



21st Century Project-Based Learning: Alternative Assessment Approach by Practicing Rubric

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ABSTRACT

Alternative assessment has been acclaimed as an approach to assess activities which are authentic and engaging students with active and cooperative learning. It also foster skills needed in the 21st century and preparing students for future careers. The study is an attempt to build an analytical rubric to evaluate students science project and enriching it with 21st century skills and providing a space for students to develop their potential. Delphi technique is used to validate the rubric and intra-class correlation coefficient (ICC) was conducted to measure the reliability of the rubric. The study encountered that the rubric reached high consensus by panel of experts and high absolute agreement of [ICC = .75(95%CI, .41 to .93)] which can be concluded that is has a fair reliability of 75.0%. Thus the rubric can be practiced and implemented to assess students science project. However the study have found numerous issues and constraints but the creation of the rubric concedes assessment of students activities which are authentic and relevant to nourish 21st century skills. Though, further research on the validity and reliability of the rubric is crucial.

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Introduction

Malaysia Education is a continuous effort in developing individual potential holistically and to produce citizens who are knowledgeable, responsible and have the ability to pursue robustness within and to contribute to the wellness and prosperity of the country (Kementerian Pelajaran Malaysia, 2007). However in the 21st century landscape, does the aspiration is still relevant in facing challenges and the uncertainties in this borderless world?

In confronting the global economy environment it is essential to prepare and produce human capital that is competent in various skills and compatible with the 21st century settings. The Vision 2020, Malaysia stated an aspiration to develop enhancement based on productivity which can only be realize by workforce who is literate in technology and the ability to think critically to compete in this global world (Jusni, 2005). Education is the foundation and the core to establish a healthy human capital that is skilled and smart by strategizing the school to act as a medium to foster creative thinking and learning ability for the future (Kementerian Sumber Manusia Malaysia, 2010). So what are the skills should be nurtured in teaching and learning programs and how to assess it in this 21st century?

Singapore has given a focus on enhancement of alternative assessment to reduce the negative effect of testing (Kelvin, 2013). In most countries, alternative assessment is required because the students product or process can be measured as well as students performance or the effectiveness of programs (Libman, 2010). Furthermore, alternative assessment is capable to diminish stres of high stakes examination and focusing on the development of the students and the effectiveness of teaching. As stated by Salamiah et al. (2013), by implementing the assessment for learning enable teachers to evaluate students continuously and students can demonstrate knowledge and skills through teaching and learning program. In is crucial for teacher to integrate assessment during instruction to generate more interesting approach and increases the learning outcomes.

Bell (2010) stated, by practicing project-based activities it enhances students to master the topic, in depth learning, higher level of reading also increase students motivation and able see what they have learned. Students can solve real world problems by designing inquiry independently, planning of learning, organizing research and establishing various strategies of learning. The centralized standard assessment is not able to measure critical 21st century skills which are based on excellence in this era (Bell, 2010). The assessment of science project skill by student is important in enhancing students' potential in solving problems and making decisions, 21st century skills as well as generic skills that can be nurtured by implementing science projects which demand the students to plan and to organize activities also to interact among themselves to produce their project together.

According to Hafner and Hafner (2007), the term of rubric is used in various ways and understood as consistent tools of assessment to facilitate in explaining the level or the degree of performance of a task. Rubric allows complex assessment especially in giving grades to a qualitative and authentic task. It involves criteria in multiple dimension of performance and standards of criteria that is measured. Furthermore, rubric informs the assessor and students what should be observed during the assessment (Perlman, 2003). This study is to develop student science project rubric by taking into account the validity and reliability in hope to help teachers to assess alternative assessment activities and nurturing 21st century skills.

