Development of Affective Learning Assessment Package for the Enhanced Basic Education Curriculum

John Mark M. Mayor

Bicol University College of Education

ABSTRACT

The study aimed to develop affective learning package in the enhanced basic education curriculum of Bicol University College of Education. Further, this employed descriptive-developmental research to attain the following objectives: assess the extent of evidence of affective learning assessment in the learning plans, develop affective learning assessment tools, validate the developed affective learning assessment tools. Through this study, affective assessment tools were developed and subsequently validated. These are a completion self-report, a teacher observation scale and a selection type self-report. Based on the findings, there is a need to incorporate affective learning outcomes more explicitly in the enhanced basic education subjects and to design activities and assessments that are aligned with these outcomes. Aside from designing high quality assessment for the cognitive and psychomotor domains, teachers must also be proficient in crafting affective assessment tools which can target outcomes contributing to affective development. Teachers can create, adapt or adopt assessment tools for the affective domain. These can be subjected to validation to make them more appropriate to different teaching and learning contexts and needs. It is recommended that enhancement of the learning plans be done with emphasis on the integration of affective learning outcomes, activities, resources and assessments. Teachers' knowledge and skills in affective assessment particularly in tool development must also be given attention. Furthermore, teacher-made affective tools can be evaluated/ validated for quality assurance and dissemination.

Keywords: affective learning assessment, assessment as learning, assessment tools, affective learning, enhanced basic education

INTRODUCTION

Learning is said to be a holistic process where the learner experiences changes in his/ her thinking, valuing and doing (Farrant, 1980 as cited in Adetayo, 2014). However, for the past years, it has been observed that more focus has been given only to the cognitive domain as evidenced by the consistent use of pen and paper assessments to measure learning and report on students' performance in school (Abe, 2004 & Owolabi & Olasehinde-Williams, 2008 as cited in Adetayo, 2014). This reality undermines the importance of assessing the affect, often associated with motivation, attitudes and values (Miller, 2005 as cited in Nursupriatna, n.d.), and the latter's contribution to the overall development of an individual. According to Rimland (2013), using appropriate and deliberate means to assess the affect can in the long run contribute to improvement of the cognitive domain as the two are connected to each other. Likewise, the affect can have a strong impact not only in a student's academic success but more importantly, in his/ her life beyond school (Popham, 2018).

Affective assessment must, therefore, be implemented across educational levels. Particularly, its implementation in the enhanced basic education curriculum can be most instrumental in its further promotion. This must also be given focus especially with the enhancements in the basic education, with the added context of flexible learning due to the COVID-19 pandemic, the affect is indeed an important dimension to explore because of its strong association with students' emotions and their motivations especially at a time of great uncertainty and fear due to the global health crisis.

The fact that there is little attention given to affective assessment as compared to cognitive assessment (Tyler 1973 as cited in McCoach et al., 2013), which is, as mentioned, the more practiced and known form of assessment in school, and the existence of only a few studies on its explicit presence in the classroom (Camelia et al., 2018) are the reasons why this study is undertaken. This study is anchored on the premise that there is a need to determine the evidence and extent of affective learning assessment in the curriculum which will serve as the basis for the learning plans's enhancement and for the development of affective assessment tools validated by experts in content, assessment and curriculum.

With its scope on Science and Mathematics focused on the Enhanced Basic Education Curriculum of Bicol University College of Education Integrated Laboratory School, this study aimed to achieve the following objectives:

1. Assess the extent of evidence of affective learning assessment in the learning plans of the Enhanced Basic Education Curriculum

2. Develop affective learning assessment tools for the Enhanced Basic Education Curriculum

3. Validate the developed affective learning assessment tools

One of the features of the K to12 program of the Department of Education is to engage learners to lifelong learning which is an ongoing, voluntary and self-motivated pursuit to knowledge for either personal and professional reasons. By vividly documenting from the assessment perspective of their affect we will be able to enhance social inclusion, active citizenship, and personal development, but also self-sustainability, as well as competitiveness and employability. As we geared towards the development of a holistic learner that is not only intellectual but also affectively capable it is deemed non-negotiable for us to determine the affective dimension of the learners and to promote that is to develop appropriate assessment tools for the affective learning.

