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Philippine K-12 Secondary Science Teachers' Assessment Conceptions in Promoting Student Learning

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Abstract This study explored the assessment conceptions of the secondary science teachers focusing on the promotion of student learning. Mixed method design obtained the assessment conceptions of the teachers. This study was conducted in 30, privately and government-owned schools in two western locations in the province of Cebu, Philippines. A survey questionnaire was administered to 125 secondary science teachers (determined through complete enumeration) with a return rate of 82.4% where descriptive statistics for data analysis was used. A focused group discussion (FGD) was conducted to eight selected secondary science teachers and thematic analysis was done to corroborate the survey results. The study showed that secondary science teachers "strongly" possess assessment conception pertaining to *improvement of student learning*, *diagnosis of student abilities* and *improvement of teaching* while they "mostly" agree on the conception regarding the *accountability of students*. The participants believed that assessment maybe used in determining and forwarding students' learning and improve teachers' instruction more than its summative purposes. The FGD further found out peculiar assessment conceptions that can be accounted to the assessment policy guidelines of the new K to 12 curriculum. It is recommended that further study can be done in determining the teacher assessment conceptions using all of the four constructs in the

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subsequent discussion. Likewise, an investigation as to how these conceptions are manifested in the actual classroom practices can provide a clearer information concerning the professional assessment competence of the teacher.

Keyword: Assessment conceptions, promoting learning, curricular reform, policy guidelines on classroom assessment

Introduction

For a number of years, many countries undergo curricular reform to improve their respective educational system (e.g. Chisholm & Leyendecker, 2008; Cheng, 2009; Jeffers, 2011). For any significant reform, one way to track the intended reform changes is to assess the learning of the students which is one of the important responsibilities of the teacher (Miller, Linn, & Gronlund, 2009). This in effect leads assessment to be handled delicately both by policy makers and by practitioners because it reflects the success of the reform. As the Philippines embark on a comprehensive curricular reform, Barnes, Fives and Dacey (2017) contends that assessment in schools takes the focal point in the national educational policy. Assessment practices in the school level are very much correlated to the teacher's conception of assessment (Brown, 2008). Educational researchers, school leaders, teaching institutions and policy makers must therefore give utmost importance to understanding the conceptions of the teachers with regard the purpose of assessment. Teacher's assessment conceptions could be influenced by the implementation of the new educational structure and the novel demands of the new assessment policy.

These assessment policies significantly serve both the accountability (looking at student's learning) and, the instruction (advancing learning) purposes in education (Danielson, 2008). In fact, Berry (2011) states that current educational policy reform movements tried to reduce the adverse impact of a highly discriminatory, accountability-based educational assessment by

employing a bigger importance in using assessment to inform improvements in the teaching and learning process. Chen and Brown (2013) even acknowledged the research of Kennedy, Chan, and Fok (2011) about Hong Kong's assessment policy, which suggests that the assessment "*for"* learning is a soft policy option (i.e. requires voluntary compliance by teachers and schools), relative to the more powerful hard policy option of selective qualification examinations, which are subsequently used to judge students and even teachers and schools. Thus, education policies that advocate the use of assessment to improve teaching and learning are in conflict with those that are oriented to use assessment as a means to measure achievement, award qualifications of students, and monitor school/teacher accountability (Yates & Johnston, 2017). They even recognize that teachers working under these conditions experience tensions between these two opposing purposes of assessment. They are prone to adopt assessment conceptions in accordance with the policy that has the greatest impact and direct effect on their work. Apparently, teachers' personal conceptions of assessment affect their practices that have implications as to how they view learning (Azis, 2015) or how they believe students could effectively learn.

Teachers' Assessment Conceptions

Teachers implement their assessment schemes influenced by their own beliefs about assessment (Aydin, Baki, Kogce, & Yildiz, 2009; Cross, 2009; Lyon, 2011; Opre, 2015; Postareff, Virtanen, Katajavuori, & Lindblom-Ylänne, 2012). Teachers view assessment as indivisible with instruction and they relate the performance of the students parallel to the learning goals (Aydin et al., 2009). In a sense, the pedagogical activities of the teachers are very much swayed by their beliefs; thus, it is important to make these belief explicit (Brown, 2004). However, Opre (2015) argued that in relation to assessment, 'conceptions' is the more appropriate term than 'beliefs' because it encompasses the beliefs itself, meanings,

preferences and propositions in the person's mental structure. Brown further developed a framework that measures the assessment conceptions of the teachers called the Teachers' Conceptions of Assessment – III (TCoA-III).

The conceptions in Brown's framework include (1) *Improvement of Teaching and Learning*, (2) *Accountability on Students*, (3) *Accountability on Schools and Teachers*, and (4) *Irrelevance*. A continuum outline of Barnes and colleagues (2017) illustrates these four conceptions of assessment with two extreme ends as shown in Figure 1.