Literature Review

Globalization has influenced policy makers in most countries to review their existing curricular to confront challenges ahead. From the development of education aspect, policy makers need to analyze the impairment and the strength of the education system to provide students with current knowledge and skills in the competitive environment of globalization (Habib & Megat, 2008). Hence, each nation must be responsible to develop the economy through education

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curricular in order to ensure the production of the human capital is optimum and to create new job opportunities that is concerned of 21st century skills. Education can't be seen as a medium to deliver basic knowledge and skills such like reading, writing and counting. Current education must meet the challenges in the 21st century and capable to produce student who is creative and innovative and also think critically to solve problem (Toffler, 1991). What is the nature of the education framework or policy that is dexterous in establishing students in reaction with the need of the 21st century?

Since the education system act as socialization agent, policy makers must transform the objectives, curriculum, pedagogy and assessment to facilitate new generation to achieve outcomes which is needed to establish good life, and wellness of the country and function as contributor in career as well as sound citizen (Maria & Kamisah, 2010). Emphasis must be given to innovation and creativity aspect especially at the national stage to promote competiveness and to educate Malaysians particularly new generation the importance of innovation and creativity and acculturating it in daily life (BPPDP, 2012). Thus, it is necessary to nurture 21st century skills at the early stage to establish competiveness and current citizens.

In Malaysia, more employees are shifting to employ candidates who are balanced in academic along with soft skills such like communication skills, problem solving skills, interpersonal skills and the ability to be flexible in confronting problems (Gurinder & Sharan, 2008). According to Zaidatol (2007), employees yearning for candidates who have complete characteristics such as having ample skills, expose to many work experience, noble and balanced in terms of practicality and general knowledge. Does the existing education curriculum and assessment fulfill the needs of employees and to prepare the students to face future careers? The ever changing settings due to globalization trigger the urge for a rapid action to evaluate the education system to ensure it is relevant and concurrent (Norasmah & Halimah, 2007). Therefore education system should emphasis on 21st century skills and play the role to change community according to future needs.

According to Ak and Guvendi (2010), education is not about transferring basic knowledge and skills and repetition of what have been done by the previous generation, it should be able to develop innovative individual by implementing activities which can establish students' ability to adapt in the uncertainties of the global situations today. Therefore education institution must be able to produce human capital that is balanced and outstanding concurrent with the needs of the 21st century. But, how to assess the 21st century skills and what kind of activities that is appropriate to ensure this could be realized? In order to develop human potential equipped with 21st century skills the education institutions and policy makers must focus in the outcomes stated below and does teachers helping the students to become... (Partnership for 21st Century Skills, 2009);

- i. Critical thinkers?
- ii. Problem solvers?
- iii. Good communicators?
- iv. Good collaborators?
- v. Information and technology literate?
- vi. Flexible and adaptable?
- vii. Innovative and creative?
- viii. Globally competent?
- ix. Financially literate?

By exposing students to the real life situations and can be reflected in the alternative assessment activities and using rubric as an assessment tool is the best practice to measure

competencies which are needed in reality (Airasian, 2001). Rubric promotes the probability to make a valid assessment which can't be accomplished in the traditional assessment approach. Rubric works as teaching tool to measure complex tasks not to degrade the reliability (Una et al., 2012). Clear criteria and standard statement used in rubric provide the teacher and student feedback and enhance learning. But according to Nurfaradilla et al. (2010), there's not much effort to overcome examination oriented education system but by implementing alternative assessment the role of high stakes examination by the centre (Board of Examination) can be reduced. Alternative assessment involves activities that are other than conventional "pencil-paper" test such as experiment, survey, checklist, portfolio, observation, interview and project (Abdul Rahim & N Saliza 2008; Libman 2010; Nurfaradilla et al. 2011).

Performance-based learning often resembles with the alternative assessment that involves activities connected to real life situation (Black, 1998). It is not the effort to create instruction related to real life but in alternative assessment is an attempt to make reflections based on reality and providing ample data about the expectation of students performance (Darling-Hammond & Snyder, 2000). However this kind of assessment needs a very good observation to identify expected behaviors and valid. In preparation of future career which is concerned with activities such like portfolio, drama, presentation and project, teachers should realize that alternative assessment is a constructive approach to evaluate process which can't be seen by traditional approach (Akbulut & Akbulut, 2011).

