of the textbook is authoritarian, not challenging, due emphasis is given for memorizing facts and definitions
1	Ideal and balanced, The material consists of equal number categories requiring for student involvement and those requiring no student thinking.
>1.5	No much contents, only questions or activities. No enough information for students to work with
Infinity	No contents, The textbook is full of points only require students to do analysis.

The guideline presented by Romy and mentioned in [26, Table 1. Guideline for students 'involvement index value interpretation; 3, Table 2: Index interpretation Index; as sited in Haji, 2016, p.333 "Table 1. Concerning the values and standards of measuring involvement coefficient as presented by Romy and mentioned in Azar"s (1982))

METHODOLOGY

This research aimed at analyzing the current Ethiopian curriculum Grades 7 and 8 chemistry textbooks contents vis-á-vis expectations for students' involvement index analysis in different aspects of the textbooks. The design of the study was embedded design of the mixed approach. The embedded design is one of the mixed method research designs and the purpose of the embedded design is to collect quantitative and qualitative data simultaneously or sequentially, but to have one form of data play a supportive role to the other form of the data [2]. Therefore, in this study, the qualitative data were used as supportive role.

The data were obtained from the current Ethiopian curriculum textbooks, the researcher has selected Grades 7 and 8 chemistry textbooks written in English language and published in 2013 G.C. The reason is that the researcher has focused on Grades 7 and 8 chemistry in order to suggest possible corrections or improvements for students' textbooks [15]. The researcher has employed stratified sampling technique (for determining the size of sample in each strata or unit of the textbooks) and systematic sampling technique (for selecting member of sample in each strata or unit of the textbooks) of the probability random sampling technique to gain sufficient sample for students' involvements based on the procedures in both textbooks.

Moreover, in order to triangulate and support the data collected from the content analysis of the textbooks, the researcher has selected 10 participants by using purposive sampling technique of non-probability type to draw appropriate information among concerned participants from their experience and knowhow on the subject matter. The participants for interview were 3 from Grade 7 chemistry teachers, 3 from Grade 8 chemistry teachers, 2 from Grade 7 students and 2 from Grade 8 students of Debre Tabor Town primary schools (Gafat and Dagmawi Tewodros General Primary Schools).

The data gathering instruments that the researcher has applied to analyze the current Ethiopian curriculum Grades 7 and 8 chemistry students' textbooks was document analysis and interview. Document analysis by using the index of students' involvement analysis of the Grades 7 and 8 chemistry students' textbooks contents was used to analyze the different aspects of each textbook such as learning objectives, texts, activities, summaries in each unit, figures/diagrams, and questions or exercises at the end of each unit. Any parts of the textbooks were sample and rated with a sample sheet. Each aspect of the textbooks was rate depending on whether it engages students for active learning and teaching process or not. An index called index of students' engagement or involvement was calculated from ratings of the different aspects of the textbooks contents using the procedures while the interpretation were made based on the guidelines and the procedures adapted from literatures [24; 14; 3; 26].

Table 2: Coding scheme of the index of students' involvement analysis data

Chemistry students textbooks	Index value in aspects of textbooks						Total
	Objectives, I_O	Text, I_T	Figure and Diagram, $I_{F\&D}$	Question, I_Q	Summaries, I_S	Activities, I_A	
Grade 7							
Grade 8							
Total							

All these six aspects were analyzed by applying an index (I). A higher index of analysis shows that the textbook has high students' involvements, which mean that it is more innovative and

more of students- centered approach. Therefore, it is better in helping or engaging the students to learning and teaching process [3, P.1039].

Interview

To triangulate and support, the data that were gathered from the document analysis (grade 7 and 8 chemistry students' textbook), the researcher has administered semi-structured face-to-face interview in order to gather qualitative data. The reason why researcher has selected semi-structured face-to-face interview was in order to offer the respondents' freedom to express their ideas freely and gathered complete data.