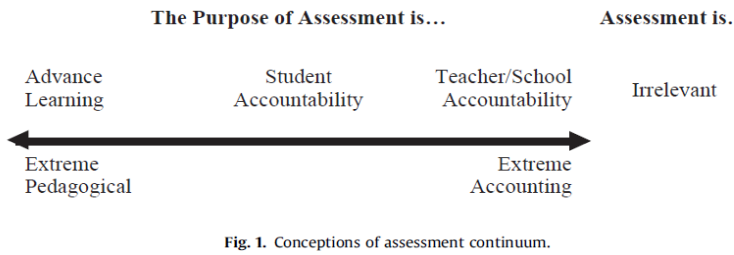

Figure 1. Conceptions of Assessment Continuum.

The pedagogical extreme of the continuum, holds the conception of informing instruction and improving student learning as the purpose of assessment. At the accountability end, lies the conception that assessment is for scrunching teachers/schools to be liable for the learner's performance. Student accountability is significantly placed in the middle to serve as the median of the continuum. This conception makes explicit the learning achievement of the students to serve both the pedagogical and accountability perspectives (Barnes et al., 2017). The fourth conception, "Irrelevance", was placed outside of the continuum since it is significantly diverse as compared to the other conceptions. This conception posits that assessment has pernicious effects to learning.

In the extreme accountability end of the continuum, teachers' professional commitment is to capitalize on the coverage of the tested curriculum. Teachers warrant students to obtain correct evidence about their acquired knowledge comparable to the loads of the exam. This scheme in turn leads to the vicious cycle of teaching for the examination, with less regard on student learning. Thus, it has been argued (Brown & Hattie, 2012; Hattie & Brown, 2008; Hattie & Brown, 2010) that, unless these constraining conditions are reformed, teacher assessment conception to improve teaching and learning will have little room to germinate.

However, Gardner (2012) emphasized that the ultimate intention of classroom assessment is to advance student learning. Some of the benefits of this perspective include improved instruction, accessing the motivation of students to learn and increasing the level of student achievement (e.g., Darling-Hammond, Newton & Wei, 2013; Lyon, 2013; White, 2009). Robust indication also confirms that teacher capabilities to design and evaluate student learning can project the learning gains that the students can possibly achieve (Darling-Hammond et al., 2013; Siegel & Wissehr, 2011). In this sense, the capability of the teacher to conduct assessment with a certain purpose in strategic areas in the instruction can improve the learning of the students. In fact, Brown, Kennedy, Fok, Chan and Yu's (2009) research showed that there is a clear relation between the teachers' conceptions about the purpose of assessment and the practices they agree with. Assessing student learning is a vital skill that teachers must acquire in order to cultivate a transformational teaching. It is a complex task to achieve because of the difficulties in advancing traditional conceptions of teachers and their practices related to assessment (Izci & Caliskan, 2017).

Thus, their assessment conceptions are shaped by their personal and professional decisions about their teaching (Opre, 2015). It also reflects the communal, historical and

racial urgencies of the educational context to where the teachers are situated (Fulmer, Lee, & Tan, 2015). Some of these factors include the educational system that they are in, their perceived expectations of the community, their pedagogical content knowledge and their personal understanding of student abilities. Additionally, Opre also recognizes the influence of the government in materializing these conceptions into practice. This claim acknowledges the impact of the policy makers on the conceptual interactions that the teachers have to contend with. Hence, the next section discusses the educational context of the current study to gain an understanding of the different opportunities and constraints that may influence the assessment conceptions of the teachers.

The Philippines K to 12 Basic Education Context

The Philippines recently underwent a major curricular reform with the implementation of the K to 12 Basic Education Program upon the signing of Republic Act (RA) 10533 "Enhanced Basic Education Act of 2013". It is an act enhancing the Philippine basic education system by strengthening its curriculum and increasing the number of years for basic education. It is the most comprehensive basic education reform initiative ever done in the country since the establishment of its public education more than a century ago (SEAMEO INNOTECH, 2012). Through this reform, the Philippines is trying to catch up with global standards more particularly in the secondary education (Okabe, 2013). Some of the key features in this program are the mandatory universal kindergarten, the spiral progression approach, and the implementation of the policy guidelines in classroom assessment.

Policy Guidelines on Classroom Assessment.