MATERIALS AND METHODS

The study focused on the service of Bicol University College of Education Integrated Laboratory School both in the Elementary and High School Department with scopes in Science and Mathematics. The required data was gathered through document analysis, the assessment of the learning plans, the development of affective learning assessment tools and affective learning assessment package and its validation.

The researcher developed instruments such as assessment tool and a validation tool. The assessment tool aimed to measure the extent of the presence and consideration of the affective domain in each subject's outcomes, teaching and learning activities, resources and assessment strategies. This was validated by experts in pedagogy and assessment who were likewise actively involved in teaching basic education subjects. The results of the assessment of the learning plans were then utilized to develop the affective assessment tools for each subject which were likewise validated by the different jurors.

A validation tool was used to validate the affective learning assessment tools in terms of clarity, target, relevance, sufficiency of information, comprehensibility and correctness. Moreover, the study utilized the available grade levels and Science and Mathematics areas in the Elementary Department and in the High School Department.

The learning plans in Science and Mathematics curriculum were analyzed using a validated researcher-made assessment tool which aimed to measure the extent of the presence and evidence of the affective domain in the outcomes, teaching and learning activities and assessment of the subjects. The results of the assessment were used as bases for the development of affective assessment tools which were likewise validated by the teachers handling the respective subjects. Data collected were analyzed using descriptive statistics.

RESULTS AND DISCUSSION

This section deals with the presentation, analysis and interpretation of data on the assess the extent of evidence of affective learning assessment in the learning plans of the enhanced basic education curriculum; develop affective learning assessment tools for the enhanced basic education curriculum, and validate the developed affective learning assessment tools.

Extent of Evidence of Affective Learning Assessment in the Learning Plans of the Enhanced Basic Education Curriculum

To assess the extent of the inclusion of the affective domain in the basic education subjects, a researcher-made analytic rubric with a quantitative and qualitative scale was crafted. Three major aspects were looked into: the learning outcomes, the teaching and learning activities and assessments. Specific criteria for each of these components were identified. Under the learning outcomes, the verbal construction or structure of each learning outcome, the alignment of the learning outcomes with each other and the alignment of these outcomes with the learning content were scrutinized following a five-point scale with 0 as the lowest and 4 indicating a very high presence of the indicators for the affective domain. For the teaching and learning activities, the appropriateness of the instructional delivery, adequacy of learning tasks, and the accessibility to needed learning resources were explored. For assessment, the alignment of the assessment task to the outcome/s, its clarity, its scope in relation to the time allotment, and the availability of a scoring guide for rating were checked.

The learning plans were subjected to a preliminary assessment to pilot-test the rubric. Initially, the evaluation of the learning plan was problematic because it was challenging to identify which among the specific learning outcomes were affective by nature because as Taber (2015) pointed out, affective objectives may not be clear-cut and distinguishable from cognitive objectives, and if objectives are not clear, identification and alignment of instructional delivery and assessment are difficult to determine as well. Still, this became the starting point for the suggested revisions and/or inclusions in the learning plans to make the affective objectives surface.

After the preliminary assessment and being more familiar with the rubric, the researcher then subjected the learning plans to two more rounds of assessment with the last one considered for analysis in this study. The numerical rating resulting from the use of the rubric was interpreted using the description: highly evident (3.5-4), evident (2.5-3.4), moderately evident (1.5-2.4), slightly evident (0.5-1.4) and not evident (0-0.4). The rubric was validated by five experts who were also involved in teacher education and were researchers and knowledgeable in rubric design. Table 1 and table 2 shows data on the extent of evidence of affective learning assessment in the learning plans of the Junior High School and Elementary School.

Table 1. Extent of Evidence of Affective Learning Assessment in the Learning Plans of the Junior High School.