Even experience teachers have problems in motivating and engaging students in active learning and it is quite a challenge. There are a variant of students learning styles, culture and ethnic background and "one size fits all" approach do not decisive in conforming high achieving standards. Education Technology Division (2006) suggested, project-based learning is essential in learning process and meant to achieved 21st century skills. Learning is not about memorizing fact and applying basic skills and it should be build in accordance with individual strengths and allows students to explore their enthusiasm through project-based learning. Project-based learning is a holistic approach in nature that incorporates cooperative learning, encourages interdisciplinary and providing challenging and complex task. Thus, it leads to authenticity due to the nature in solving real world situations beyond classrooms setting. By using rubric educators can assess activities that are authentic such like project easily and able to give appropriate feedback and enhances teaching.

The rubric is used as an assessment tools in education since 1960. Rubric can offers more focused assessment and reducing bias by stating a clear criteria. These are some benefits that can be gained through the practice of rubric in assessment;

- i) Provides feedback to students about their strength and weakness in achieving learning goal (Cooper & Gargan, 2009).
- ii) Promotes active learning and act as an assessment tools to observe criteria in larger scale (Nitko, 2001).
- iii) Provides the meaning in communication about the expected performance especially in focusing on individual elements, ideal responses and reflective (Andrade et al., 2009).
- iv) Facilitates students to make self assessment to keep track their level of achievement (Lasater, 2011).
- v) Ensures the assessment to focus on each domain of learning and prevent educators bias (Mertler, 2001).

Methodology

3 rounds Delphi technique is used to determine the validity of the analytical rubric for science project. Theoretically, the

Delphi technique process occurs repeatedly until the conditions are identified and met (Chia-Chin Hsu & Stanford, 2007). The testing of reliability using Inter-rater reliability (IRR) and assessor will record the score on observed behaviour and compare it with other observers to see the similarities and the derivative. Each assessment must have high credibility and reliable and based on the evidence (Unal et al, 2012). After completing the analytical rubrics for science project and the 3 rounds Delphi has achieved the requirements and specifications, content validity achievement will be calculated using the percentage of estimates (Sidek & Jamaludin, 2005). If the percentage earned more than 70% the rubric has good content validity. Furthermore, consensus reached the panel of experts determined using median and half quartile deviation. Analysis of intra-class correlation is the method to see how close an individual assessment could be and to determine the reliability of the raters when using a scoring rubric as a guide (Good, 2012). This study used the Intra-class correlation coefficients ICC (3) and teachers assigned as raters to evaluate students science project using the rubric. The purpose of the analysis is to show that there is a high degree of acceptance among raters in analytical scoring rubric. Therefore it is proved that the scoring is done by the raters have achieved consensus in similarity of scoring, when the reliability of the rubric is high and it can be used on a wider sample.

Findings

Analysis of percentage of content validity for 3 rounds Delphi.

Delphi round	No. of Experts	Percentage of validity(%)
1	5	82.0
2	5	83.3
3	5	91.1

Table 1: Percentage of validity for 3 rounds Delphi.

Based on Table 1, it shows that all 3 rounds reached a very high percentage of content validity (82.0% for round1, 83.3% for round 2 and 91.1% for round 3) and confirmed that the rubric is appropriate to measure students science project. According to Sidek and Jamaluddin (2005), manual or module which reached more than 70.0% is considered usable. In determining consensus reached by panel of experts in Delphi round, median and half quartile deviation were used. According to Holden and Coleman (1992), scale and precision is needed to confirm consensus reached in Delphi Technique. The science project rubric in validate by analyzing the median, first quartile Q_1 , third quartile Q_3 and the calculation of half quartile deviation. Based on Gravetter and Wallnau (2002), median is a good indicator because it doesn't influenced by extreme value. Validity refers to the relevance of criteria and classifying consensus. Analysis the level of relevance and consensus in Delphi round 3

Construct	Level of relevance	Level of Consensus
Purpose	4	High
Planning	5	High
Scientific Accuracy	5	High
Specification	4	Fair
Benefit to Community	4	High
Creativity Element	4	High
Graphic Element	5	High
Supporting Data	4	High
Language	4	High
Scientific and Noble Values	5	High
Percentage	High: 00.00%	High : 90.00%
		Fair : 10.00%