The main data required for Index of student's involvement analysis by using procedures were collected principally from analysis of the current Ethiopian curriculum Grades seven and eight chemistry students' textbooks. In different aspects of both textbooks such as learning objectives; texts; activities; summaries in each unit; figures/diagrams; and questions at the end of each units of sampled by applying probability type stratified as well as systematic random sampling technique. Furthermore, Interview was performed and collected some data from the selected Grades 7 and 8 chemistry teachers and students in order to triangulate and refines the quantitative data that obtained from the document or content analysis six aspects of the students' involvements analysis sample of each textbook.

After gathering, the quantitative data from the contents of Grades 7 and 8 chemistry textbooks in different parts, the data was analyzed via different aspects of the Grades 7 and 8 chemistry students' textbooks (learning objectives, texts, activities, summaries in each unit, figures and diagrams, and questions or exercises at the end of each unit were quantitatively analyzed). The indexes as well as the involvement of the students in each aspect of the textbook were determined by applying the equations of Romy that were adopted from the literatures.

Additionally, in order to triangulate the quantitative data, the qualitative data were analyzed via thematic analysis.

Reliability and validity of the study

Validity of the Research Tool or Instrument

The research tool was presented to three members of the Department of Education and Curriculum study in Begemidir College of Teacher Educations in Debre Tabor Town in order to establish its validity. They were asked to examine the definitions of the various levels in accordance with the skills and behaviors demonstrated by students' involvements analysis. The professionals assessed the research tool and some items that seem vague were corrected, as it was valid for use in this study.

Reliability of the study

Inter-rater Reliability: In order to ascertain the inter-rater reliability of the research, 30 items that were not included in the sample textbooks took for student involvement were analyzed by two instructors of education and curriculum studies. The Kappa's value measure of agreement was calculated based on the classification of the coders, for each aspects of student involvements analysis by using the formula:

Cohen's kappa = $(PA_O - PA_E)/ (1 - PA_E)$, $PA_O = A/n$ and $PA_E = (1/n^2) (pm_i)$

Where, PA_O - stands for proportion agreement observed

PA_E - Stands for proportion agreement expected

A – Stands for number of agreement between two coders

n - Stands for number of units in common by coders

pmi - Stands for each product of marginal's

Based on the above-mentioned formulas, the Cohen's Kappa values was 0.91 (91%) for the students' involvement analysis. The substantial values (κ > 75 excellent measure of agreement) [19]. Therefore, the obtained Kappa values indicated excellent measure of agreement between the two coders, which guaranteed a high inter-rater reliability for the research.

Intra-rater Reliability: Intra-rater reliability is similar to inter-rater reliability, except that the comparisons are made between two data collection efforts by the researcher itself in two different phases and the way of calculations are the same fashions of inter-reliability [19]. In order to ascertain the intra-rater reliability of the research, 30 items those were not included in the sample textbooks for students' involvement. Therefore, the obtained Cohen's Kappa values was 0.96 (96%) for students' involvement analysis in both textbooks. The obtained Kappa values indicated excellent measure of agreement between the two phases, which guaranteed high intra-rater reliability for the research.

RESULTS

The results obtained from rating of contents of the textbooks were used to calculate the index of students' involvements for each aspects category of the Grades 7 and 8 currents curriculum chemistry students' textbooks. Moreover, results from the interview was written in narrating form to provide some information in order to triangulate and support the quantitative data whether the textbooks engages students for active learning or not. The results of the textbooks analysis using students' involvements in both Grades 7 and 8 chemistry students' textbooks were tabulate and presented as bellows.

- The summarized index of students' involvement value for each aspect of two textbooks

Table 3: The summary of total index of value for each aspect of the two textbooks

Chemistry students textbooks	Index value in aspects of textbooks						Total
	Objectives, I_O	Text, I_T	Figure and Diagram, $I_{F\&D}$	Question, I_Q	Summaries, I_S	Activities, I_A	
Grade 7	1	0.018	0.25	0.22	0.04	0.5	2.028
Grade 8	1	0.013	1	0.16	0.022	0.4	2.595
Total	2	0.031	1.25	0.38	0.044	0.9	4.605

Table 26 showed the summarized results of the analysis of current Ethiopian curriculum Grades 7 and 8-chemistry student's textbooks vise-a-vise the student's involvements analysis. In Grade 7 chemistry students' textbook the indexes of each aspects were (index of objectives = 1, index of text narrating = 0.018, index of figures and diagrams = 0.25, index of questions at the end of each chapter = 0.22, index of summary = 0.04, and index of activities = 0.5). In addition, In Grade 8 chemistry students textbook the indexes of each aspects were (index of objectives = 1, index of text narrating = 0.013, index of figures and diagrams = 1, index of questions at the end of each chapter = 0.16, index of summary = 0.022, and index of activities = 0.4).