The assessment framework in the Philippines has evolved since the implementation of the K to 12 basic education program. The previous framework, then called (KPUP) Knowledge, Process, Understanding and Product,

serve as the criteria where the students are assessed and graded (DepEd, 2012). However two years after its implementation, the framework was revised into "Policy Guidelines on Classroom Assessment" (DepEd, 2015). This framework acknowledges the integral role of classroom assessment in the curriculum by deliberately considering Vygotsky's Zone of Proximal Development (ZPD) where it ensures students' success by moving them from the guided learning to independent display of knowledge, understanding and skills and to enable them to transfer this successfully in future situations (DepEd, 2015).

WW-PT-QA grading system. As a policy guideline, the Department of Education (DepEd, 2015) provided a summary of the competencies that must be achieved by the students with respect to the content and performance standards as prescribed in the curriculum. They emphasized that assessment schemes must be able to measure how well the students applied their learning in different contexts. They classified the summative assessment into different criteria: written works (WW), performance tasks (PT), and quarterly assessments (QA). The written works are evidences of learning from the students in a form of paper-and-pen artifacts. Performance tasks are those that involve different cognitive processes in which students manifest learning from a certain activity or task. Furthermore, if a particular assessment is conducted at the end of a quarter may it be a written work or a performance task, it is considered as another criteria called quarterly assessment (QA). This section includes objective tests (like periodical tests) or authentic assessments.

In summary, the assessment conceptions of the teachers may influence the way they assess the learning of the students. The educational context and policy makers also contribute to their assessment conceptions. Recent studies in relation to the teachers conceptions of assessment has been done in various

countries like Hong Kong (Brown, Kennedy, Fok, Chan, & Yu, 2009), Columbia (Muñoz, Palacio, & Escobar, 2012), India (Brown, Chaudhry, & Dhamija, 2015), Italy (Pastore, & Pentassuglia, 2016), USA (Barnes et al., 2017), Ecuador (Brown & Remesal, 2017), Turkey (Izci & Caliskan, 2017), and Iran (Khodabakhshzadeh, Kafi, & Hosseinnia, 2018) to name some. However in the Philippine context, such studies are less explored, limiting a thorough information regarding the assessment literacy of the teachers in the country. Policy-makers may or may not be empirically informed as to how the teachers conceive assessment and by extension, their professional assessment literacy. In effect, when the policy-makers design their policy guidelines for classroom assessment, it may or may not entirely cohere with the teachers conceptions of assessment. This is very crucial to address as it eventually affects the attainment of the curricular visions and goals of the implemented reforms.

Hence, this study attempted to fill in that gap as presented in Figure 2. The framework shows that the assessment conceptions of the teachers in terms of promoting student learning are influenced by their personal beliefs on assessment and vice versa. This relationship is shown with the double-headed arrow between the teachers' conceptions of assessment and their personal beliefs. Likewise, policy guidelines on classroom assessment (DepEd, 2015) strongly contribute to the teachers' personal beliefs on assessment since they adhere to it in their assessment practices.

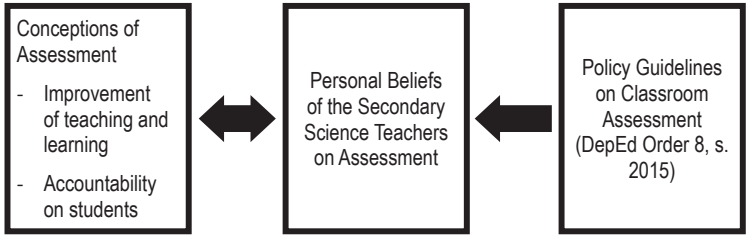

Figure 2. Conceptual framework.

Purposes of the Research

This study aimed to investigate the secondary science teacher conceptions on assessment particularly on the promotion of student learning. The study aimed to address the following research questions:

1. What are the assessment conceptions of the secondary science teachers in terms of
   a. Improvement of teaching and learning, and
   b. Accountability on students;
2. What basic themes emerge with respect to these teachers' conception of assessment?

Methodology

Research Design

This study made use of a mixed method design. It gathered evidences and described the assessment conceptions of the secondary science teachers in a much deeper sense as to how this conception influenced the way they assessed their students. The quantitative procedure of this study made use of a survey questionnaire that determined the assessment conceptions of the teachers. The qualitative aspect of the study was a descriptive case study obtained from the focused group discussion (FGD) that corroborated the survey results.

Research Participants

Complete enumeration of all the secondary science teachers (125 teachers) was conducted in all of the privately-owned and government-owned high schools in the western part of Cebu province Philippines. Permit from the Department of Education (DepEd) Division office was obtained in order for the study to be conducted in a government-owned school. While for the privately-owned school, the researcher secured

the permission of the principal. A total of 35 secondary schools responded (24 from government schools and 11 from privately-owned schools).