Learning Area	Learning Outcomes	Description	Learning proper/ Content/ Teaching and learning Activities.	Description	Assessment	Description
Science 7	1.3	Moderately Evident	1	Slightly Evident	1.25	Moderately Evident
Science 8	2	Evident	2.3	Evident	2.25	Evident
Science 9	1	Slightly Evident	1	Slightly Evident	2	Evident
Science 10	1	Slightly Evident	1.3	Moderately Evident	1.25	Moderately Evident
Math 7	0	Not evident	0	Not evident	0	Not evident

Math 8	0	Not evident	0		Not evident	0	Not evident
Math 9	0	Not evident	0		Not evident	0	Not evident
Math 10	0	Not evident	0		Not evident	0	Not evident
Overall rating	0.6625	Slightly Evident	0.825		Slightly Evident	0.84375	Slightly Evident

It can be seen that the affective domain is slightly evident in all the learning plans examined. It was consistently noted across the learning plans that the learning outcomes were constructed in such a way that they can be categorized following Krathwohl et al.'s taxonomy. Most of the learning outcomes across subjects were framed starting with the action verb to demonstrate the cognitive aspect of learning which cannot be categorized relatively at the valuing stage of the taxonomy of affective objectives. Further the attainment of an objective using this verb will not only showcase the expected knowledge or skill but likewise not indicate their personal understanding and/ or regard for what they are learning.

It is evident in the assessment, that learning plans in mathematics focused only on the psychomotor and cognitive learning with no emphasis on the affective learning. Moreover, the learning plans assessed in science noted moderate evidence of affective learning. Further, elementary science and mathematics learning plans were also examined using the same criteria and rubric. Table 2 shows data on the extent of evidence of affective learning assessment in the learning plans of the elementary school.

Table 2. Extent of Evidence of Affective Learning Assessment in the Learning Plans of the Elementary School

Learning Area	Learning Outcomes	Description	Learning proper/Content/Teaching and learning Activities.	Description	Assessment	Description
Science 4	0	Not evident	0	Not evident	0	Not evident
Science 5	0	Not evident	0	Not evident	0	Not evident
Math 5	0	Not evident	0	Not evident	0	Not evident
Math 6	0	Not evident	0	Not evident	0	Not evident
Overall rating	0	Not evident	0	Not evident	0	Not evident

The overall result shows no evidence of affective learning assessment in the learning plans both for elementary science and mathematics subjects. Most of the learning outcomes were stated in a way that its gearing towards only for cognitive and affective learning. Further, it was determined through the assessment that the instructional delivery modes were generic and very limited to discussion. Similarly, most of the learning resources were also either generic or are intended for the achievement of the cognitive outcomes such as content-oriented web page links or Youtube links though some may also be directed to an extent to affective tasks. Likewise, generally, there are no clear-cut assessment tasks for the affective dimension though these can also still target the affective outcomes. Across the subjects, tasks that involve reflection whether in oral or written form can be good measures of the affect, for example (Hussin et al., 2021). Students' valuing and internalizing can also be targeted by tasks that require them to write their own teaching philosophies or when they are asked to design their own activities, lessons, instructional materials and even curriculum.

Developed Affective Learning Tools for the Enhanced Basic Education Curriculum

Given that there is no clearly designed affective assessment for the subjects, three tools have been designed with the intent of integrating these tools strategically in the learning plans, particularly, at appropriate points in the content delivery and the teaching and learning activities. To reiterate McMillan's (2001 as cited in Gabuyo

& Dy, 2013) argument, given the unstable nature of the affect, the use of a variety of assessment methods is ideal. Therefore, the combination of assessment methods such as teacher observation, self-reporting and peer assessment is recommended. With the constraints of distance learning, however, only the first two kinds were considered since peer assessment requires students to interact with one another. This requirement is constrained by the distance learning modality.

Observation is a technique that can be readily used by teachers for various purposes. In affective assessment, the teacher must identify first the affective trait/s that need/s to be observed and the behaviors that can indicate its/ their presence. The teacher will then decide whether to use unstructured or open-ended observation, through which anecdotal records can be produced, or a structured one which can utilize behavior checklists, rating scales or rubrics (Gabuyo & Dy, 2013). A student self-report, on the other hand, allows students to share about their thoughts, emotions or attitudes. Teachers can directly ask their students through individual or group interviews, or through questionnaires or surveys. When using the second kind of self-reporting, the completion or selection types can be utilized. Rating scales, semantic differential scales and checklists can likewise be used under the latter (Gabuyo & Dy, 2013).