For a better understanding and clarifications, Figure 2 showed the graphical presentations of the summarized student's involvements index analysis of the Grades 7 and 8 Chemistry student's textbooks.

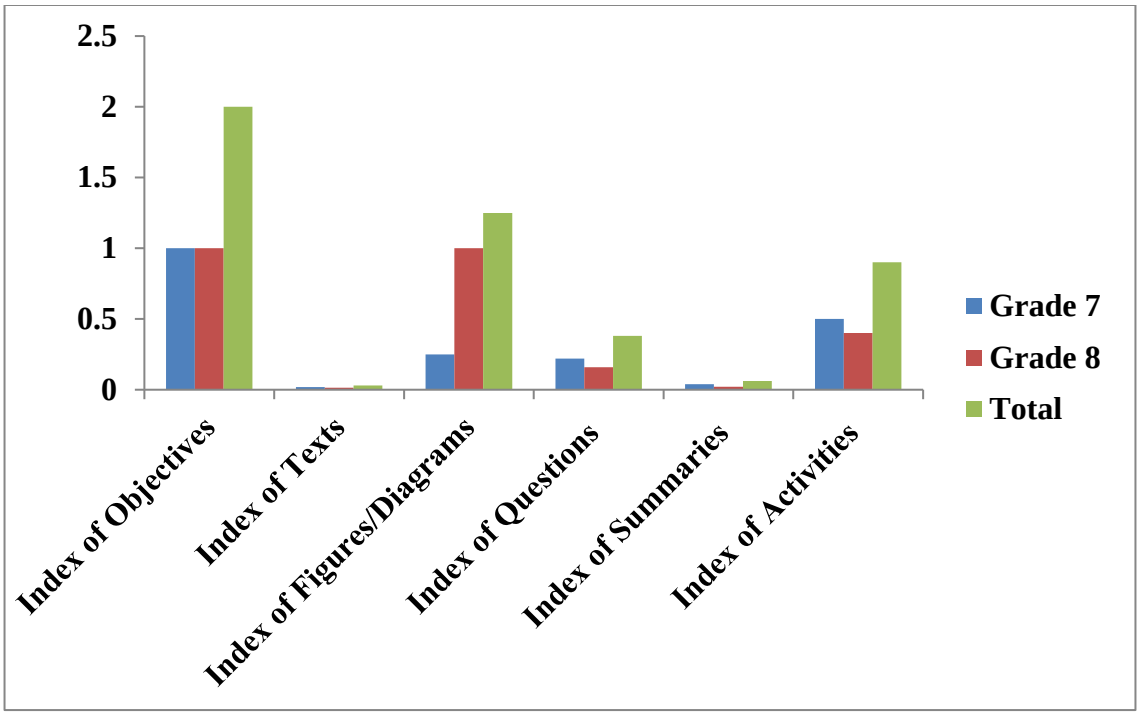

Figure 2: Students' involvements indexes of Grades 7 and 8 chemistry student textbooks

Interview

The interview using semi-structured questions were prepared for both Grades 7 and 8 teachers and students with intentions about the two textbooks. The interview for teachers and students administered one broad question and these questions contained sub questions in each. The questions were focused on students' involvements analysis of different aspects or contents of the two textbooks. Ten participants were involved in the interviews.

The participants for the interview were 3 from Grade 7 chemistry teachers; 3 from Grade 8 chemistry teachers; 2 from Grade 7 students; 2 from Grade 8 students found Gafat and Dagmawi Tewodros full primary school in Debre Tabor Town, Ethiopia.

I. Interview results of the expectations for student involvements analysis in different aspects or ratting of contents of the two textbooks.