One private and one public high school were purposively chosen to participate in the FGD for diverse representation. The criteria for school selection includes: must have science teachers with a variety of age range (21-30, 31-40, 41 and above years old), degrees held (ranging from bachelor's to master's degree, certificate or diploma in teaching and doctor's degree are optional), and varied length of teaching experience (1-10 years, 11-20 years, more than 20 years of experience). This information was obtained from the demographics of the questionnaire. Three teachers from the private school and five from the public school showed up on their separate scheduled group interview. Informed consent to participate was sought among all the participants.

Research Instruments

Teachers' Conceptions of Assessment (TCoA-III) questionnaire. Brown's (2004) Teachers' Conceptions of Assessment Inventory was adapted with a well fit internal validity (χ^2=3217.68; *df*=1162; RMSEA=0.058; TLI=0.967). Two conceptions were highly associated to the promotion of student learning – *Improvement of teaching and learning and Accountability on students*. These two conceptions were the ones used to investigate the assessment conceptions of the secondary science teachers (Appendix A). Furthermore, this study used three (from the four) domains under the *Improvement of teaching and learning* conception, namely*; Improve student leaning, Improvement of teaching,* and *Diagnose student abilities.* The items were presented in a 6-point Likert scale (6 for strongly agree, 5 for mostly agree, 4 for moderately agree, 3 for slightly agree, 2 for slightly disagree and 1 for strongly disagree).

Focused Group Discussion (FGD) questions. A set of questions was prepared that served as the guide in obtaining the qualitative data from the focused group discussion. Questions were asked to provide information of the assessment methods that the teachers implement and their intentions in using them (see Appendix B). Question number one provided information of other assessment methods that they implement. The second one identified their intention in conducting their assessment methods in their own words. While, the third question presented the placement of their assessment methods using their lesson plans and their criteria in choosing an assessment task or method. The last question provided answers to the effect of assessment in teaching in terms of improvement of their teaching, how the students learn, purpose in assessing, or describing their students' achievement in relation to learning goals.

Data Collection

The structure of the questionnaire was slightly changed from the original version in order to fit the context of the study (with the permission of the developer). The instrument was then subjected to experts review to assure content and instrument validity. Prior to the actual implementation of the study, the instrument was pilot tested to 12 secondary science teachers who volunteered and not part of the targeted respondents. The pilot tested group did not have any problem or confusion with the instrument and the survey statements appeared to be clear to them.

After pilot testing, all the respondents (125 teachers) were given the TCOA-III survey questionnaire. A total of 109 questionnaires were retrieved but six with missing data were removed from the analysis leaving only 103 questionnaires (final return rate of 82.4%). After retrieving the questionnaires, the researchers chose one privately-owned and one government-owned school to participate in the FGD based on varying age range, degrees held, and length of teaching experience. The

questions were given to the teachers prior to the interview (Appendix B) so that the participants can have time to prepare for their answers. A separate and convenient date was set wherein the FGD was conducted and audio-recorded. The participants were asked to bring their lesson plans of the current school year of a particular topic that they think would help them further elaborate their answers to the questions.

The answers of the selected teachers in the FGD were axially coded and thematically analyzed to corroborate with the survey results. The interview was administered using English as the medium of communication, although the respondents used their own dialect (Cebuano) when they felt the need to elaborate on their answers. Their responses were transcribed and translated into English for the coding process. To ensure certainty of their answers to the questions, the translated transcripts were proofread by the FGD participants where they affixed their signatures to signify that the translated transcriptions reflected their answers accurately. All the qualitative data were cross-checked independently by another researcher to reduce subjectivity of analyses. The discrepancies were discussed and reconciled by one of the authors and an independent researcher.

Data Analysis

Descriptive statistics was used to deduce answers about the common assessment conceptions of the secondary science teachers in terms of (a) Improvement of teaching and learning and (b) Accountability on students obtained from the TCOA-III instrument. The mean rating of each statement was obtained followed by the computation of its overall mean. After which, the standard deviation under one domain was acquired to describe the homogeneity of the assessment conceptions. Furthermore, bivariate correlation of the improvement of teaching and learning and accountability on student conceptions was executed to show the extent of relationship possessed by the two conceptions.

In this study, since the answers of the participants were axially coded, the two conceptions of assessment were made as the *global* themes. The domains in each conception were the *organizing* themes. The answers of the participants in the questions were the sources of the *basic* themes.

Results and Discussion

This section presents the assessment conceptions of the secondary science teachers. The correlation result of the survey questionnaire is discussed first. The second part discusses in detail the extent of agreement (mean rating and standard deviations) among the respondents with respect to the TCoA-III instrument together with the qualitative results of the FGD for deeper analysis of the participants' conceptions. For distinction, the teachers who answered the survey are referred to as the respondents while those included in the FGD are denoted to as participants.