Table 2: Level of relevance and level of consensus in Delphi round 3

Table 2, shows all construct in the science project rubric reached 100% of high relevance and 90% of high consensus by 15 experts and it can be concluded that the rubric is usable to assess students' science project

Descriptive analysis on raters using the rubric

Rater	Mean	Standard Deviation
1	2.10	0.57
2	2.10	0.74
3	2.00	0.82
4	2.50	0.53
5	1.70	0.67

Table 2: Item statistics of mean and standard deviation on scoring students science project using the rubric by raters.

Based on Table 2, Rater 4 shows the highest mean ($m=2.50$, $s.d=0.53$) and Rater 5 shows the lowest mean ($m=1.70$, $s.d=0.67$). Even though the standard deviation is not unified, to see whether the raters scored consistently further correlation analysis between raters is needed.

Correlation test on scoring science project by raters using the rubric.

Rater	1	2	3	4	5
1	-	-	-	-	-
2	0.50	-	-	-	-
3	0.61	0.65	-	-	-
4	0.56	0.73	0.66	-	-
5	0.68	0.61	0.65	0.67	-

Table 3: Correlation matrix between items on scoring by raters using the rubric

Based on Table 3, it shows that the correlation on scoring between raters using the science project rubric. Rater 2 and Rater 4 shows the highest correlation of $r = 0.73$ compared to between Rater 1 and Rater 2 shows the lowest correlation of $r = 0.50$. It can be concluded that there is a fair positive correlation among raters and has a low reliability in terms of consistency in scoring. Further reliability test is needed to see the agreement among raters by using intra class correlation (ICC)

Intra class correlation coefficient (ICC) of scoring between raters using the rubric.

	Intraclass Correlation	95% Confidence Interval	
		Lower Bound	Upper Bound
Single Measures	0.37	0.12	0.71
Average Measures	0.75	0.41	0.93

Table 4: Coefficient between class for absolute agreement among raters in scoring science project using the rubric

Based on Table 4, its shows the coefficient between class for absolute agreement among raters in scoring using the science project rubric. The analysis shows that the agreement among raters is 75% [ICC = 0.75 (CI, 0.41 to 0.93)]. For the scoring using this rubric show only a good reliability of 75%. According to Kottner et al. (2011), some researchers fixed the absolute agreement to 0.60, 0.70 and 0.80 but there were some research fixed the absolute agreement to 0.95 based to the need of the study.

Discussion & Conclusion

Based in Intra-class Correlation Coefficient (ICC) the analysis shows that the science project rubric has an absolute agreement of 75.0%. It conclude that it has a good reliability and can be used to assess students project. If we refer on the correlation test it also shows a fair positive correlation between raters which is 0.50 to 0.73.

APPENDIX (SCIENCE PROJECT RUBRIC)

Name/Group:

Class:

Date:.....

Title :