A. Texts narrating of the two textbooks

For Grade 7 chemistry students textbook text narrating: 3 respondent teachers said most of the texts in the textbook more focus on conclusion, definitions and some of them are facts.

"Primary school is the right time and truck to create tomorrow's visionary and creative chemists, chemical and productive engineers, as well as science entrepreneurs, but the textbook lacks such a kind of text narrative that triggers students to be creative, visionary and future intellect. Most graduates of the Universities are dependent on government employment. The proportion of entrepreneurs, technology creators, production engineers among the graduates are very few. This due to the problem of the curricula and the way students pass primary schools. Organizing primary schools starting from textbook preparation has to be the main task for different stakeholders".

Grade 7 Chemistry Teacher

Even if the questions are presents in the textbook but immediately answered by the textbook, it does not show higher involvements of students. Two students who participated, they also give some suggestions about the text of the textbooks that mostly similar to teachers reflections; they said that, the texts are more focus on definitions, some of them are focus on statements of facts and some rare texts were on the generalizations. In additions, the questions that exist in the textbook are immediately answered by the textbook does not encourage the learners to be active.

For Grade 8 chemistry students textbook text narrating: the 3 teachers and the 2 students said similar ideas they said that most of the texts of the textbook are focus definition, facts and then generalizations. The questions existed immediately answered by the textbook.

B. Figures and diagrams of the two textbooks

For the figures and diagrams of Grade 7 chemistry student's textbooks: the teacher said that most of the figures and diagrams are used for illustrative purpose and very few figures and diagrams used to perform some activities and the rest very few are used to illustrated how to set up the

apparatus for an activities. The students also repeated the ideas of teachers about the figures and diagrams.

One of the teachers said that

Most of the diagrams and figures are used to illustrate things that are already written in a text, which is important to allow students to gather information via different routes. However, it is better the figures and diagrams focus on improving students' kinesthetic ability, learning by doing and practicing, which improves students' practicability and creativity

For the figures and diagrams of Grade 8 chemistry student's textbooks: the teachers and the students said that, the figures and diagrams of Grade 8 chemistry students textbook are more focus on requires students to perform some activities or to use data. In addition, very few of them are for illustrative purpose.

C. Questions at the ends of each chapter in the two textbooks

For Grade seven chemistry student textbook questions at the ends of each chapter: the items are true false, filling in the blank, match, multiple choices, and some open ended questions. The ideas of teachers and students with regard to narrations of questions at the ends of each chapter reflected similar ideas. They said that, all chapters have review questions but the answers are directly from the textbooks thereof the questions at the ends of each chapter in the textbook shows lower involvements of students in the teaching and learning process.

One of the students said that: "To solve and answer questions, it is not required to use even guidebooks and any other sources to work each chapter questions, all the answers for each question founds in the book".

For Grade 8 chemistry student textbook questions at the ends of each chapter: the results were similar with Grade 7 chemistry student textbook.

One of the grade 8 students reported,

We are grade eight students preparing for ministry, we expect questions to make students to assess different books to get answers for the questions, which simultaneously makes students ready for ministry, but we get all answers of the questions in the book.

The results indicated that, the questions at the ends of each chapter do not encourage the higher student's involvements.

D. Chapter summary of each chapter in the two textbooks

The teachers and students said that the chapter summaries of Grades 7 and 8 chemistry student's textbooks are simply the repetitions of the conclusions of the chapters in a shorter version. Therefore, it shows lower involvements of students.

One of the teachers replied,

Chapter summaries are valuable to easily catch the core points of a chapter that has to be in mind by students, moreover it is essential to indicate the future prospect about the application the concept in real world. I do not think the chapters summaries are organized in such away, most of the summaries are the mere repetition of the chapter.

E. Activities in the two textbooks

For both Grades 7 and 8 chemistry student textbooks, the teachers and students relatively provide similar information as the activities of the textbooks are moderately good when it is compared to other aspects of the textbooks. This indicated that activities of textbooks somewhat allow good involvements of students to manage it.

One of the teachers said:

Almost all of the chapters have activities, which allow students to test themselves on how much they conceive from what is learned, but I am not sure that the activities are formulated to enhance the higher order thinking levels.