Table 1 presents the bivariate correlation of the two assessment conceptions: *Improvement of teaching and learning* and *Accountability on students*. The two conceptions showed statistically significant moderate positive correlation ($r = .59$, $p \leq .01$). This correlation implies that as the teacher thinks of assessment for the Improvement of teaching and learning, it is likely that the teacher lets the students manifest the quality of their learning in comparison to the competencies found in the curriculum guide. It is notable that the teachers are highly aware of the close relationship between formative and summative purposes of assessment. However, the magnitude of the mean ratings and the moderate positive correlation shows that the inclination is more on the extreme pedagogical end of the spectrum in relation to Figure 1 (Barnes et al., 2017).

Table 1. Conceptions of Assessment.

Conceptions on Assessment	Mean	Correlation	
		1	*2*
1. Improvement of teaching and learning		1	
A. Improve student learning	5.46 (0.48)[a]		
B. Diagnose student ability	5.45 (0.55)		
C. Improvement of teaching	5.33 (0.60)		
2. Accountability on students		0.59[b]	1
D. Evaluate learning objectives	5.06 (0.81)		

[a] *Standard deviations are enclosed in parenthesis.*
[b] *significant at 0.01 level (2-tailed).*

Comparing these results to the study of Barnes and collleagues (2017), they used the four constructs of the TCoA-III to the teachers in the northeastern region in the United States. Their descriptive analysis also showed moderate, but higher, correlation ($r = 0.72$, $p \leq .01$) on the *Improvement of teaching and learning* and *Accountability on students,* which shows that the teachers lie more on the extreme pedagogical end. The teachers believe that assessment is indeed for promotion of student learning. However, the mean rating of their conceptions under those are much smaller (*slightly* to *moderately* agree) compared to the aforementioned study (*mostly* to *strongly* agree). This may imply that the inclinations of teachers in assessment are more on the learning of the students than on the accountability measures of the policy makers. The extent on how they agree, however, may differ with location and context. The next subsections present a holistic discussion of the quantitative and qualitative results for each assessment conception domains.

Improve Student Learning

Table 1 illustrates that the *Improve student learning* domain has the greatest mean rating, followed by *Diagnose student abilities*, *Improvement of teaching*, and *Evaluate learning objective* domains. Particularly, the respondents *strongly agree* that assessment is done to improve student

learning (M=5.46, SD=0.48) by providing them with strategic feedback regarding their performance and needs. The standard deviation (SD) in this conception was the least among the four domains, which implies homogeneity of the teachers conception. Here, the conceptions of the teachers are in sync with the intentions of the policy guidelines on classroom assessment because immediate feedback is given importance to further student learning (DepEd, 2015, p.3).

Figure 3 presents the thematic network of how the participants provide their students with opportunities to further their learning. The figure details the involvement of the students in the given assessment and their interaction with their classmates. It appears that the participants' conceptions are grounded on socio-cultural learning theory that acknowledges learning via participation in a socially situated interaction (Pella, 2011).

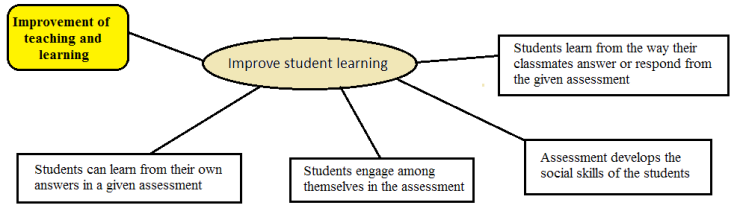

Figure 3. Thematic network for Improve Student Learning.

This basic theme gives the impression of student-centeredness as the students are viewed to be directly involved in the assessment process. This result was clearly manifested in the assessment conceptions of the respondents. Secondary science teachers have a common conception that students can improve more on their interpersonal learning when interaction is not fully under the teacher's authority. Students can freely express their opinions and ideas whether it is right or wrong and they can listen to each other. They are free to affirm or negate each other's thoughts. In the process, they can improve their current understanding or learning. Such practice makes

the student the "key assessor" (Earl, 2013) in the assessment scheme by providing them the avenue to be empowered and to have a direct control over their learning.

It can also be inferred in this study that teachers do implement assessment *as* learning. In fact, Yates and Johnston (2017) suggest that high correlation between the domains of *Improvement of teaching and learning* and *Accountability on students* can indicate implementation of assessment "*as"* and "*for"* learning. Bivariate correlation of this study yields a moderate positive correlation ($r = 0.59$, $p \leq .01$) which implies that implementing group activities may be one of the ways that the secondary science teachers implement assessment "*as"* learning.