Popham (2018) recommends the use of anonymous self-reports following the constructed-response or completion format to ensure that learners answer honestly without the desire to please or give out the expected desirable responses. This is a self-report requiring qualitative responses. Quantitative self-reports are also common tools for measuring affective outcomes with Likert and semantic differential scales often employed (Buissink-Smith et al., 2011).

Two researcher-made tools and one adopted tool were presented to the validators for their comments. These three were consistently recommended to be used in the subjects analyzed. These tools were focused on measuring students' willingness to participate in the class discussion and/or their perceived important or value of the topics. The first researcher-made tool is intended for self-reporting following the completion format. Students will be asked to complete one or two statements about the topic. Specifically, these self-reports are to be known as personal takeaways. As suggested by the affective outcomes that they aim to target, these can give teachers qualitative information on the students' willingness and/or valuing of the topics.

Self-reporting is one common affective measure (Buissink-Smith et al., 2011) but as emphasized by Popham (2018), it should ideally be done anonymously as this facilitates a more authentic and honest sharing from the students, but given the constraints due to the distance learning set-up, the teacher may disregard this factor. Otherwise, it has been suggested in the tool that the takeaways may be done in Google Jamboard or any platform that will still allow anonymity while students complete the statements about the topic.

The second one is a participation observation checklist in which a list of behaviors are provided and teachers are expected to identify whether or not they are present. These statements consider the current distance learning modality which can either be conducted synchronously or asynchronously. This can be used to get an impression of students' participation in a unit or for the entire subject and this can also indicate their willingness to learn (Handelsman et al., 2005 as cited in Dixson, 2015) which can also be linked to their valuing, but this may not be applicable when students have problems with internet connection due to socioeconomic concerns. It will be difficult for the students to participate in either synchronous or asynchronous activities to be observed by the teacher through the checklist if their internet connection is weak or intermittent.

The last one is adopted from Dixson (2015) known as the Online Student Engagement Scale [OSE]. It is a structured self-reporting test composed of 19 items which uses a five-point Likert scale. The instrument asks students how likely it is that each statement describes their own thoughts, feelings or behaviors. Each of these statements fall under one of the factors that characterize engagement which are skills, emotion, participation and performance derived from Handelsman et al.'s (2005) Student Course Engagement Questionnaire [SCEQ] (as cited in Dixson, 2015). The OSE has been found to be a valid and reliable tool for measuring student engagement online based on Dixson's (2015) study.

Validation of the Affective Learning Assessment Tools

Fifteen teachers handling the science and mathematics subjects in elementary and high school given focus in the study were invited to serve as validators of the affective learning assessment tools. The validators are elementary and high school teachers outside Bicol University. The evaluators are also experienced teachers who hold a master's degree in education and have dedicated over five years to teaching in various educational settings. Their advanced training and years of experience equip them with a deep understanding of effective educational practices and assessment techniques. Upon their consent, they were given a soft copy of the learning plans, the suggested affective assessment tools and the validation rubric. The learning plans were annotated marking suggested inclusions like additional learning outcomes highlighting the affective domain and the affective assessment methods that can target them.

The validation aimed to determine the acceptability of the affective tools in measuring the willingness of the students to be involved in the discussion of specific topics and/ or their perceptions of the value of the topics. Given the constraints of the distance learning modalities, peer assessment as the third recommended method to gauge the affect was not considered. The results of the validation were interpreted through the following descriptors: highly acceptable (25-30), acceptable (19-24), moderately acceptable (13-18), slightly acceptable (7-12) and not acceptable (1-6). Table 3 shows the data of the jurors' validation results of the affective learning assessment tools. The overall results indicates that the affective learning assessment tools can be used in all basic education subjects of Bicol University College of Education Integrated Laboratory Schools.