In general, the result of interview support that of the result obtained from the content analysis in students involvement analysis for Grades 7 and 8 chemistry students' textbooks.

DISCUSSION OF RESULTS

The index value of learning objectives for Grades 7 & 8 chemistry students' textbooks for both textbooks. Based on the guideline, it was considered as ideal balance equal to one, which indicates the presence of learning objectives in each chapter or unit- that indeed entails, as the students involvement is higher. The result in lines with the study done by [3; 26].

The index value of texts for Grades 7 & 8 chemistry students' textbooks were 0.018 and 0.013, respectively. Based on the index interpretation table these are far below 0.4. According to Romy (1968) as mentioned in [26] and [8], textbooks should have a balance more than 0.4 index value. The result indicated that the textbooks reflect the lower student's involvements in aspect of text narrating. The textbooks are not challenging students for higher order thinking, and mostly give emphasis for memorizing of definitions, facts, conclusion or generalizations and sometimes focus on the questions which directly answered by the textbooks. In additions, the qualitative results that obtained from interview showed that, the texts of the textbooks does not show higher involvements of students and the questions that exist in the textbook are immediately answered by the textbook mean that does not encourage the learners to be active. Therefore, the qualitative results exactly support to the quantitative results. The quantitative result in line with the study done by [26] and

[14]. However, this result not agree with the study done by [3] and [8] in Kurdistan Region. The possible reason for the difference would be the inter and intra subject difference assessed by the authors, the quality of curriculum or the textbooks, educational cultural differences, infrastructures and facility of teaching and learning process.

Expectations for students' involvements index on figures of Grades 7 and 8 chemistry students' textbooks is 0.25 and 1, respectively. The index value figures of Grade 7 chemistry students' textbook were below standard/0.4, which tells the lower involvement of students- alarms stakeholders to take action of placing illustrative diagrams appropriately in different sections of the textbook. Whereas the index value of figures in Grade 8 chemistry students' textbook is above the standard, that entails the textbook is good and balance in terms of providing diagrams for illustration and data analysis purposes. This is very important, as diagrams are one of the methods to convey information to students in a simple and easier way. A good diagram promotes students to capture scientific skills easily and enables students to understand the new information better. In addition, the qualitative results revealed that, about Grade 7 figures/diagrams most of them used for illustrative propose and very few figures and diagrams used to perform some activities and the rest very few are used to illustrate how to set up the apparatus. Whereas, for Grade 8 figures/diagrams are more focus on requires students to perform some activities or to use data very few of them are for illustrative purpose. Therefore, the qualitative results were supportive of the quantitative results. Grade 7 figure index value result is in line with the study done by [8] and [26]. However, this result is not in agreement with the study conducted by [3]. For the figure index result of Grade 8 chemistry students textbook in line with the study conducted by [3] , and [26]. However, it is not agree with the study done by [8]. The possible reason for the contradictory result of both textbooks would be the

difference in subjects or nature of subjects incorporated the quality of curriculum and the textbooks, cultural differences, infrastructures and facility of teaching and learning process.

Another important aspect of textbooks that is considered was questions at the ends of each chapter. The analyses showed that index of expectations for students' involvement for Grades 7 and 8 chemistry students' textbooks questions is 0.22 and 0.16, respectively (Table 3). Even though there is a slight difference between textbooks, the obtained results are below the average value expected value in both textbooks. This value indicated that most of the questions directly answered by the nearby contents of the textbook in both grades, which indeed makes students passive in searching solutions from different reference books, internet and any other sources of information. Additionally, the qualitative results showed that, questions at the ends of each chapter do not encourage the higher student's involvements because the questions are not pushing higher order thinking, and the answer are easily available in the textbooks this is supported to the quantitative results. The quantitative result in line with the study done by [14]. However, this result doesn't agree with the study conducted by [3, 26] Ethiopia physics textbooks. The possible reason for the contradiction might be the intra and inter textbooks variability, curriculum quality as well as the educational culture difference.