Diagnose Student Ability

The *Diagnose student ability* domain (M=5.45, SD=0.55) almost tied with the *Improve student learning* domain (M=5.46, SD=0.48) with a small difference on the standard deviation. This result shows that as assessment helps students to improve their learning, it allows the teacher to see what students have learned or can do or have done. It is a way for teachers to gauge how much students have gained from the teaching-learning experiences. It establishes what the students have acquired in the instruction and helps the teachers to identify the strengths and weaknesses of the students.

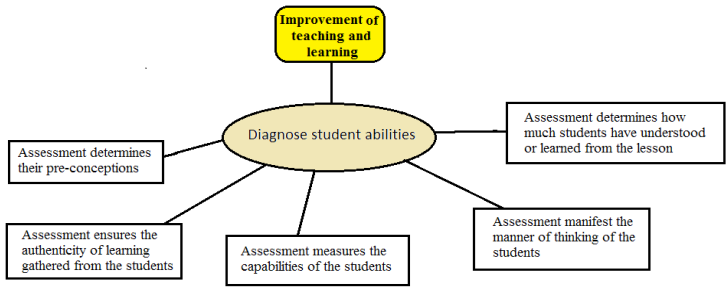

Figure 4. Thematic network for Diagnose Student Abilities.

Figure 4 presents the thematic network for this domain. In here, participants share the conception that assessment determines how much the students have learned from the lesson. For them, assessment manifests the manner of thinking of the students and ensures the authenticity of their learning. The secondary science teachers use various assessment methods to determine what goes on in the minds of the students and how the lessons are assimilated by them. It provides evidence that the teachers give value in determining what the students have understood from the lesson, their capabilities and how they think. These actions clearly describe the formative purposes of assessment.

This basic theme is recurring and common in the answers of the participants. It appears that assessment is strongly viewed as a tool directed to uncover their learning and for teachers to address. However, the manner of how they specifically progress learning is not explicitly described in the FGD. Nevertheless, if they do provide feedback, this conception is subtle and may eventually serve the purpose of improving their learning instead of simply pure diagnosis.

Improvement of Teaching

Following the previous two student-centered domains, the respondents also *strongly agree* (albeit with a lesser mean) that assessment is for the *Improvement of teaching* (M=5.33, SD=0.60). In the two previous conceptual themes, assessment is focused on how learning of the students is improved and diagnosed. In the *Improvement of teaching* theme as shown in Figure 5, concerns with the relationship and effect of assessment in instruction, an integral part of the teaching practice that has direct effect on their instructional design. With whatever student response they get from the assessment, teachers eventually modify their on-going instruction. The information that they can gather from the assessment is also used to decide for the progress of their lesson.

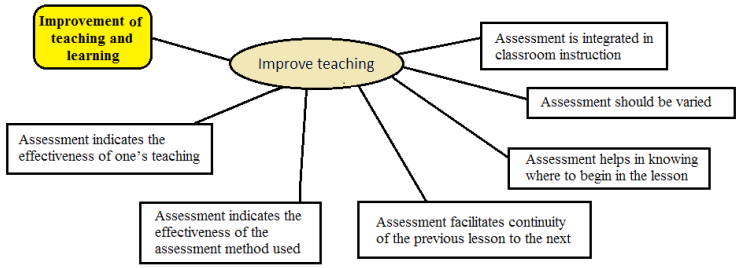

Figure 5. Thematic network for Improve Teaching.

Secondary science teachers generally possess the notion that assessment is integrated in the teaching practice. This conception affirms the indivisibility between assessment and instruction (Harlen & Qualter, 2009). Assessment allows the teachers to have control in the teaching-learning process by eliciting students' prior knowledge and capabilities that serves as their clue to either proceed or linger more in the lesson. Eventually, assessment is viewed to inform and improve their manner of instruction.

Moreover, two peculiar basic themes emerge from the FGD, which is not found in the construct of Brown's (2004) assessment conception instrument. Two participants from the FGD possess this concept that assessment indicates the effectiveness of the teacher. This conception is also present in the results of Aydin and colleagues (2009) wherein teachers possess a belief that assessment is a reflection of the teacher's effectiveness. Meanwhile some of the participants also believe that assessment indicates the effectiveness of the assessment method used.

Based from the response of the participants, these conceptions do not necessarily involve the students in the analysis of their practice. It is more directed towards the effectiveness of their teaching practice and the implementation of the assessment method. Apparently, they equate the idea of

effectiveness of instruction to that of the appropriateness of assessment. They are convinced that a favorable assessment result is parallel to effectiveness of the instruction as it would imply that the students have achieved learning.