CONSTRUCT	EXCELLENT	GOOD	SATISFACTORY	WEAK	FEEDBACK								
PURPOSE	<input type="checkbox"/> Has a clear theme, objective and a precise concept. Not confusing and captivating audience/reader entirely.	<input type="checkbox"/> Has a theme, objective and suitable with concept. Not confusing and mostly captivating audience/reader.	<input type="checkbox"/> Has a theme and objective and not quite suitable with the concept. A bit confusing to audience/reader and less captivating.	<input type="checkbox"/> Theme and objective are not clear and not suitable with the concept. Confusing and least captivating.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
PLANNING	<input type="checkbox"/> Has a systematic and a clear work plan with a blue print matches the concept. Discussion is done effectively and taking into account all members ideas.	<input type="checkbox"/> Has a systematic work plan with a blue print that matches the concept but need some corrections. Discussion is done and taking into account most members ideas.	<input type="checkbox"/> Has an unclear work plan and blue print and not quite suitable with the concept. Discussion made not taking into account most members ideas.	<input type="checkbox"/> Has no work plan and blue print and irrelevant with the concept. Need lots of correction . Discussion poorly made and does not involve members ideas.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
SCIENTIFIC ACCURACY	<input type="checkbox"/> Has a complete, precise and relevant scientific concept, facts, statistics, phenomenon or story.	<input type="checkbox"/> Has some relevant scientific facts, statistics, phenomenon and story	<input type="checkbox"/> Has some relevant scientific facts, statistics, phenomenon and story but weak to support the theme.	<input type="checkbox"/> Has least scientific facts, statistics, phenomenon and story and very weak to support the theme.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
CONSTRUCT	EXCELLENT	GOOD	SATISFACTORY	WEAK	FEEDBACK								
SPECIFICATION	<input type="checkbox"/> Has an explicit characteristics and suit the theme/concept and cost. All components are able to function efficiently to clarify the objective	<input type="checkbox"/> Has characteristics that suit the theme/concept and cost. Most components are able to function to clarify the objective.	<input type="checkbox"/> Has an unclear characteristics to suit the theme/concept and cost. Most components are not able to function to clarify the objective.	<input type="checkbox"/> Characteristics doesn't suit the theme/concept and cost. All components are not able to function to clarify the objective.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
BENEFIT TO COMMUNITY	<input type="checkbox"/> Accommodate ideas clearly with the need of the community, very future oriented and marketability.	<input type="checkbox"/> Accommodate ideas with the need of community, future oriented and marketability.	<input type="checkbox"/> Ideas less accommodate with the need of community, less future oriented marketability.	<input type="checkbox"/> Ideas do not accommodate the need of community, not future oriented and marketability.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
CREATIVITY ELEMENT	<input type="checkbox"/> Very creative, has alternative ideas to solve problem logically and clearly shows application through	<input type="checkbox"/> Creative, has some alternative ideas to solve problem logically and has an effort to show	<input type="checkbox"/> Less creative, most ideas are not able to solve problem and illogical and less effort to show application through	<input type="checkbox"/> Not creative, no ideas to solve problems, illogical and not innovative.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										

	innovation.	application through innovation.	innovation.										
GRAPHIC ELEMENT	<input type="checkbox"/> Has a clear and esthetic graphic elements such as diagram, chart, table and graph. Entirely captives audience through animation, space, colors, texture and shape creatively.	<input type="checkbox"/> Mostly has an esthetic graphic elements such as diagram, chart, table and graph. Most captives audience through animation, space, colors, texture and shape.	<input type="checkbox"/> Rarely has an esthetic graphic elements such as diagram, chart, table and graph. Less captivating the audience and less creative.	<input type="checkbox"/> There's no effort to attach graphic element and not captivating the audience.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
CONSTRUCT	EXCELLENT	GOOD	SATISFACTORY	WEAK	FEEDBACK								
SUPPORTING DATA	<input type="checkbox"/> Attached with complete references and scientific content that is clear and relevant. It also supported with complete and clear charts, table and diagram.	<input type="checkbox"/> Attached with references and scientific content that is clear and relevant. It also supported with complete charts, table and diagram.	<input type="checkbox"/> Attached with incomplete references and scientific content in most section. There's some effort to attach charts, table and diagram.	<input type="checkbox"/> Reference is not included with inaccurate scientific content. Lacking of chart, table and diagram.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
LANGUAGE	<input type="checkbox"/> Language is scientific and choices made consistently to reinforce presentation/ writing.	<input type="checkbox"/> Most language is scientific and choices made to reinforce presentation/ writing.	<input type="checkbox"/> Rarely provide a scientific language and less choices to reinforce presentation/ writing.	<input type="checkbox"/> Language is not scientific and no attempt to reinforce presentation/ writing.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										
SCIENTIFIC AND NOBLE VALUES	<input type="checkbox"/> Students show 3 out of 20 scientific and noble value.	<input type="checkbox"/> Students show 2 out of 20 scientific and noble value.	<input type="checkbox"/> Students show 1 out of 20 scientific and noble value.	<input type="checkbox"/> Students do not show any scientific and noble value.	Scoring <table border="1"> <thead> <tr> <th>E</th> <th>G</th> <th>S</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Comment.	E	G	S	W	3	2	1	0
E	G	S	W										
3	2	1	0										

It shows that the scoring of student science project is inconsistent between rater, however variance is not that wide. According to Colton et al. (2007), the inconsistencies between raters is due to lack of practice and explanation about and how to use the rubric. Raters may have different understanding upon the use of the rubric or the criteria wasn't clear enough.