Table 3 Jurors' Validation Results of the Affective Learning Assessment Tools

Affective Learning Assessment Tools	Description	Dimensions												Overall Result	
		Clarity of purpose of the assessment tool		Clarity of assessment target		Relevance to the Lesson/s		Comprehensibility and Correctness of the language used		Sufficiency of information		Clarity of interpretation			
Personal Takeaways	Completion of statements based on how important the ideas cited for the students	29	H.A	24	A	27	H.A	28	H.A	25	H.A	26	H.A	27	H.A
Participation Observation Checklist for the Lesson/ Unit/ Course	Getting an impression of students' participation in a unit or for the entire subject	29	H.A	26	H.A	27	H.A	27	H.A	24	A	25	H.A	26	H.A
Online Student Engagem	Self-report on how well do the	29	H.A	25	H.A	29	H.A	28	H.A	25	H.A	25	H.A	27	H.A

ent Scale (OSE)	behaviors, thoughts, and feelings describe them.												
Overall Result		29	H. A	25	H. A	28	H. A	28	H.A	25	H.A	25	H. A	27	H.A

The first tool—the personal takeaway—was consistently regarded as highly acceptable by the experts, with the only variations being in how the sentences are structured for completion and the themes in which the tool can be implemented. This indicates that this is strongly advised for use in the basic education subjects, but valuable feedback from the validators includes the need to include a rubric for evaluating the students' takeaways, to be clearer with instructions for completing the statements, to use or specify words that can be used for values analysis like the word "important," or to provide sample reflective responses to serve as a guide for students.

The participation observation checklist, the second tool, was also deemed to be highly acceptable, albeit some of the validators suggested using a five-point Likert scale rather than yes-or-no answers to better characterize and evaluate the frequency at which particular behaviors are demonstrated by pupils. For synchronous classes, other recommendations included using acceptable language while communicating and relating the lesson to real-world events and global/national issues. It was also advised that accurate crediting or citation be paid attention to in the observation for output submissions. It was also suggested to include indicators of behavior that deviates from norms or expectations.

In general, the third tool from Dixson (2015) that was selected was also thought to be highly acceptable. The validators advised concluding with a brief reflection after the self-evaluation. The items must also be divided into categories for clarity, and they must all be displayed in tabular form. It's possible to include some elements that emphasize information literacy, digital literacy, and lifelong learning.

To adapt the affective learning assessment tools for diverse environments, educators should consider accessible digital alternatives, such as online self-report surveys or apps, that can be used on common devices, ensuring that students in low-resource or remote settings can participate. For environments where synchronous observation is challenging, educators might implement asynchronous methods, like recorded video observations or student reflection logs, which provide flexibility in assessing affective growth over time. Additionally, adapting the language and examples in assessment tools to be culturally and contextually relevant will make them more inclusive and relatable across varied educational settings.

CONCLUSIONS

This section presents comprehensive conclusions out of the gathered data to set purposeful recommendations for further studies and improvement. The findings of the study led to the following conclusions:

1. Affective learning assessment is slightly evident in the junior high school learning plans and not evident in the elementary school learning plans.
2. Two researcher-made tools were developed and one adopted tool. Personal Takeaways which is a completion of statements based on how important the ideas cited for the students; Participation Observation Checklist for the Lesson/ Unit/ Course which is getting an impression of students' participation in a unit or for the entire subject and Online Student Engagement Scale (OSE) which is Self-report on how well do the behaviors, thoughts, and feelings describing students.
3. The validation of the developed affective learning assessment tools resulted to highly acceptable which indicates that the tools can be used in the basic education subjects.

RECOMMENDATIONS

Based on the conclusions, the following recommendations are made:

Learning Plans enhancement can be done through the integration of affective learning outcomes, activities, resources and assessment.

1. Teachers' knowledge and skills in affective assessment particularly in tool development must be given attention.

2. Teacher-made affective tools can be evaluated/ validated for quality assurance and dissemination.

REFERENCES

1. Adetayo, J. (2014). Assessing the affective behaviours in learners. Journal of Education and Practice 5(16). Retrieved February 26, 2019 from www.iiste.org

2. Bilash, O. (January 2011). Krathwohl's affective domain taxonomy. Retrieved March 3, 2019 from https://sites.educ.ualberta.ca/staff/olenka.bilash/Best%20of%20Bilash/krathwol.html

3. Buissink-Smith, N., Mann, S. & Shepherd, K. (2011). How do we measure affective learning in higher education? SAGE Publications 5(10), 101-114.https://doi.org/10.1177/097340821000500113

4. Camelia, F., Ferris, T.L.J. & Cropley, D. H. (2018). Development and initial validation of an instrument to measure students' learning about systems thinking: The affective domain. IEEE Systems Journal, 12, (1), 115-124. https://doi.org/10.1109/JSYST.2015.2488022.