The researchers reviewed these unique themes whether they belong to the other domains of Brown's instrument that were not included in the study (particularly under *School Accountability* and *Irrelevance*), but it did not reflect the conceptions of those domains either. However, upon reviewing the assessment policy guidelines of the Department of Education, one of the purpose of assessment indicates that, "assessment helps the teacher determine whether instructional strategies are effective" (DepEd, 2015, p.5). It could be that this conception between effectiveness of instruction as a direct link to the appropriateness of assessment is from the policy makers themselves as it is evident from their provisional guidelines.

Evaluate Learning Objectives

The conception that has the least mean rating and the greatest standard deviation (M=5.06, SD=0.82) is the *Evaluate learning objectives* domains. This result implies that the respondents vary in their agreement with their conceptions in terms of *Accountability on students*. Teachers *mostly agree* that assessment determines if the students have fulfilled the competencies, content knowledge, and performance standards stipulated in the revised science curriculum (DepEd, 2013). Likewise, they *mostly agree* that assessment is a process of checking the progress of the students against the achievement of the objectives.

Figure 6 shows this basic theme observed as common among participants coming from both private and public schools. It is also important to emphasize that both schools implement the same curriculum guide and follow the same grading system as prescribed by the policy guidelines on classroom assessment (DepEd, 2015).

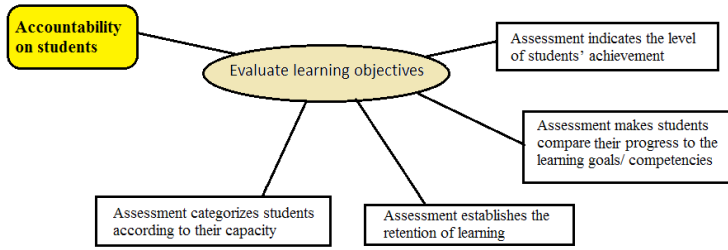

Figure 6. Thematic network for Evaluate Learning Objectives.

For most of the secondary science teachers, assessment indicates their students' level of achievement which is related to the summative purposes of assessment. Achievement for them is something that is measurable and must be performed by the student may it be through traditional forms or alternative ways. Determining these achievements allows teachers to categorize students as either slow, average or fast learners. For some, it is an inherent capacity of the teachers to know those who understand from those who do not. While for others, it serves as a determinant for students who have the ability to keep up with the lesson's progress. Regardless of which, it is a common conception that assessment classifies students according to their capacity.

Conclusion and Recommendation

With the implementation of the K to 12 Basic Education Program, this study aimed to investigate the secondary science teachers' conceptions on assessment particularly on the promotion of students' learning. In the Philippines, studies that focus on assessment conceptions are less explored. The scarcity of such studies provides incomplete information regarding the assessment literacy of the secondary science teachers in the country. Hence, this current study attempted to fill in that gap.

The two conceptions under study are (1) *Improvement of teaching and learning* and (2) *Accountability on students*. The

moderate positive correlation between these two conceptions implies that the assessment conception of the secondary science teachers lies more on the pedagogical end of the assessment conception continuum. Further, this study found out that the assessment conceptions of the teachers were strongly about student-centered domains of *Improvement of student learning* and *Diagnosis of their student abilities*. Following these domains is the *Improvement of teaching* and *Accountability on students* conception*,* respectively.

This study showed that the assessment schemes of the secondary science teachers are more student-centered and are highly evident in the focus group discussion. What is very clear to them and where majority share the same understanding is the conception that assessment helps diagnose the students' abilities. Secondary science teachers do not entirely discuss the way they specifically provide feedback, but the positive correlation of the two assessment conceptions (*Improvement of teaching and learning* and *Accountability on students)* implies that assessment is also given "*as"* learning aside from "*for"* and *"of"* learning.

This study indicates that amidst the culture of high-stake exams in the Philippines (e.g. National Achievement Test), the teachers prioritize in promoting students' learning than the accountability perspective. This is evidenced by their high extent of agreement to the *improvement of teaching and learning* conception. Further, this conception showed a positive correlation to the *accountability on students* conception. This is consistent with the studies of Yates and Johnston (2017) amidst the strong implementation of the National Certificate of Educational Achievement (NCEA) in New Zealand and of Barnes et al. (2017) in USA amidst the No Child Left Behind Act of 2001.

The secondary science teachers also consider the co-dependence between assessment and instruction. As assessment naturally helps the students, the teachers also benefit in a way

that it informs their instruction (i.e., knowing whether to proceed to the next lesson or not proceed). However, a consequential conception that relates to the teachers' professional competence was their notion that assessment is indicative of the effectiveness of the teachers' instructional strategies and of the assessment methods used. This is also evident in the results of the study of Aydin and colleagues (2009). The current policy guideline on classroom assessment contributes to these underlying conceptions of the teachers. Since the decision to choose the best method to implement rests in the hands of the teachers, it does not necessarily contribute a positive implication to the teachers themselves. This may add further pressure on them because administrators now look at their assessment procedures to determine their professional effectiveness. It is important to remember that assessment in the classroom serve the purpose of promoting students learning (Gardner, 2012). Although it may have implications to teaching, assessment procedures and results must not be an index on the effectiveness of the teacher; rather, a tool to improve their teaching practices oriented for the promotion of student learning. Failure of the assessment method used does not necessarily mean failure of the students' learning achievement; all the more it does not necessarily mean failure of the teacher employing such method.