If an effort to practice alternative assessment as an authentic approach, sacrifice must be made especially in terms of reliability. It means that the reliability can't be control the center (Board of Examination) and only the marking scheme is provided to teachers in order to have a high reliability responses (Mokhtar, 2009). According to Akbulut and Akbulut (2011), teachers responded poorly in choosing alternative approach such like peer assessment, project and report. This is due to the teachers believed that such assessments have low reliability and meaningless to students. Hence, this issue becomes a challenge to education institutions because alternative assessment is based on the observation made by raters that can be questioned its reliability and validity. The goal in implementing alternative assessment is to help students' learning not to focus on high reliability, however the assessment must be valid (Mokhtar, 2009). As stated by Stemler (2004), there are three approaches to ensure the scoring is precise and consistent. First, the degree of measurement is given to all raters. Second, to observe the correlation between raters and thirdly, the degree of scoring must reached general attribute compared to error component.

There are some factors that influence the implementation of rubric which are the expertise of rater, possibility of bias and rater competency in using the rubric (Good, 2012). According to Wolf and Stevens (2007), constraints related to the use of rubric can be reduced by using a clear statement and simple words for each criteria such like make a list, draw, discuss, compare, expect and so on. Not only the criteria is provided and build prior to assessment, it also can be designed by students during the course.

When the students build their own criteria for the assessment they are able to enhance understanding and eager to get involve with the assessment in producing better performance and achieve the goal that they set by themselves (Good, 2012). Therefore the educators can detect whether there are some misconception upon unclear criteria and can be explained to students.

According to Nurfaradilla et al. (2010), most teachers believed that alternative assessment promotes active learning and increases motivation of teachers and students. The educators also believed that alternative assessment also nurture creative and critical thinking but doesn't effects their workload. However Ak and Guvendi (2010) found that the process of providing and implementing alternative assessment activities is time consuming and have a negative perception especially by experience teachers. Findings from Ikhsan, Norila and Nurul (2013) also stated that teachers time constraints is an issue for them to implement school based assessment and to provide documentation. Salamiah (2013) found that teachers believed that the implementation of such assessment increases workload due to the management of students' evidence and filing.

If the students are intended to explore the curricular based on their needs, level and talent, it welcomed more problems to educators in preparing instructional activities. Thus, according to Sasmaz-oren & Ormanci (2013), policy must be made to provide ample supports and resources for teachers to implement alternative assessment in order to reduce workload and time constraint. Kishbaugh et al. (2012) found that, the students stated that rubric helped them to enhance the quality of their

science product. Rubric offers a guideline and expectation that must be performed by students and facilitates students to achieve good grades. However, according to Andrade (2005), due to much concerned in achieving good grades, does rubric enhance students' performance or just a tool to ensure good grades? Students' believed that rubric fulfilled teacher expectation not as tools to develop their learning. Nitko (2001), stated that even there were some limitations in the use of rubric, it allows students to explore beyond knowledge and skill not just transferring facts and memorizing text.

Wolf and Stevens (2007) propose that the rubric can be used by student peers to provide feedback on their achievement but not to giving scores due to psychometric purposes and pedagogical excuses. Thus, this will allows students to build their own knowledge and promotes lifelong learning (Akbulut & Akbulut 2011). The study found a number of issues in the use and the implementation of rubric such like validity, reliability, time constraint, workload, teachers competencies and students attitudes in performing project. However, such efforts must be supported in nurturing 21st Century skills for future careers and providing a space for students to establish their talents in their own way.

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