5. Commission on Higher Education [CHED]. (2017). Policies, standards and guidelines for bachelor of secondary education [BSEd]. https://ched.gov.ph/wp-content/uploads/2017/11/CMO-No.-75-s.-2017.pdf

6. Dixson, M.D.. (2015). Measuring student engagement in the online course: The online student engagement scale (OSE). Online Learning, 19 (4). https://doi.org/10.24059/olj.v19i4.561.

7. Gabuyo, Y. & Dy, G. (2013). Assessment of Learning II. Quezon City, Philippines: Rex Bookstore Inc.

8. Hussin, M., Said, M.S., Norowi, N. M., Husin, N. A. & Mustaffa, M. R. (2021 June 1). Authentic assessment for affective domain through student participant in community services. Asia-Pacific Journal of Information Technology and Multimedia 10 (1), 52-62. https://doi.org/10.17576/apjitm-2021-1001-05

9. Lin, G. (2018). Anonymous versus identified peer assessment via a Facebook-based learning application: Effects on quality of peer feedback, perceived learning, perceived fairness, and attitude toward the system. Computers & Education 116, 81-92. https://doi.org/10.1016/j.compedu.2017.08.010

10. Mamat, M. & Mokhtar, F. (2012). Reliable assessment model for affective environmental education: Rasch model made simple. IEEE Explore, 171-174.

11. McCoach, D. B., Madura, J.P. & Gable, R.K. (2013). Instrument development in the affective domain school and corporate applications (3rd Edition). Springer

12. Popham, W. J. (2018). Assessment literacy for educators in a hurry. ASCD

13. Rahayu, S. (2015). Evaluating the affective dimension in chemistry education. In Kahveci, M. & Orgill, M. (eds.). Affective dimensions in chemistry education. Springer-Verlag Berlin Heidelberg. https://doi.org/10.1007/978-3-662-45085-7_2

14. Santeea, J.A., Marszalekb, J.M. & Hardingera, K. (2019). A critique of validity analysis from instruments assessing the affective domain. Currents in Pharmacy Teaching and Learning 11, 218-229. https://doi.org/10.1016/j.cptl.2018.11.010

15. Setiawan, A., Mardapi, D., Supriyoko, & Andrian, D. (2019). The development of instrument for assessing students' affective domain using self- and peer-assessment models. International Journal of Instruction, 12(3), 425-438. https://doi.org/10.29333/iji.2019.12326a

16. Stauffer, B. (2020 March 19) what are 21st century skills? Applied Educational Systems. Retrieved from https://www.aeseducation.com/blog/what-are-21st-century-skills

17. Syaiful, L., Ismail, M. & Adb Aziz, Z. (2019). A review of methods to measure affective domain in learning. 2019 IEEE 9th Symposium on Computer Applications & Industrial Electronics (ISCAIE). https://doi.org/10.1109/ISCAIE.2019.8743903

18. Taber, K.S. (2015). Meeting educational objectives in the affective and cognitive domains: Personal and social constructivist perspectives on enjoyment, motivation and learning chemistry. In Kahveci, M. & Orgill, M. (eds.). Affective dimensions in chemistry education. Springer-Verlag Berlin Heidelberg. https://doi.org/10.1007/978-3-662-45085-7_1

19. Tahiroğlu, M. & Çetin, T. (2019). Assessment and evaluation in social studies values education and other affective process: Problems and activity examples for solution. Değerler Eğitimi Dergisi, 17 (38), 295-331. https://doi.org/10.34234/ded.577347

20. What is the affective domain anyway? (February 20, 2019). Retrieved March 3, 2019 from https://serc.carleton.edu/NAGTWorkshops/affective/intro.html

21. Wu ,W. H., Kao, H.Y., Wu, S.H. & Wei, C. W. (2019) Development and evaluation of affective domain using student's feedback in entrepreneurial massive open online courses. Front. Psychol. https://doi.org/10.3389/fpsyg.2019.01109