Summative assessment is a major element in the assessment schemes of the secondary science teachers because it is inherent in the reformed educational system. It allows them to classify students as slow, average or fast but different teachers have different intention of categorizing the students. It also updates the teachers of the level of achievement that the students have reached in relation to the competencies prescribed by DepEd (2013).

With these information, policy makers can implement suitable policies in the current curricular program that is attuned to the teachers' conceptions (leaning towards the pedagogical extreme-Figure 1) to help attain the goals and objectives of

the K to 12 Program. A credible policy guideline on classroom assessment must be put in place taking into consideration the conception of teachers on the purpose of doing it. These conceptions are few of the important factors that influence their classroom decisions and it is more critical during the period of systemic school reform since teachers are the last step in the sequence of change (Remesal, 2011).

With these findings, the researchers recommend a research in the Philippine context that determines all the four assessment conceptions of the teachers. This can be done to completely determine and describe the extent of agreement that the teachers possess and to have a holistic understanding of their assessment conceptions. Similar study could be done to elementary teachers and to secondary teachers with expertise on other subject areas. Large scale study could be done across the Philippines with proper sampling procedure to generate a valid inference on the assessment conceptions of the Filipino teachers in general. This would help policy-makers design future policy guidelines in line with the assessment conceptions of the teachers.

Likewise, one of the results of this study is the existence of peculiar assessment conceptions that is not present in Brown's (2004) framework. It could be that teachers hold further conceptions on other domains not yet explored or studied. A deeper case study can be done to further explore other peculiar conceptions not addressed in Brown's (2004) TCoA-III instrument. This may uncover some conceptions unique in the Philippines' context and explore the reasons for the possession of such conceptions.

Lastly, one of the limitations of this research is the lack of classroom observation to further verify that the teachers' assessment conceptions are observable and manifested in the classroom. Studying the assessment conceptions as

demonstrated in their classroom assessment practices provides clearer information regarding the professional competence of the teacher in the aspect of assessment. Such process was not implemented due to time constraint. The researchers strongly recommend this as part of the methodology to further reinforce the claims.

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Appendix

A. Conceptions of assessment – improvement of teaching and learning & student accountability.

Improvement of teaching and learning
(A) Improve Student Learning
1. Assessment helps students improve their learning
2. Assessment is appropriate and beneficial for children
3. Assessment feedbacks to students their learning needs
4. Assessment provides feedback to students about their performance
5. Assessment is an engaging and enjoyable experience for children
6. Assessment makes students do their best
7. Assessment is a positive force for improving social climate in a class
(B) Improvement of Teaching
8. Assessment information modifies ongoing teaching of students
9. Assessment is integrated with teaching practice
10. Assessment changes the way teachers teach
11. Assessment allows different students to get different instruction
12. Assessment information is collected and used during teaching
13. Assessment influences the way teachers think
(C) Diagnose Student Ability
14. Assessment measures students' higher order thinking skills
15. Assessment establishes what students have learned
16. Assessment identifies student strengths and weaknesses
17. Assessment is a way to determine how much students have learned from teaching
18. Assessment identifies how students think
19. Answers to assessment show what goes on in the minds of students
Student Accountability
(D) Evaluate Learning Objectives
20. Assessment selects students for future education or employment opportunities
21. Assessment is comparing student works against set criteria
22. Assessment is assigning a grade or level to student work
23. Assessment places students into categories
24. Assessment is checking off progress against achievement objectives
25. Assessment determines if students meet qualifications standards

B. Questions used for the Focused Group Discussion

1. From the given list of the assessment methods (a list was being provided to the participants), which of them have you already implemented in your classes? Are there some methods that you have implemented that were not in the list? If so, what are those?

2. Which specific part in your classroom instruction do you implement those methods (based from your answer in no. 1)? What is/are your intention/s in conducting that particular assessment method/s?
3. From your previous lesson plans in this school year, can you show the different assessment methods that you have implemented in your classes in a particular science topic? What are you criteria in choosing an assessment task or method?
4. In what specific way/s does assessment affect your teaching in terms of:
    a. Improvement of your teaching
    b. How students learn
    c. Purpose in assessing
    d. Describe students' achievement in relation to learning goals