The expectations for students' involvement index of summaries for Grades 7 and 8 chemistry students' textbooks were 0.04 and 0.022, respectively (Table 3). According to the index value interpretation guideline the index value showed very low involvement of students at all mean that the value was below average. This indicated that the summaries provided at the end of each chapter in both textbooks only focus on the repetition of the same idea from the texts in short manner. No any sentence in the summaries of textbooks that raises questions provided to develop the student thinking skill, the answer to which are not available in the textbooks or are not the subject of current research in science. In addition, the qualitative results revealed textbooks summary are simply the

repetitions of the conclusions of the chapters in a shorter version shows lower students involvements mean that it is supportive the quantitative results. The index value result in line with the study done by [3] . However, this result contradict to the study result of narrating summaries of both textbooks done by [26]. The possible reason for the differences would be the difference in subjects or nature of subjects incorporated at the study.

The least but not the last aspect of the textbooks is the index of expectations for students' involvement on activities in the sampled pages of textbooks. The obtained index values were 0.5 and 0.4 for Grades 7 and 8 chemistry student textbooks, respectively. Based on the guideline the result implies that the activities of both textbooks show relatively less involvement of students towards solving problems by themselves using different sources of knowledge other than the textbook. Furthermore, the qualitative result that were obtained from interview suggested that, related to other aspects moderately good and it has somewhat allowed good involvements of students; therefore, the qualitative results were supportive of quantitative results. The result in line with the study done by [26]. However, this result contradicted with the study conducted by [14] in Ethiopia and from the study by [3]. The possible difference for the contradictory result might be due to the difference in subjects incorporated at the study, the Grade levels, the socioeconomic development of the country that directly and indirectly influences the quality of education, the standard of the curriculum, the accessibility of infrastructures and facility that plays a pivotal role on teaching and learning process. Generally, activities mainly focus on lower students' involvement index. This implies that activities of both textbooks need to major modifications. Learning objectives have good student involvement index. An overall, different aspect of the textbooks has to be harmonized to focus on with appropriate student involvement index.

CONCLUSION AND RECOMMENDATIONS

Conclusions

The average index values that obtained from the analysis were 0.338 and 0. 4325 Grades 7 and 8 respectively. This mean that, contents of both textbooks showed lower students' involvement. Generally, Grades 7 and 8 Chemistry student textbooks content does not encourage active involvement of students in the teaching and learning process.

Recommendations

For curriculum and textbooks designers

It is recommended for policy makers, syllabus and curriculum designers, and other concerned stake holders, as it is better to have a look to make the textbooks to be sufficient enough in making students involved actively and improve self-learning based on the weakness the study dealt with.
All chapters have learning objectives at the beginning of each chapter. Therefore, these criteria have to be maintained. However, it is recommended that curriculum designers should improve the objectives of textbooks in terms of developing higher order thinking level.

The text narration in both textbooks lacks promoting the student- centered learning and more emphasis on providing, definitions, facts and conclusions. It is also inadequate towards providing challenging activities. Thus, the text narration should be adjusted with a proper balance in terms of statements of facts, definitions, conclusions, and explanations to promote higher thinking skills.

The index value of figures and diagrams is good for Grade 8, which has to be maintained with few modifications, and low for Grade 7, which needs detailed amendment and modification. It is recommended that while modifying figures and diagrams, it is better to focus on developing the discovery learning and thinking skills of students.

Questions at the end of each chapter in both grades could immediately answered by the textbook itself, and mainly focuses on definitions. Therefore, the textbooks questions needs improvisation to promote self-learning and searching ability and trend of students from different sources.

The summary exists in each chapter of textbooks all most all repeats the conclusions of each chapter, hence, it is better to modify chapter summaries with a new way of expression to re text the chapter in a meaning full short version with a visionary approach.

Student involvement index for activities in both textbooks moderately approaches to the average value. This indicated that there is still a gap in the quantity as well as quality of activities in the sample pages. Therefore, the activities are better to be managed in quality and quantity to inspire students and to foster a fruitful challenge to attain the desired outcome.

Overall, every aspect of the textbooks should be organized in a manner to facilitate active engagement of learners in the teaching and learning process to make students visionary, productive and creative. After all, it is recommended, stakeholders should take their parts and parcels to make the textbook as expected to be.

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